CHESAPEAKE BAY PROGRAM UPDATES

Stream Restorations at STAC Quarterly Meeting

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Greg Noe (USGS), gave a briefing on the findings from the 3-day STAC workshop, ***The State of the Science and Practice of Stream Restoration in the Chesapeake: Lessons Learned to Better Inform Implementation, Assessment and Outcome***

The workshop brought together experts and stakeholders to review past restoration projects, assess current approaches, and improve future practices.

The workshop focused on three topics:

- Identify the evolution of stream restoration goals, regulations, practices and practice implementation;
- Present and discuss science and assessment to document holistic impacts and outcomes; and
- Create a synthesis of the best available science, practices and monitoring to enable adaptive management.

Present:
Synthesis

In-channel biotic

Biological uplift is rare. Examples of biological uplift include single stressor removal projects, benthic macroinvertebrates where riparian areas have been improved, fish where blockages have been removed, and hyporheic taxa.

'Stabilization' of channel form over time

Natural Channel Design in the Eastern US can stabilize channel form over typical monitoring periods of up to five years. There is little peer reviewed literature on new design techniques that focuses on channel and floodplain geomorphology.

Riparian

Often short-term negative impacts to riparian vegetation. Loss of existing trees in the riparian zone from stream restoration implementation occurs. But deliberate riparian restoration can improve ecosystem health. Amphibians in stream-wetland complexes and soil health can improve.

Water quality

Restoration effects are mixed but there are measurable improvements that make restoration a best management practice worth considering for attenuating nutrient pollution and sediment control. Tradeoffs and unintended consequences may occur.

USGS

Future:
What do we do differently to get better outcomes?

Where and why has biotic uplift occurred in response to stream restoration?

- Single known stressor
- Smaller streams
- Whole stream corridor (incl. riparian and floodplain zones)
- Intentional goal and approach to improve ecological uplift

→ Target headcuts, knickpoints, concrete channels, buried streams, headwaters, fish blockages, and disconnected floodplain-stream systems – in less degraded watersheds – for maximum likelihood of ecological uplift. *Give it time*.

USGS

Issues that impact outcomes and perception of stream restoration:

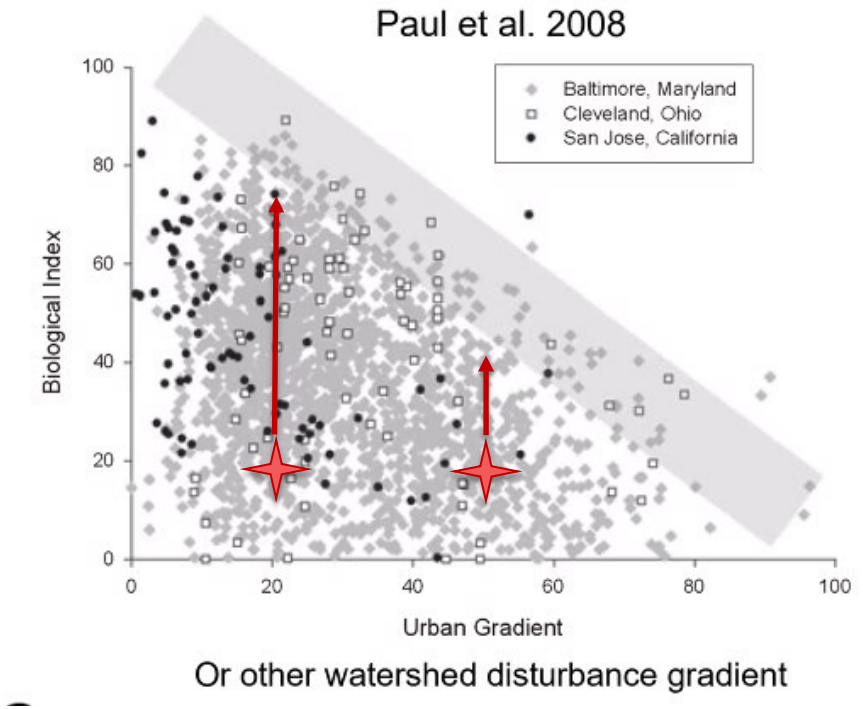
- Most stream restoration projects for the Chesapeake Bay TMDL have the primary goal of nutrient and sediment reduction to the Bay, but do not incentivize prioritizing biotic uplift.
- FEMA rules discourage changing (increasing or decreasing) flood levels which restricts the rewetting of the floodplain and potentially limits functional uplift.
- The term “stream restoration” should be refined to be more specific of actual management goals, objectives, and practices of each project in order to better communicate project intentions.

Recommendations to achieve better outcomes from Stream restoration:

- Consider the restoration potential of the stream (based on the condition of watershed and past land uses) to identify project goals, design approach, and assessment of sustainable outcomes.

- If improved ecological functions (ecological lift) are a main goal, then explicitly identify them, and use appropriate restoration design approaches to achieve that goal and monitor those restoration outcomes.

- Focus on holistic ecosystem condition and resilience, not only geomorphic stabilization, and promote stream evolution that improves ecological uplift.



Or other watershed disturbance gradient