Habitat GIT – Fish Passage, Brook Trout, Cosatal Habitats STAC Workshop (Mike Slattery)

Fisheries GIT Member Update

Update: *Fish Passage Workgroup, Habitat GIT*

Background

The fish passage workgroup is part of the Habitat Goal Implementation Team.
Fish Passage Outcome: During the period of 2011-2025, restore historical fish migratory routes by opening 1,000 additional stream miles, with restoration success indicated by the presence of blueback herring, alewife, American shad, Hickory shad, Brook Trout and/or American eel.

Current Status

The Fish Passage Prioritization Tool has been updated and is accessible online. The workgroup is in the process of using the tool to calculate stream miles opened by fish passage projects. Currently, the fish passage coordinators calculate stream miles opened by measuring the upstream mainstem miles of the stream on a map. The Fish Passage Prioritization tool calculates functional network length (The functional network is defined by those sections of river that a fish could theoretically access from any other point within that functional network. Its terminal ends are barriers, headwaters, and/or the river mouth.); justified by American eel and Brook trout (priority species) using the functional network of the streams. This would be a more accurate and consistent method of calculating stream miles and a more consistent tool for record keeping.

Connection to Fish GIT

Is the Fish GIT interested in learning more about how to use Fish Passage Prioritization Tool and about the new methodology for calculating stream miles opened?

Update: Brook Trout Habitat Prioritization Underway for the Chesapeake Watershed

Background

The new Chesapeake Watershed agreement includes an outcome to *"Restore naturally reproducing brook trout populations in Chesapeake headwater streams with an 8 percent increase in occupied habitat by 2025."* Inclusion of this outcome presents an opportunity to engage residents in upper portions of the 64,000 square mile watershed in actions to restore health of the estuary. To ensure that the best available science is used in making decisions about how to achieve this outcome, the North Atlantic Landscape Conservation Cooperative is partnering with contractor Downstream Strategies, the Eastern Brook Trout Joint Venture, the Chesapeake Bay Program, and USFWS Chesapeake Bay Field Office to develop a pilot model for brook trout habitat prioritization in the Chesapeake watershed. The goal of the project is to assess habitat for specific biological endpoints in a consistent framework that can be applied at various scales. Models will be available for testing during late summer 2014, and as an online decision support tool for field application by spring 2015. Multiple stakeholder groups will apply a modeling and buy-in process to the specific case study of brook trout in headwaters of the Chesapeake Bay, including portions of West Virginia, New York, Pennsylvania, Virginia and Maryland.

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Current Status

The team including Downstream Strategies and led by Todd Petty of West Virginia University has been working to resolve some final issues, including:

- Timeframe of sampling to use. Based on the recommendation of Steve Perry of the Eastern Brook Trout Joint Venture, the team has decided to use fish samples from 2000 onward.
- Confirm that Downstream Strategies has obtained all of the available brook trout data. Feedback from State partners is due by Friday, May 30.
- How to include information about invasive salmonids (i.e., rainbow trout, brown trout). This is challenging from a modeling standpoint because the species tend to share the same habitat (so expect a positive correlation) but also compete against each other (expect a negative correlation), and only partial sampling of other salmonids is available. The team has proposed to omit invasive salmonids as a predictor variable for the presence of brook trout but incorporate information about them, post-modeling, into the decision support tool.

Downstream Strategies expects to complete an **initial model for review** to be coordinated by the technical team in **early June**. The Habitat GIT will arrange a webinar presentation at this stage.

Methodology

The primary goals of the models are to assess habitat for specific biological endpoints in a consistent framework that can be applied to various endpoints developed as part of this project. In addition to the assessment, the team must produce results that can be integrated into the existing decision support tool. For this pilot assessment, the decision has been reached by multiple stakeholder groups to apply the process below to brook trout within the Chesapeake Bay. Within this area, there are active groups working toward restoration at multiple scales, all of which will have access to the decision support tool that will be produced as part of this project. To assure buy-in to the final assessment products, the project team will work with the stakeholders to develop deliverables that are consistent with the goals of the project and its end-users. By working through this modeling process with a real data example, it will allow stakeholders to have a more complete understanding of the process, which will ensure a smooth application of this methodology to additional inland modeling efforts.

Modeling process

- Compiled data that summarizes local and upstream conditions for many datasets, such as temperature, land cover, geology for the NHD plus version 2 catchments. This data, along with any additional relevant predictor datasets identified by the review team will be utilized as predictor data for model.
- Predictor data will be combined with response data (fish survey data) for those catchments where fish survey data was available. The resulting dataset will be used to create a predictive model that will allow for characterization of the fish response for ALL catchments. The statistical methodology we will use for the predictive modeling will be boosted regression trees (BRT).
- Technical review team will critique results and make suggestions to the resulting preliminary model.

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Connection to Fisheries GIT

Peer review of preliminary model results by aquatic resource managers will be sought later this summer via the Habitat GIT; ***would any members of the Fisheries GIT be interested in assisting with this review?***

Results of this prioritization will be integrated into an existing decision support tool and could ultimately contribute to a tool prioritizing habitat needs of multiple aquatic species, including estuarine and coastal fish. Wider application of the methodology is **of interest to regional partnerships under the NFHAP** (it draws on modeling done for the Ohio River Basin and Southeast Aquatic Resources Partnership).

This tool will make more evident the **connection between land and water habitats**. The Northeast States are conducting a synthesis of their State Wildlife Action Plans (SWAPs) with assistance from the North Atlantic Landscape Conservation Cooperative; this work will build the case for importance of management actions in priority areas upstream of anadromous fish spawning and nursery grounds.

This pilot model and the application to decision making at various scales has been submitted for consideration as a Special Session for the **RAE Coastal Estuaries Summit** for November 2014.

Update*: STAC Workshop, "Designing Sustainable Coastal Habitats"*

Background

The Habitat GIT and STAC led a workshop titled "Designing Sustainable Coastal Habitats" on April 16-17, 2013 in Easton, Maryland. The workshop explored approaches for designing coastal landscapes in the Chesapeake Bay watershed through strategic restoration and protection of habitats most likely to be sustainable in the face of multiple stressors affecting coastal ecosystems. Scientists, habitat restoration partners, and policy makers focused discussion around three themes: (1) Ecosystem Components of Coastal Habitats; (2) Capacity of Coastal Habitats to Support Fauna and Flora; and (3) Designing Sustainable Coastal Habitats in the Face of Human Development, Climate Change, and Sea Level Rise.

Current Status

STAC recently released the workshop report, which outlines five specific recommendations agreed to by the workshop participants:

1. Institute a more balanced approach to Chesapeake Bay restoration by integrating water quality, habitat, and ecosystem-based species goals.
2. Expand the spatial and temporal scales used to set Bay restoration/conservation targets.
3. Align differing and complex objectives for management of living resources using an adaptive management framework, such as Structured Decision Making and Strategic Habitat Conservation.
4. Initiate a pilot study of landscape-scale restoration approaches.

5. Form a Habitat Modeling workgroup to facilitate data synthesis, coordination, and regional model development.

The Habitat GIT drafted a letter in response that addressed each STAC recommendations and suggested specific action items for Chesapeake Bay Program partner agencies in order to continue the efforts from the workshop (Attached, "Response to STAC-Sustainable Habitat Workshop"). The Habitat GIT believes a continued collaborative effort across partner agencies to plan and design habitat implementation plans will be the most effective in designing sustainable habitat projects in the watershed.

Connection to Fisheries GIT
The Habitat GIT values Fish GIT input and participation in implementing the actions described in the response to the report recommendations.

DRAFT Habitat GIT response to STAC Workshop Recommendations

Dr. Kirk Havens, STAC Chair
CBP Scientific and Technical Advisory Committee
645 Contees Wharf Road
Edgewater, Maryland 21037

Dear Dr. Havens:

The Chesapeake Bay Program's Management Board and the Vital Habitat Goal Implementation Team express our appreciation to the Scientific and Technical Advisory Committee for their workshop report entitled, "Designing Sustainable Coastal Habitats." Thank you for the opportunity to respond to the recommendations presented in the workshop report.

The Management Board strongly agrees with the recommendations proposed in the report and believes the most effective approach to continue the efforts from the workshop is to engage specific groups within the Chesapeake Bay Program Partnership. Specific responses to the recommendations follow as well as suggested action items associated with each recommendation.

1. Institute a more balanced approach to Chesapeake Bay restoration by integrating water quality, habitat, and ecosystem-based species goals that support "outcome" and/or "surrogate" species.

The Management Board expects this to be accomplished by the Goal Implementation Teams working to integrate Management Strategies of related outcomes to the most practical extent possible. Specifically, we expect the following steps to be taken:

- By the end of FY 2014, the GIT Chairs, with support from the **Enhancing Partnering, Leadership, and Management GIT, should present to the MB a plan outlining the degree to which Management Strategies associated with various outcomes can be aggregated across Goals.**
- As Management Strategies are being developed in the coming year, the **MB will discuss** the potential efficiencies and challenges inherent in such an aggregation **and provide feedback** to the GITs on this plan prior to development of detailed Management Strategies.

2. Expand the spatial and temporal scales used to set Bay restoration/conservation targets

While the Management Board acknowledges that pockets of this exist (i.e. observation of Chesapeake wintering ground impacts on Mid-Atlantic Flyway population of black ducks; the scope and intent of Maryland's Coastal Resiliency Master Plan), we agree that such spatial and temporal considerations need to be more explicitly reflected in the setting of meaningful milestones against which the partnership will measure progress toward outcomes. Accordingly, we direct the **GITs to work with STAR and the Habitat Modeling team called for in recommendation #5 below, to prepare a series of ecosystem response scenarios** (i.e. "Assuming 60% of practices are in place by 2017, then we can expect [wetland/forest/stream/SAV/blue crab/oyster/shad/brook trout] to respond this way by 2025 and beyond") Think of this as of as Scenario Builder "Plus"; again, it highlights the need for staff support devoted to supporting the habitat/species modeling needs of GITs.

3. Align differing and complex objectives for management of living resources using an Adaptive Management framework and decision matrix models, such as Strategic Decision Making.

As STAC has assumed the role of Adaptive Management 'watchdog' for the partnership, the MB will look to **STAC to (1) assist the GITs in developing Management Strategies that are adaptive,** balanced, and allow for application of the latest science to policy decisions and (2) **communicate early and often with the MB** regarding any concerns. The MB will further rely upon the **Local Government Advisory Committee to identify and suggest information needs of local planning agencies to be addressed by existing and developing landscape-level planning tools** such as those supported by Landscape Conservation Cooperatives (LCCs), or by new decision support tools which may be possible through the efforts of a Habitat Modeling Team (see recommendation #5 below).

4. Initiate a pilot study of landscape-scale restoration approaches.

The MB is pleased to note that this recommendation has already been acted upon in that the Nanticoke/Pocomoke/Choptank region has been selected by both FWS as a focus area for their Designing Sustainable Landscapes pilot under the North Atlantic Landscape Conservation Cooperative and by NOAA as a priority focus area for their Habitat Blueprint Identification of this geography as a focus for landscape-scale restoration builds on important foundational work led by TNC in their floodplain connectivity study and NRCS work to provide incentives to owners of marginally-productive agricultural lands on the Delmarva for restoration of wetland, riparian buffer, and forest. To highlight

these examples and encourage more of this landscape-level approach to restoration, the **MB directs the Communications Team to explore development of a series of stories and visuals about a mosaic of landscape-level efforts** being championed by a variety of partners, including the Upper Susquehanna Conservation Alliance (and Upper Susquehanna Coalition), James River Association, Potomac Conservancy, and Cacapon and Lost Rivers Land Trust. These stories should incorporate aspects of regional economics and lag times (per item #6 below).

5. Form or develop a formal association with a Habitat Modeling group to facilitate coordination and regional model development and potential mechanisms to integrate and coordinate local to landscape-scale coastal habitat decisions.

During the April STAR meeting, several GITs expressed the need for greater support in terms of modeling, monitoring and GIS needs. Such needs have been reiterated in agency communications since the *Designing Sustainable Coastal Habitats* workshop; for example, an email from the Fisheries GIT Chair to senior NOAA leaders states that the workshop *"led to a discussion about the feasibility of coordinating oyster, SAV, and living shoreline restoration efforts to better evaluate and monitor cumulative impacts on the ecosystem and key "outcome" and/or "surrogate" species, such as waterbirds (i.e., black ducks, seaducks), blue crab, oysters, and terrapins. This will require improved data and cooperative monitoring. The Little Choptank may be a perfect area to bring this vision to fruition. However, when using data and tools to plan these restoration efforts, there is a continual need to incorporate changes in land use, climate, and sea level rise as important stressors to ecosystems that will impact restoration efforts. To showcase the success of these restoration efforts to the public, it may be necessary to quantify monetarily the value of these living resources more clearly."* In order to begin to address this persistent need, the MB hereby requests that **STAR work with the Modeling Team to frame options for providing such support in a more direct manner to the Fisheries, Habitat, and Maintain Healthy Watersheds GITs, and to have those options ready to present at the July MB meeting.**

6. **Build economic arguments and expected lag times for ecosystem recovery into public messaging about the Bay watershed.**

The Management Board asks **the Communications Team to work with STAR to develop messages that incorporate economic values and the concept of lag times** in ways that are easily understandable

In closing, on behalf of the Chesapeake Bay Program's Management Board, please extend my thanks to the workshop steering committee and participants for their time and effort in the workshop as well as STAC members for their attention to this workshop report. We believe a continued collaborative effort across partner agencies to plan and design habitat implementation plans will be the most effective in designing sustainable habitat projects in the watershed. We appreciate STAC's continued role in improving our overall management of the Chesapeake Bay restoration effort.