Workshop Title: Factors Influencing the Mainstem, Tidal, and Non-Tidal Fish Habitat Function in the Chesapeake Bay Watershed: Application to Restoration and Management Decisions (Responsive)

Submitted by: Sustainable Fisheries Goal Implementation Team (SFGIT), Vital Habitats Goal Implementation Team (HGIT), Fish Habitat Action Team (FHAT), and Stream Health Workgroup (SHWG)
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Workshop Steering Committee:

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Workshop Description: Fish habitat is defined as "any area on which an aquatic organism depends, directly or indirectly, to carry out the life processes of the organism, including, an area for spawning, incubation, nursery, rearing, growth to maturity, food supply, or migration…" Fish habitat is considered the core of ecosystem-based fisheries management, yet large information gaps exist in understanding habitat influence on species.

The proposed two-day workshop will focus on evaluating factors influencing the range of services provided to an organism, including, but not limited to, mediating trophic interactions, reproduction, shelter, and feeding, and influencing the behavior of organisms (hereby referred to as "habitat function") throughout the Chesapeake Bay Watershed. The Fish Habitat Management Strategy takes the first step in closing this information gap by identifying five habitat types (listed in Table 1) and corresponding representative species along with a preliminary list of factors influencing these habitats. This workshop will build off the initial effort by utilizing a refined list of representative species to develop a comprehensive listing of factors influencing the five identified habitats. Workshop participants will develop criteria for analyzing the impact of factors influencing habitat, which will be utilized to evaluate the significance of these factors on habitat function and mitigation.

Our current efforts towards achieving the Fish Habitat Outcome require the integration of these factors into management and restoration to ensure a comprehensive and resilient ecosystem approach which will improve the effectiveness of current measures. This assessment will be crucial in improving adaptive management in habitat restoration and conservation efforts and improve the connections between habitat function and response (e.g. decreased reproductive success and trophic disruption).

Management Need: This workshop is greatly needed as the initiation and continuation of several fish habitat workplan actions depend on this base knowledge to move forward. The workshop will produce several products which will outline factors influencing fish habitat, qualify significance of these factors on fish habitat, and analyze mitigation techniques to improve restoration and conservation efforts. With limited funding capabilities for fish habitat efforts, it is imperative that funded efforts are implemented in a manner which takes into account the effectiveness and longevity of proposed activities within the context of multiple fish species.

The workshop goals will be both timely and essential to fulfill the Fish Habitat Outcome to "Continually improve effectiveness of fish habitat conservation and restoration efforts by identifying and characterizing critical spawning, nursery and forage areas within the Bay and tributaries for important fish and shellfish, and use existing and new tools to integrate information and conduct assessments to inform restoration and conservation efforts." Further, the products of this workshop will support ongoing efforts detailed in the 2016 – 2017 workplans. The proposed workshop outcomes of evaluating factors influencing fish habitat and qualifying limitations to fish habitat function will assist the SHWG in determining vital physical habitat functions. This proposal addresses the following actions from the Fish Habitat Workplan:

"Continue to improve our understanding of specific habitat stressors, including temporal consideration to promote sound management strategies that can conserve and restore habitat for productive fisheries"

"Work with Chesapeake Bay Program (CBP) partners and Goal Implementation Teams to identify threats and understand how those threats are being addressed"

"Engage and communicate fish habitat needs with CBP partners and local communities"

And actions in the Stream Health Workplan:

"Identify practicable metrics consistent with BMP verification guidance to credit projects for N, P, and sediment load reductions and stream functional improvement for overall improvement in stream health, and incorporate these recommendations into BMP Verification Plans"

"Implement recommendations from the STAC workshop report to establish a joint SHWG and Urban Stream Workgroup to develop guidance to align the stream restoration BMP protocols for nutrient and sediment loads delivered downstream to optimize improvements in stream health and function"

Workshop Synthesis: Workshop discussions and outcomes will be documented in a final workshop report that will be distributed to the CBP and interested parties within 90 days following the workshop. Products (detailed on page 3) will focus on the use of existing data and strategies and include recommendations to develop metrics where data are lacking. The final report will provide guidance on how identified factors can be addressed, and the significance these factors play in the evaluated habitat types and representative species. The Chesapeake Bay Local Government Advisory Committee (LGAC) coordinator is a member of the steering committee; this will help ensure the workshop products will be useful to local government and decision makers.

Pre-workshop Preparation: The Steering Committee will reach out to appropriate scientists and experts when selecting the representative species and designing the workshop to ensure necessary expertise is available and all relevant information, research, and data sets are identified, compiled, and sent to the workshop participants in advance of the workshop (preliminary habitat types and representative species are below).

Habitat Types	Representative Species*
Tidal saltwater sub-tidal (ex. oyster reefs, open water)	Atlantic silversides, croaker, spot, summer flounder, striped bass
Tidal saltwater nearshore and intertidal (ex. marshes, SAV)	Juvenile Sciaenids, grass shrimp, mummichog
Cold and upstream freshwater Non-tidal	Smallmouth bass, trout
Warm Freshwater Non-tidal	Largemouth bass
Freshwater Tidal (ex. Emergent marshes)	Striped bass, American shad, yellow perch

Table 1: Selected habitat types and a preliminary listing of representative species that will be evaluated in this effort.
*Representative species includes but is not limited to species selected from the Fish Habitat Management Strategy, Key Forage species from the 2014 STAC Forage Workshop Report, and species from the TetraTech Fish Habitat Literature Review. List may be modified as expert opinions are consulted.

Steering committee will utilize existing reports and literature to inform workshop including but not limited to: National Fish Habitat Partnership's 2015 Status Report, Atlantic States Marine Fisheries Commission Habitat Matrix, TetraTech Fish Habitat Egg and Larval Matrix, Adult Matrix, and Literature Review, North Atlantic Landscape Conservation Cooperative Aquatic Cores and Connectors, and Forage Workshop Report

Workshop Speakers and Attendees: The Steering Committee will identify and convene experts in saltwater and freshwater habitat to address the workshop objectives and significantly contribute to the workshop products. In addition to Chesapeake Bay region experts, the Committee will invite experts from other regions to offer outside perspectives and knowledge to the workshop.

Objectives – To address the following questions:

- What qualities distinguish the five identified habitat types?
- What factors limit and influence representative species in the identified Bay habitat types?
- Is there an existing metric or indicator that can be used or developed to measure fish habitat function?
- What qualitative rating criteria exist for these factors and how can criteria be applied to fill gaps?
- What management options are available for mitigating these factors or restoring habitats?
- How can monitoring, conservation, restoration and communications actions be implemented?

Workshop Products (to be included in report or appendices):
Fish Habitat Data Inventory - Inventory of relevant literature sources pertaining to fish habitat, identified factors influencing, and fish productivity and response to factors and mitigation techniques.

Refined list of factors influencing fish habitat in mainstem, tidal, and nontidal systems - Steering Committee will build off the Management Strategy factors influencing fish habitat list, adjusting and adding additional considerations as necessary. This can be used to evaluate the condition of a habitat in the context of fish health.

Qualitative criteria to analyze significance of factors which limit fish habitat function - Qualitative criteria to evaluate the significance and interactions of factors influencing fish habitat.

List of mitigation techniques for each factor that optimize, restore or conserve fish habitat - This list will be essential to determine which factors pose the greatest risk to fish habitat and can inform how the Chesapeake Bay Watershed can more effectively target restoration and management techniques.

Communications products to deliver results to local government and broader Chesapeake Bay Watershed - This component will be useful in communicating information and actions that can mitigate factors influencing fish habitat to managers and local decision makers. Communications products will highlight the criteria developed by the workshop to better match action to opportunity.

Rationale: This workshop will bring together experts from across disciplines to assemble basic fish habitat information needed to progress actions in multiple workplans and to advance the outcomes of multiple goal teams. The information is the foundation required for fish habitat assessment and adaptive management.

Timeline: Steering Committee will begin bi-monthly meetings in June 2017 to plan the workshop, develop the final representative species list, gather existing information and data, and identify experts. In November, participants and key partners will be invited to the workshop. The workshop will be conducted in early 2018. The steering committee will have a follow up meeting at the end of the workshop and a conference call within a month of workshop completion. The report will be submitted to STAC within 90 days of the workshop.

Budget Justification and Logistics: The workshop will be held over two days between winter 2017 and spring 2018. Workshop participation will be by invitation only and target 30 participants. Estimated costs for venue, catering and travel are included below:

Venue - $4000	Catering - $3000	Travel for participants - $3000	**Total - $10,000**

Past STAC Workshop Proposals from the SFGIT and HGIT:
The HGIT and SFGIT have previously submitted five workshop proposals to STAC:
- "Identifying and Mapping Quality Fish Habitat Areas in the Chesapeake to Improve Targeting and Effectiveness of Conservation and Restoration" – Submitted 2/2015. Not accepted.
- "Initiating a Campaign for Land Conservation and Fisheries Health" - Submitted 3/2013. Not accepted.
- Forage Workshop – Submitted March 2014. Accepted and conducted 11/2014.
- "Designing Sustainable Stream Restoration Projects within the Chesapeake Bay Watershed" – Submitted 3/2013. Accepted.
- "Designing Sustainable Coastal Habitats". STAC Publ. No. 13-005, Edgewater, MD. pp. 52.