Fish Communities as Biological Indicators in Hinkson Creek: alternative research projects

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First, I must apologize for my absence at today's meeting. However, I want to take this opportunity to provide the committee with some alternative scenarios for obtaining information on the fish community of Hinkson Creek and how that information could be used to strategically improve condition and reduce impairment of this system. Two alternatives, a less expensive M.S. student project or a more costly PhD student, could provide important information for the Hinkson Creek collaborative adaptive management team; however, the PhD project will better place this information in a statewide context and allow the team to set realistic goals for the restoration of this system.

With an M.S. project, we could learn the following: $92,000~/2 yrs

1) Broad characterization of the fish community of Hinkson Creek periodically along its longitudinal profile. With a single field season, a student and technician could realistically sample 10-20 sites along the stream.
2) Fish assemblage characteristics in those sites could be related to existing information on stream habitat, insect communities, and landscape factors such as urban development.
3) Information on where the fish community reflects impairment and a baseline index of biotic integrity that will allow for continued monitoring.

With a Ph.D. project, we could obtain the following: $185,604 /4 yrs

1) Detailed information on longitudinal changes in fish assemblages along Hinkson Creek. Two field seasons will allow a more complete characterization of the fish community and strategic targeting of areas that are likely to show shifts in assemblage characteristics, such as the rural-urban transition or along floodplain wetlands and tributary junctions.
2) Model relating fish assemblage characteristics to habitat and floodplain features.
3) Population assessment of sportfish in Hinkson Creek, including population size, age structure, and individual growth and health.
4) Index of biotic integrity that can then be compared to similar reference streams throughout the state.
5) Paper setting realistic goals for fish assemblage biotic integrity in Hinkson Creek given current landscape features. Strategic identification of areas that provide the best opportunities for restoration.

Restoration of stream ecosystems throughout this nation is underway, yet we continue to loose species and habitats at an alarming rate, frequently failing to meet restoration goals. This may not be because of the kind of restoration work underway, but because we are poorly allocating our efforts on the landscape by using an opportunistic approach to restoration without a guiding framework. In other words, it may not be what we are doing, but *where we are doing it*, that is causing failure of many restoration projects. By completing a spatially explicit analysis of the fish community within a larger context, a PhD project may be able to provide the team with realistic goals for fish community restoration and information that will allow strategic placement of its restoration efforts. Though an M.S. project would be less costly and not without value, its capacity to provide this type of valuable information is much reduced.