



Anacostia Wetlands Benthic Study

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Principle Investigator(s):

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Collaborators: Chesapeake Bay Program (over 25 Federal Agencies, 6 States, the District of Columbia, and numerous local customers and partners)

Statement of Problem: Considerable work has been conducted on the benthic populations of such aquatic systems as streams and lakes, but there remains a paucity of effort on tidal wetlands, especially freshwater. This study will characterize the benthic communities establishing themselves on recently reconstructed urban freshwater tidal wetlands in Washington, D.C. in comparison to a similar relic wetland in the Anacostia as well as to a reference wetland in the adjacent Patuxent River watershed. The focus of the study will be the two main areas of Kingman Marsh that were reconstructed from Anacostia dredge material by the U.S. Army Corps of Engineers in 2000. Populations from this 'new' marsh will be compared to those of similarly reconstructed Kenilworth Marsh (1993) just one half a mile upstream, as well as to the relic Dueling Creek Marsh in the Anacostia and the outside reference Patuxent Marsh in an adjacent watershed.

Objectives: The overall objective of this study is to evaluate the relative success of urban freshwater tidal marsh reconstruction. The study is designed to test whether or not the benthic community can provide a viable bioassessment of the urban freshwater tidal reconstructed habitat.

Approach: Project tasks will include:

1. Identifying to the extent practical the benthic organisms inhabiting the Anacostia marshes (Kingman, Kenilworth and Dueling Creek) as well as the selected Patuxent Marsh area.
2. Determining whether time of marsh establishment (age) relates to differing benthic communities by evaluating as a series: Kingman Marsh as reconstructed in 2000, Kenilworth Marsh as reconstructed in 1993, Dueling Creek as a disturbed but last remaining relic marsh area in the Anacostia, and a relatively undisturbed Patuxent marsh area in an outside but adjacent watershed.

3. Evaluating the influence of marsh (sediment) elevations (elevation gradient effect) and tidal regimes on benthic community composition in the freshwater tidal system by sampling channel; mud flats (exposed at low tide); low, mid and high marsh zones; and stable but temporary pools.
4. Using combinations of quantifiable methods of sampling such as the Eckman dredge and corers coupled with qualitative benthic sampling devices such as sweeps with D nets and placement of Hester-Dendy samplers over periods of time.
5. Comparing the benthic populations of the reconstructed marshes (Kingman and Kenilworth) with the non- reconstructed marsh areas of Dueling Creek and Patuxent.
6. Evaluating the various wetland benthic communities for pollution tolerance.
7. Comparing the results from this study with those from similar wetland projects as may be reported in the literature.
8. Providing annual and final reports to the Baltimore Corps of Engineers and the District of Columbia. The study is well structured to produce peer-reviewed publications in professional journals as well as presentations at scientific meetings.

Selected Reports and Other Products:

Report, Planned: Kevin Brittingham and Richard Hammerschlag, 2004, Final Report to Corps of Engineers and District of Columbia: "Benthic Macro-invertebrate Populations of Urban Freshwater Tidal Wetlands in the Anacostia River, Washington, D.C."

Peer reviewed journal article on same subject, USGS.

Relevance and Benefits:

This task addresses goal 4 of Status and Trends of Biological Resources: Monitor and assess environmental status and trends.