

2015 Patuxent River Conference

Small Group Discussion: Yellow

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Watershed / Upland Species and Habitat

What is the most fundamental scientific question concerning watershed / upland habitat and species that would enhance our understanding of the Patuxent River ecosystem?

Fundamental Question: How do stream water condition and ecosystem function vary between physiographic provinces and land uses in ways that are relevant to people and policymakers?

The Patuxent River watershed lies within the Piedmont and Coastal Plain physiographic provinces in Maryland. Streams in the Piedmont region tend to have steeper gradients than those of the Coastal Plain, and are underlain by bedrock rather than the unconsolidated fine-grain deposits typical of the Coastal Plain. As a result, Piedmont streams tend to be zones of sediment erosion and transport, while those in the Coastal Plain tend to be depositional zones. Wetland hydrology, geomorphology, and land use also differ between the provinces. Management and policy decisions need to be informed by a scientific understanding of the differential effects of land uses and management actions in the Piedmont versus the Coastal Plain.

Tidal Species and Habitat

What is the most fundamental scientific question concerning tidal habitat and species that would enhance our understanding of the Patuxent River ecosystem?

Fundamental Question: What role do tidal creeks and wetlands play in processing land-based or Patuxent tidal fluxes of nutrients and sediments?

Nutrients and sediment enter the Patuxent River via river flows and tidal fluxes from the main Bay. Tidal creeks along the Patuxent estuary may function as “high-end BMPs (Best Management Practices)” to trap sediment and transform or remove nutrients from fluvial or tidal sources. The role of these “sub-sub-estuaries” in maintaining the water quality of the tidal Patuxent needs to be better understood. These systems should be protected and managed.

Conservation, Restoration, Management, and Monitoring

What is the most significant conservation, restoration, management, or monitoring strategy that would enhance water quality in the Patuxent River over the next 5 years?

Fundamental Question: How do we move across policy “stovepipes” or structures to address cross-cutting goals wherein one management action may have unintended consequences which are contrary to other goals in tidal waters?

For many of the research examples highlighted at the 2015 Patuxent River Conference, a given management solution for one challenge may have the potential to impact a different goal. For example, TMDL (Total Maximum Daily Load)-motivated sediment reductions have the potential to reduce the ability of tidal wetlands to keep up with sea level rise. Nutrient reductions targeting improved water quality may impact food web structures and productivity of fish populations. To meet this challenge, we need “outside-the-box” thinking, as well as mechanisms for coordinating management holistically.