Ecosystem Services at the Bay Program

Habitat GIT Meeting—November 16, 2020

Chesapeake Bay Program
Science. Restoration. Partnership.

Bo Williams, EPA

“Ecosystem services are the benefits people obtain from ecosystems...including provisioning services, regulating services, cultural services, and supporting services.” --Millennium Ecosystem Assessment

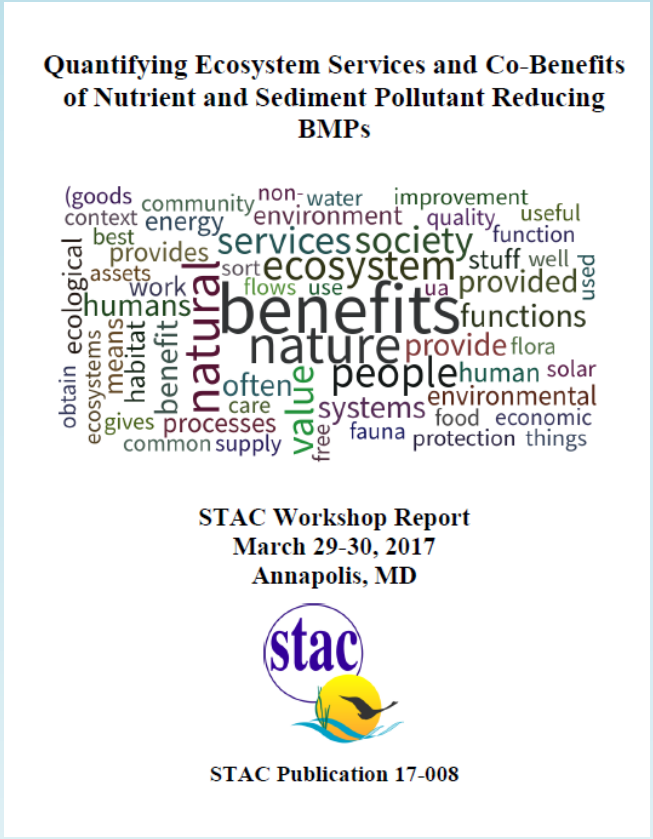
“Components of nature, directly enjoyed, consumed or used to yield human well-being (FEGS).”—Boyd, J. & Banzhaf, S.

Quantification of the Value of Green Infrastructure Hazard Mitigation Related to Inland and Coastal Flooding

CAN WE PUT A VALUE ON ECOSYSTEM SERVICES AND INCLUDE IT IN CAST?
PRESENTATION FROM KRISTIN SAUNDERS (UMCES)

STAC Workshop 2017 “Quantifying Ecosystem Services and Co-Benefits of Nutrient and Sediment Pollutant Reducing BMPs”

- Identified 5 priority benefits to focus on:
  - Ecosystem sustainability – benefits to fish and other aquatic resources
  - Hazard mitigation – flood, drought, fire risk
  - Recreation and aesthetics – hunting, fishing, swimming, boating, education
  - Drinking water – quantity and quality
  - Human health – improved air quality, reduced heat related illness, fewer water borne illnesses



Quantification of the Value of Green Infrastructure Hazard Mitigation Related to Inland and Coastal Flooding project is born

- Deliverables will include a final report and lookup table spelling out the recommended:
- (1) **Quantification of hazard mitigation for inland and coastal flooding** as it relates to BMPs and/or nutrient and sediment reductions on various land uses and geographic areas throughout the Chesapeake Bay Watershed in a format that can be integrated into CAST
- (2) **A defined replicable process** (original work specific to the Chesapeake Bay watershed), tailored for use by the Bay Program and incorporation into CAST, for identifying ecosystem services, connecting these services to BMP impact, and quantifying the benefits of other management strategies/outcomes in the context of BMPs.
- (3**) A summary on lessons learned** from completing the first deliverable. The intention is to perform similar analysis in the future for other BMPs and Watershed Agreement goals and outcomes.

RESES Project: Identifying and defining levels of meaningful change in ecosystem services of the Chesapeake Bay and its watershed

Collaboration between CBPO, Region 3 & EPA Office of Research and Development
(Presentation from Ryann Rossi)

Scoped list of BMPs:

- Agricultural forest buffers (with and without fencing)
- Agricultural grass buffers (with and without fencing)
- Agricultural tree planting
- Agricultural cover crops (all cover crop BMPs)
- Urban forest buffers
- Urban forest planting
- Urban tree planting
- Forest conservation
- Wetland creation & restoration
- Impervious surface reduction (based on conversion to grass)

Key Ecosystem Services and Beneficiaries:

- What ecosystem services are most relevant for stakeholders you represent/work with?

  Example:

  - Habitat quality (trout)
  - Pollinator fauna supply
  - Habitat quality (birds)
  - Increased soil quality
  - Water quality (nutrient in GW)
  - Supply of edible flora
  - Decreased risk of extreme events
  - Water clarity

- Who are the beneficiaries that we need to make sure we capture?

  Example:

  - Farmers
  - Landowners
  - Watermen
  - Residential property owner
  - Recreational Anglers
  - Wildlife viewers

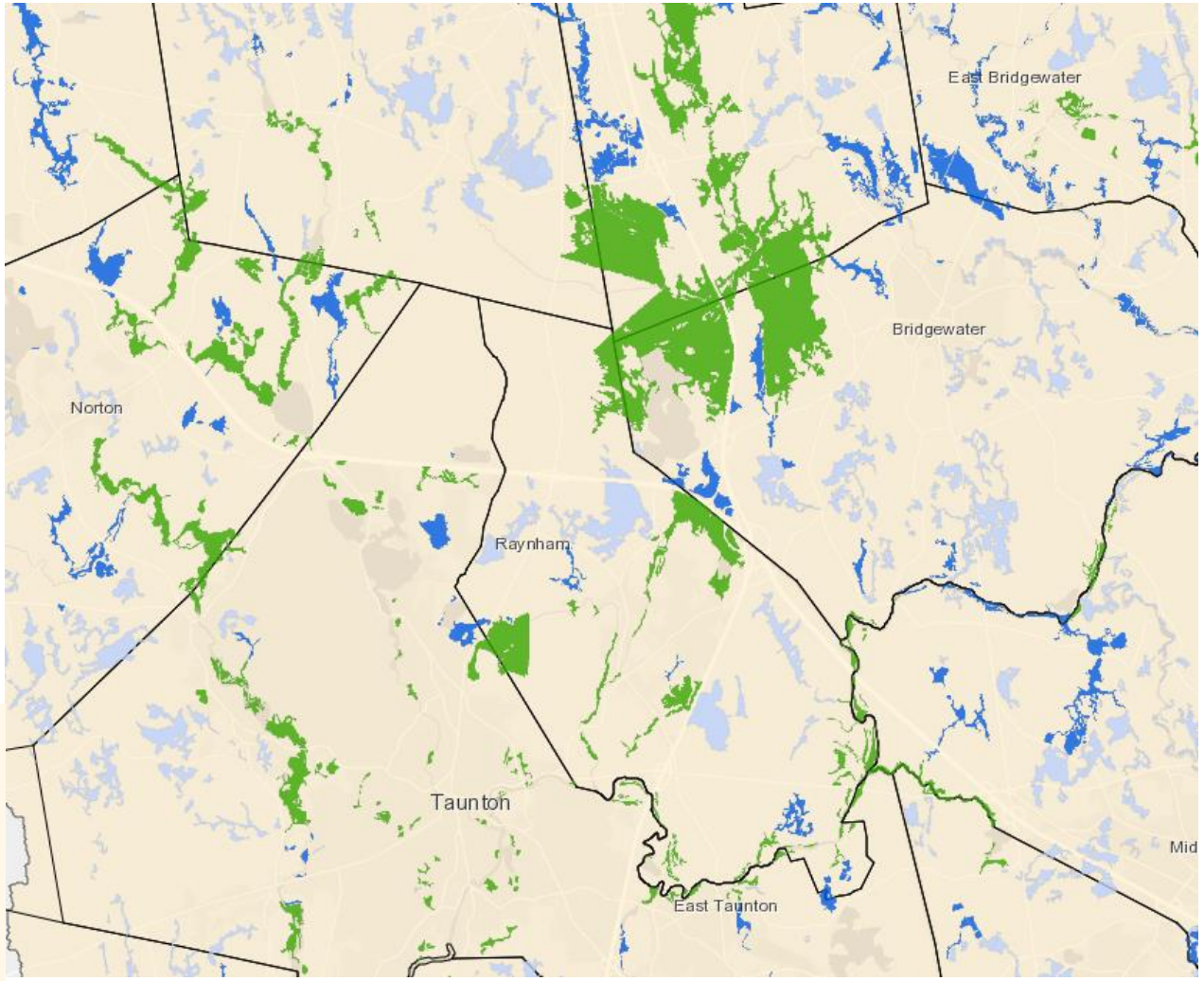
Project goal: Identify and quantify ecosystem services to help motivate increased implementation of conservation and restoration related BMPs, **especially upstream in the watershed** where folks may be more disconnected from the bay.

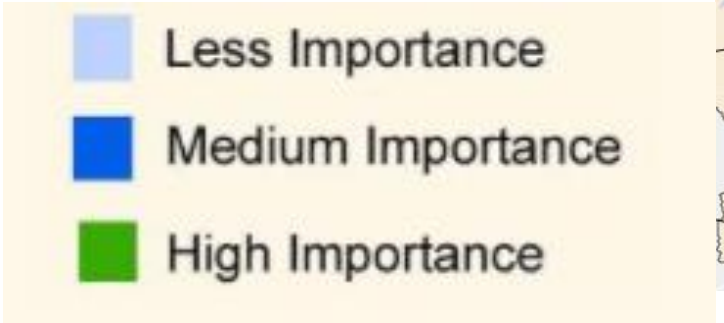
EPA ORD R2P2 Project

Developing an ecosystem services decision support system for coastal watersheds utilizing a Rapid Benefits Indicator approach

Collaborators: Anne Kuhn, Marisa Mazzotta, Jane Copeland– EPA ORD Atlantic Coastal Environmental Sciences Lab

Example: Which freshwater riparian wetlands do we protect to help mitigate the impacts of flooding?





ES Projects at CBP

- Tetra Tech: BMP Impact Scoring
- Beyond Environmental Benefits
- Fisheries GIT: Valuation of benefits of nutrient reduction from aquaculture (oysters)
- Toxics Workgroup: Methods to integrate co-benefits of toxic contaminant reduction into decision tools (GIT-Funded)
- Habitat GIT? (Climate vulnerable communities)

Developing High-Resolution Metrics of Ecosystem Services for the Mid-Atlantic

US EPA Project Leads: Mid-Atlantic Regional Office (including the CBPO), and the Office of Research and Development

fppt.com

EnviroAtlas is an interactive, web-based tool that anybody can use to help inform decisions that impact the places where people live, learn, work and play.

- **Web-based**
- **Easy to use**
- **No technical skills required**

Developed through cooperative effort amongst multiple Federal agencies and other organizations.

Subscribe to our email list

Human health and well-being are closely tied to the environment, which provides benefits such as clean water, clean air, and protection from natural hazards. Chemical and non-chemical stressors can impact the environment's ability to provide these benefits, also known as ecosystem goods and services. EnviroAtlas provides geospatial data, easy-to-use tools, and other resources related to ecosystem services, their stressors, and human health.

- Project Fact Sheet
- Community Component Fact Sheet
- Current Status of EnviroAtlas
- EnviroAtlas Introduction Video EXIT

- EnviroAtlas Interactive Map - Discover and use hundreds of maps
- Eco-Health Relationship Browser - See the many linkages between ecosystem services and human health

- Learn about EnviroAtlas Data- Spatial extents, organization, and approach
- Data Matrix - Search and sort 300+ maps
- Data Download

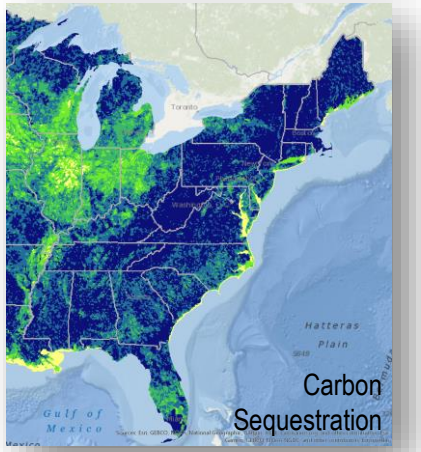
- What are Ecosystem Services?
- Explore Example Uses of Our Tools

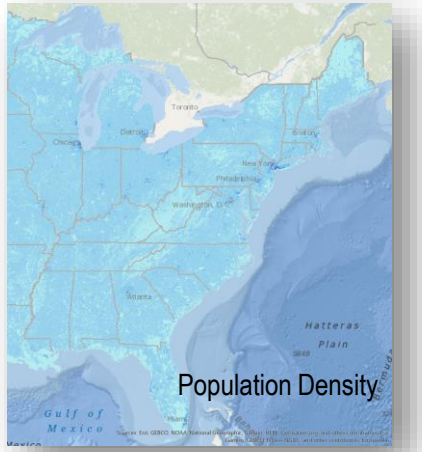
- Access Educational Modules for Grades K-12 and Beyond

- Learn about Featured Communities
- EnviroAtlas Tools and Toolboxes
- EnviroAtlas Publications

www.epa.gov/enviroatlas

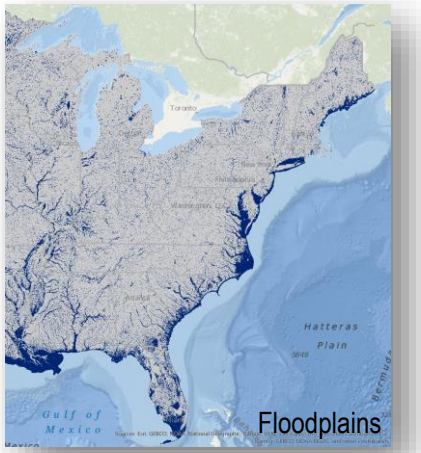
Released May 2014

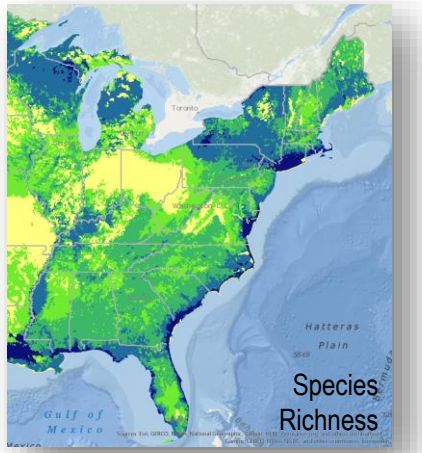




National Data

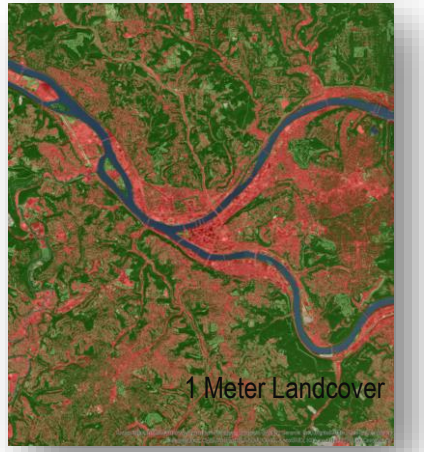
30-meter land cover
300+ unique data layers
Consistent data for the conterminous U.S.

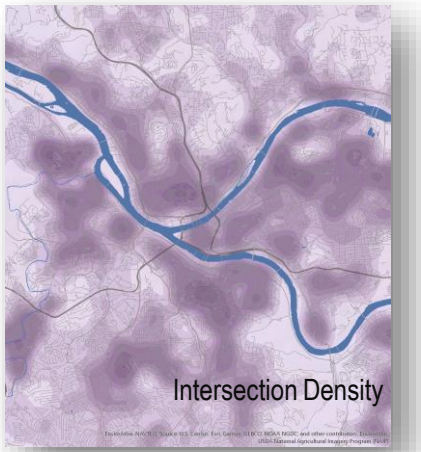




EnviroAtlas

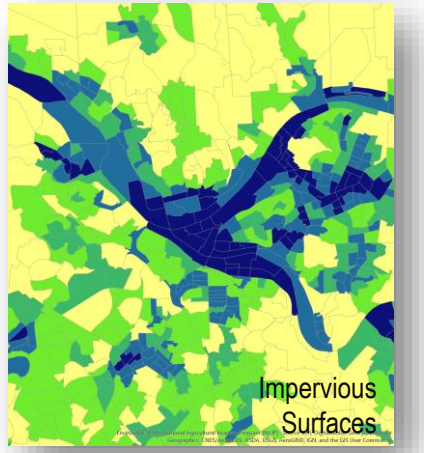
Data Fact Sheets
Peer-reviewed
Standard Metadata
Open access

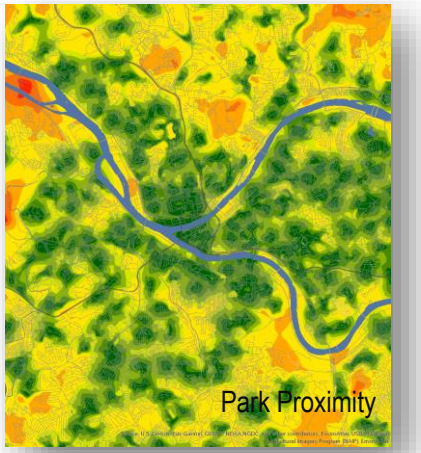




Community Data

1-meter land cover
100+ unique data layers
27 metropolitan areas
1200 cities & towns
48.9 million people





Project Results

(Tentative end date: October 2022)

- 1m landcover map covering the 5 Mid-Atlantic Region states.
- Suite of metrics describing ecosystem service provisioning and associated characterization of demographics and the built environment.
- Public-facing interactive website.
- Documentation of several demonstration projects/use cases based on collaboration with select communities and focusing on community decision-making.
- In-house skill in developing 1m landcover data and production of ecosystem service metrics, and integrating ecosystem services information into decision making.

fppt.com