EnviroAtlas

EnviroAtlas: Connecting Ecosystems, People, and Well-being

EnviroAtlas Development Team

US EPA, Office of Research and Development, Research Triangle Park, NC, USA

enviroatlas.epa.gov/enviroatlas

Background

EnviroAtlas is a web-based collection of interactive tools and resources that allows users to explore the many benefits people receive from nature, often referred to as ecosystem services. It is designed to be accessible to a wide variety of users and does not require any special software or expertise. It is available to anyone with a web browser.
Key components of EnviroAtlas include the following:

- A multi-scaled Interactive Map with broad scale data for the lower 48 states and fine scale data for selected communities;

- The Eco-Health Relationship Browser, which shows the linkages between ecosystems, the services they provide, and human health; as well as,

- Ecosystem services information, GIS and analysis tools, and written resources.

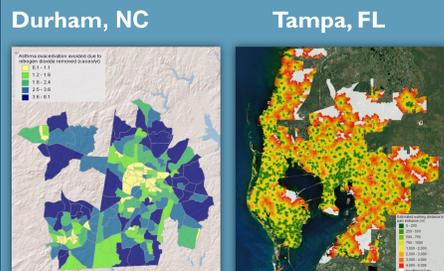### Four target outcomes of EnviroAtlas:

1. *Improve public health and well-being* by evaluating potential consequences of action or inaction under alternative scenarios, identifying underserved and vulnerable populations for management action, and advancing the state of the science on the role of ecology in public health.

2. *Jumpstart innovation* by providing a wealth of data, supplementing research across many organizations, and increasing development of tools by outside organizations by allowing them to tap into EnviroAtlas data and tools.

3. *Boost "environmental intelligence"* by conveying uses and benefits of green infrastructure, and utilizing systems thinking to reveal co-benefits and unintended consequences.

4. *Increase community empowerment* by providing easy public access to environmental data and analytical tools, allowing them to contrast and learn from conditions in other communities.

Multi-scaled Data and Analysis
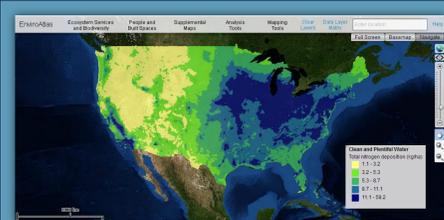
Above: Annual deposition of nitrogen by subwatershed (12-digit HUC) for the contiguous United States.

EnviroAtlas has two primary scales with data layers on natural resources, drivers of change, and benefits/beneficiaries.

National
- Analysis of relationships between ecological indicators and sustainability
- Based on 30-meter National Land Cover Dataset (NLCD)
- Most metrics summarized by subwatershed (12-digit HUC)
- ~ 85,000 HUCs for contiguous U.S.

Community
- Emphasizes connections between ecosystem services and public health and well-being
- Based on derived 1-meter land cover
- Most metrics summarized by US census block group
- Planned coverage for 50 US communities by 2017
- 12 completed communities to date

Durham, NC

Estimated reductions in adverse respiratory health events due to ambient air filtration by trees

Tampa, FL

Opportunities for physical activity, engagement with nature, & social interaction

Mapping Ecosystem Service Indicators

EnviroAtlas organizes ecological, demographic, built environment, and other relevant data into the following societal benefit categories:
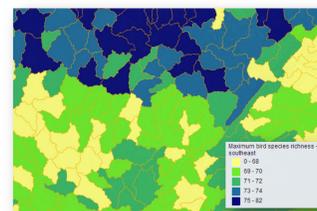
- Clean Air
- Clean and Plentiful Water
- Natural Hazard Mitigation
- Climate Stabilization
- Recreation, Culture, and Aesthetics
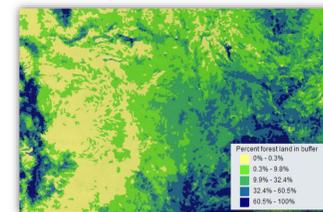- Food, Fuel, and Materials
- Biodiversity Conservation

Above: Eco-wheels for each category illustrate natural resources providing these services, drivers of change, and derivative benefits.
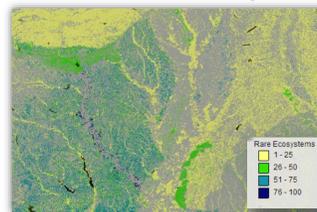

Above: Percent green space within ¼ km

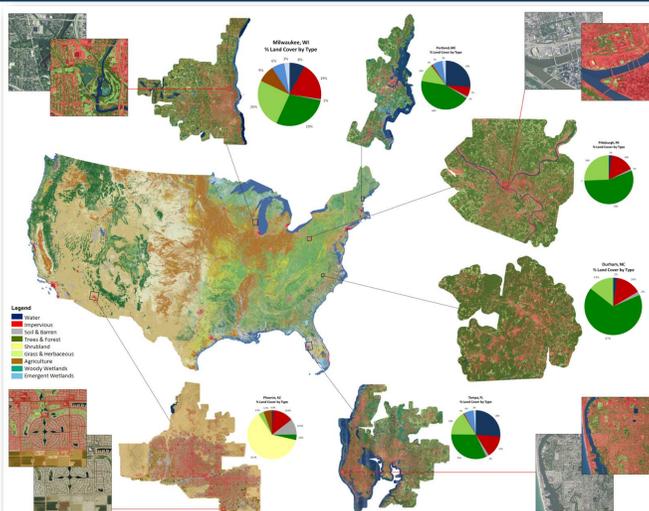*Above: Modeled maximum bird species richness*

Above: Tree coverage along streams

Above: Extent of rare ecosystems

## Landcover Data Provides a Foundation

Landcover data present a "birds-eye" view of the earth that can be combined with other data to help identify important features, patterns and relationships in the landscape. EnviroAtlas uses the NLCD which is available at 30 m² resolution. High-resolution 1-m² USDA aerial imagery is classified into landcover data for each of the communities.

Phoenix land cover data were generated and shared by Arizona State University. Milwaukee land cover data were generated by the University of Arkansas.

Integrated Tools

The suite of tools and resources in EnviroAtlas allows for analysis of relationships between people and environmental indicators and enhances user understanding of the interdependencies that exist between human and ecological communities. Integrated analysis tools in the Interactive Map support decision making, education and research.

### Analysis tools in the Interactive Map

- Navigate up- and down-stream along waterways in a subwatershed (12-digit HUC)
- Follow the path of a raindrop from any point to the nearest downstream waterbody
- Determine the elevation profile of a selected area
- Combine multiple data attributes into a single index value *(in development)*
- Graph the relationship between map layers *(in development)*

Raindrop Tool


Elevation Tool
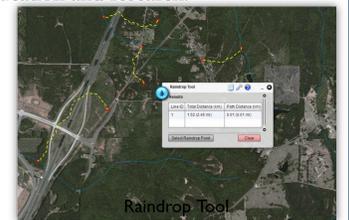
Beyond Maps: Making Connections

Eco-Health Relationship Browser

- An interactive tool that illustrates the linkages between ecosystems, the services they provide, and human health and well-being.
- Summarizes relevant evidence from over 300 peer-reviewed articles.
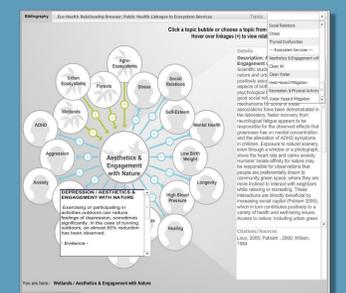
Fact Sheets and Research

- Available for each data layer, easy-to-read fact sheets use existing research to highlight connections with ecosystem services, stressors and drivers of change, sustainability, and well-being.
- Showcase trends and statistics found for communities using EnviroAtlas data.
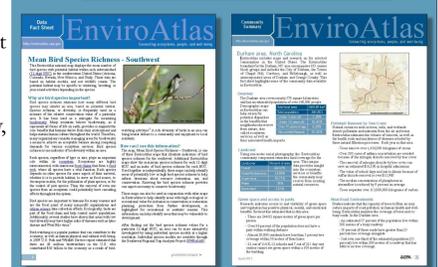
Acknowledgements

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