



Anne Neale and the EnviroAtlas Team

**A Community on Ecosystem Services
Linking Science, Practice, and Decision Making
December 11, 2014**

What is EnviroAtlas?

An online decision support tool giving users ability to view, analyze, and download geospatial data (and other information) related to ecosystem services (nature's benefits)

EnviroAtlas includes:

- Benefit relevant indicators
- Reference data (e.g., boundaries, land cover, soils, hydrography, impaired water bodies, wetlands, demographics)
- Analytic and interpretive tools



Developed through cooperative effort amongst multiple Federal agencies and other organizations

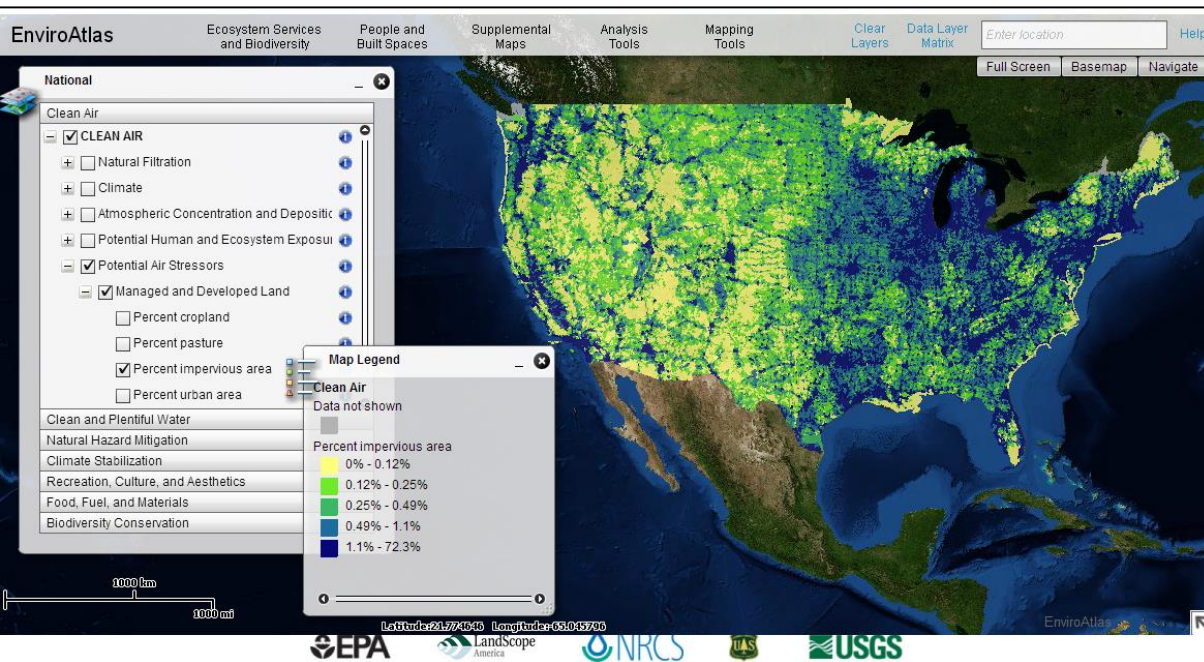
Nature's Benefit Categories in EnviroAtlas

- Clean Air
- Clean and Plentiful Water
- Natural Hazard Mitigation
- Climate Stabilization
- Food, Fiber & Materials
- Biodiversity Conservation
- Recreation, Culture & Aesthetics

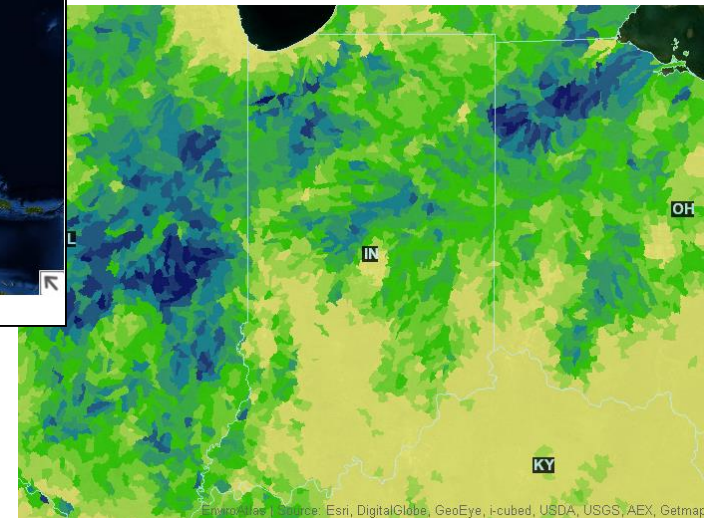


The EnviroAtlas is multi-scaled

- National: Wall-to-wall coverage for coterminous US; summarized by medium-sized drainage basins (12-digit HUCs); some pixel-level maps



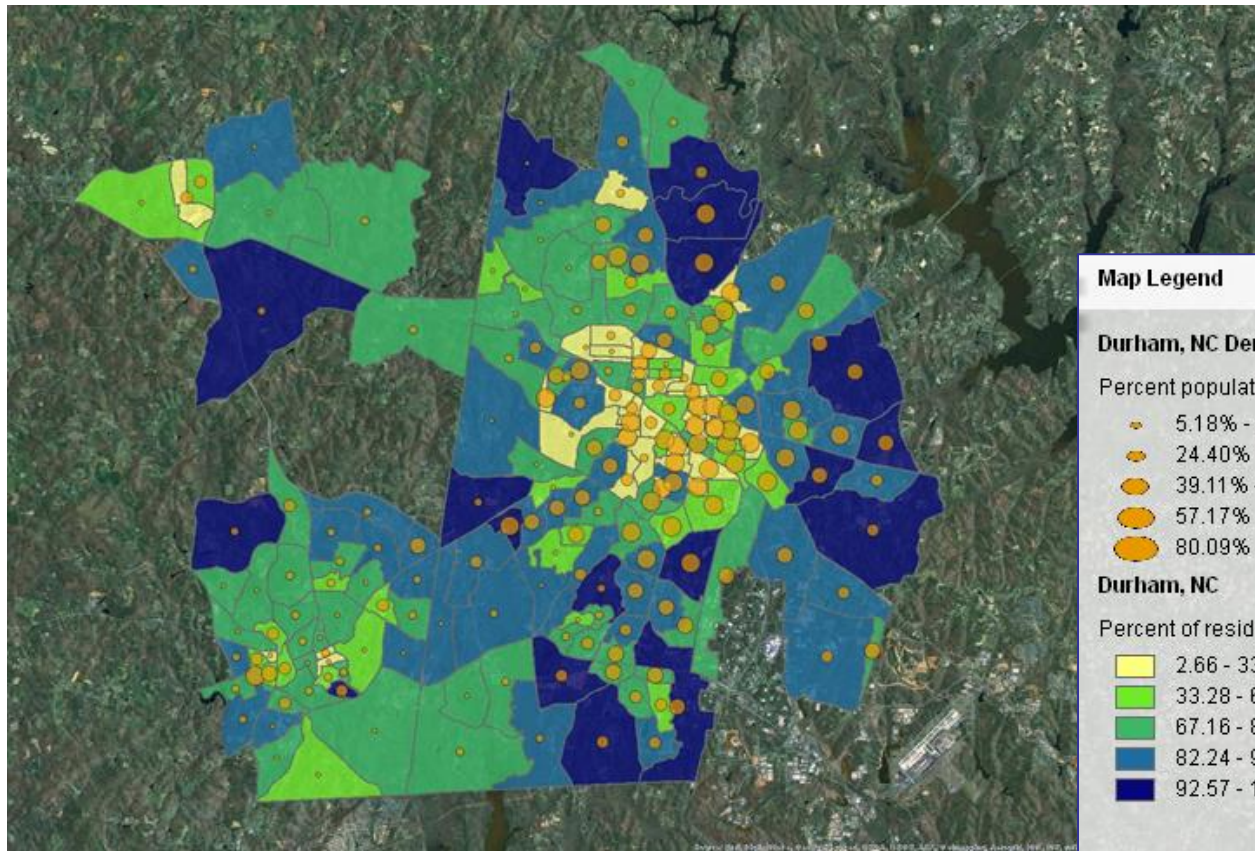
- Demographic, other data can be overlaid



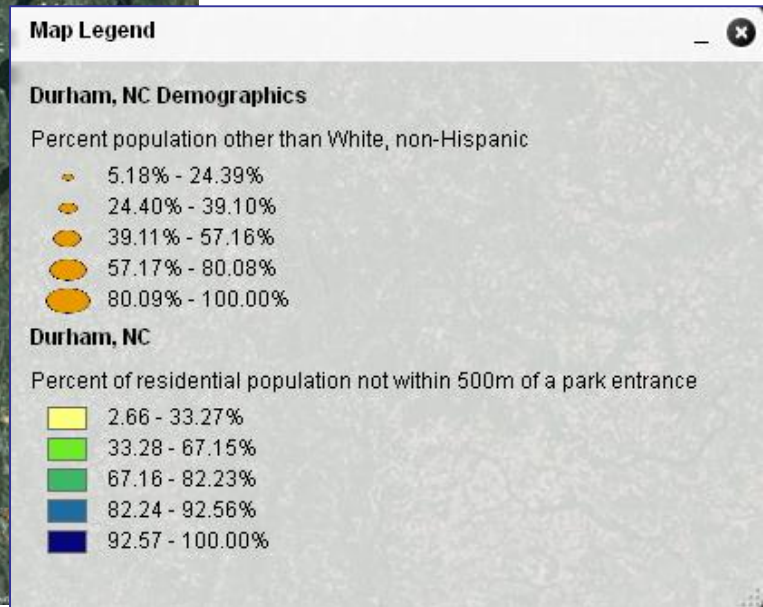
- Over 160 data layers
- Every layer published as a service

The EnviroAtlas is multi-scaled

Community: High resolution component for 50 populated places; summarized by US census block groups; some pixel-level maps



- Demographic, other data can be overlaid



- Over 90 layers for multiple communities
- Every layer published as a service

EnviroAtlas – More than Data

- Eco-Health Browser
- Mapping and Analysis Tools
- User added data
- Ecosystem Services Analyzer
- Downloadable GIS Toolboxes
- Interpretive Fact Sheets for every data layer

Click [HERE](#) to open the Relation Browser in a new window, or [HERE](#) for a copy of all the Relation Browser data.

Bibliography Eco-Health Relationship Browser: Public Health Linkages to Ecosystem Services

Click a topic bubble or choose a topic from the dropdown list above. Hover over linkages (+) to view the relationship between elements.

Details: Urban Ecosystems
 An urban ecosystem is a dynamic system that contains both built and natural elements. In urban ecosystems, built infrastructure typically covers a large proportion of the land surface and/or people live in high densities. These systems include all green and blue spaces within the area, such as parks, cemeteries, lakes and streams, along with human components. Urban ecosystems can mimic the function of natural ecosystems and thus provide their own important ecosystem services that contribute to human well-being in those urban areas. Various green environments such as shade trees, urban green spaces and urban forests, can exist within a single urban region. The services provided by urban ecosystems include filtering water runoff, providing areas for physical activity and recreation such as hiking and bird watching, mitigating the Urban Heat

EnviroAtlas

Ecosystem Services and Biodiversity | People and Built Spaces | Supplemental Maps | Analysis Tools | Mapping Tools | Future Scenarios

Filter and Search

Select Up or Down Stream

UP DOWN

Distance of Time

DIST TIME

Value Stop (Knt)

1 250

Count Stop

1 100

Select to Save HUC Shapefile

Polysgons Plotted

Select a Search Point Clear

EnviroAtlas

Ecosystem Services and Biodiversity | People and Built Spaces | Supplemental Maps | Analysis Tools | Mapping Tools | Future Scenarios

Analyze Ecosystem Services (Experiment)

Food, Fuel, and Fisheries | Biodiversity Conservation | Clean Air | Clean Water | Recreation and Well-Being | Ecosystem Services and Biodiversity

Elevation Profile

Why are naturally vegetated stream buffers important?

Why are naturally vegetated stream buffers important? Riparian areas filter and absorb nutrients and sediment, reduce erosion, and provide shade for the stream. They also provide habitat for fish and other aquatic organisms. Land management in riparian areas directly affects the water quality in downstream areas, both in quantity and quality.

Map Legend

Draw a Freshwater Line

EPA EnviroAtlas

Decent Stream Buffer Zone as a Natural Land Cover

Why are naturally vegetated stream buffers important?

Riparian areas filter and absorb nutrients and sediment, reduce erosion, and provide shade for the stream. They also provide habitat for fish and other aquatic organisms. Land management in riparian areas directly affects the water quality in downstream areas, both in quantity and quality.

Map Legend

References

1. EPA. 2006. Land Use and Land-Use Change: National Wetlands Inventory. Washington, DC: EPA.

2. EPA. 2006. National Wetlands Inventory. Washington, DC: EPA.

3. EPA. 2006. National Wetlands Inventory. Washington, DC: EPA.

4. EPA. 2006. National Wetlands Inventory. Washington, DC: EPA.

5. EPA. 2006. National Wetlands Inventory. Washington, DC: EPA.

EPA EnviroAtlas

Decent Stream Buffer Zone as a Natural Land Cover

How was this map created?

The data for this map was created by updating the 2006 National Land Cover Database (NLCD) and the 2006 National Wetlands Inventory (NWI) with the 2006 National Wetlands Inventory (NWI) data. The 2006 National Land Cover Database (NLCD) and the 2006 National Wetlands Inventory (NWI) data were used to create this map.

Map Legend

References

1. EPA. 2006. Land Use and Land-Use Change: National Wetlands Inventory. Washington, DC: EPA.

2. EPA. 2006. National Wetlands Inventory. Washington, DC: EPA.

3. EPA. 2006. National Wetlands Inventory. Washington, DC: EPA.

4. EPA. 2006. National Wetlands Inventory. Washington, DC: EPA.

5. EPA. 2006. National Wetlands Inventory. Washington, DC: EPA.

EnviroAtlas Data Layer Matrix

you are here: EPA Home » Research » Ecosystem Research » EnviroAtlas » Interactive Map



EnviroAtlas Ecosystem Services and Biodiversity People and Built Spaces Supplemental Maps Analysis Tools Mapping Tools Clear Layers Data Layer Matrix Phoenix, Arizona, United States

Full Screen Basemap

5/15/2014

National Matrix

Map Layer Title	Description	Watershed Link	BIODIVERSITY CONSERVATION	CLEAN AIR	CLEAN AND PLENTIFUL WATER	CLIMATE STABILIZATION	FOOD FUEL, AND MATERIALS	NATURAL HAZARD MITIGATION	RECREATION, CULTURE, AND AESTHETICS
Acres of crops that have no nearby pollinator habitat	This map depicts the total acres of agricultural crops within a subwatershed (12-digit HUC) that require or would benefit from the presence of pollinators, but are without any nearby supporting habitat.	Meta data				x			
Agricultural water use (million gallons/day)	This map estimates the millions of gallons of water used daily for agricultural irrigation for each subwatershed (HUC-12) in the contiguous United States. Estimates include self-supplied surface and groundwater, as well as water supplied by irrigation water providers, which may include governments, companies, or other organizations.	Meta data		x					
Area of solar energy (km ²)	This map estimates the square kilometers of area within each subwatershed (12-digit HUC) that offers the potential for harvesting solar energy. This map does not take into account land use or ownership.	Meta data				x			
Average annual daily potential (kWh/m ² /day)	This map estimates the average daily potential kilowatt hours of solar energy that could be harvested per square meter within each subwatershed (12-digit HUC). This calculation is based on environmental factors and does not take into account land ownership or viability of installing solar harvesting systems.	Meta data				x			
Average annual precipitation (inches/yr)	This map estimates the average number of inches of precipitation that fall within a subwatershed (12-digit HUC) each year. Precipitation includes snow and rain accumulation.	Meta data	x	x	x		x	x	
Carbon storage by tree biomass (kg/m ²)	This map estimates the kilograms of dry carbon stored per square meter of above ground biomass of trees and forests in each subwatershed (12-digit HUC).	Meta data			x				
Carbon storage by tree root biomass (kg/m ²)	This map estimates the kilograms of dry carbon stored per square meter in below ground biomass in each subwatershed (12-digit HUC). Biomass below ground includes tree root biomass and soils.	Meta data			x				
Cotton yields (thousand tons/yr)	This map depicts the thousands of tons of cotton that are grown annually within each subwatershed (12-digit HUC).	Meta data				x			
Cultivated biological nitrogen fixation (kg N/ha/yr)	This map depicts the mean rate of biological nitrogen fixation from the cultivation of crops within each subwatershed (12-digit HUC) in kg N/ha/yr.	Meta data	x		x				
Domestic water use (million gallons/day)	This map estimates the millions of gallons of water used daily for domestic purposes in each subwatershed (HUC-12). For the purposes of this map, domestic or residential water use includes all indoor and outdoor uses, such as for drinking, bathing, cleaning, landscaping, and pools for primary residences.	Meta data		x					

Example National Data Layers

Decision Context: Identifying lands for protection or restoration

What is goal?

- Nutrient / sediment load reduction

- Wildlife habitat protection

- Restoration of wildlife habitat connectivity

- Community access to green space

- Improving equity of distribution

- Improving pollinator habitat

- Groundwater recharge

- Maximize multiple benefits

Example National Data Layers – Water Body Buffer

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EnviroAtlas

Ecosystem Services and Biodiversity

People and Built Spaces

Supplemental Maps

Analysis Tools

Mapping Tools

Clear Layers

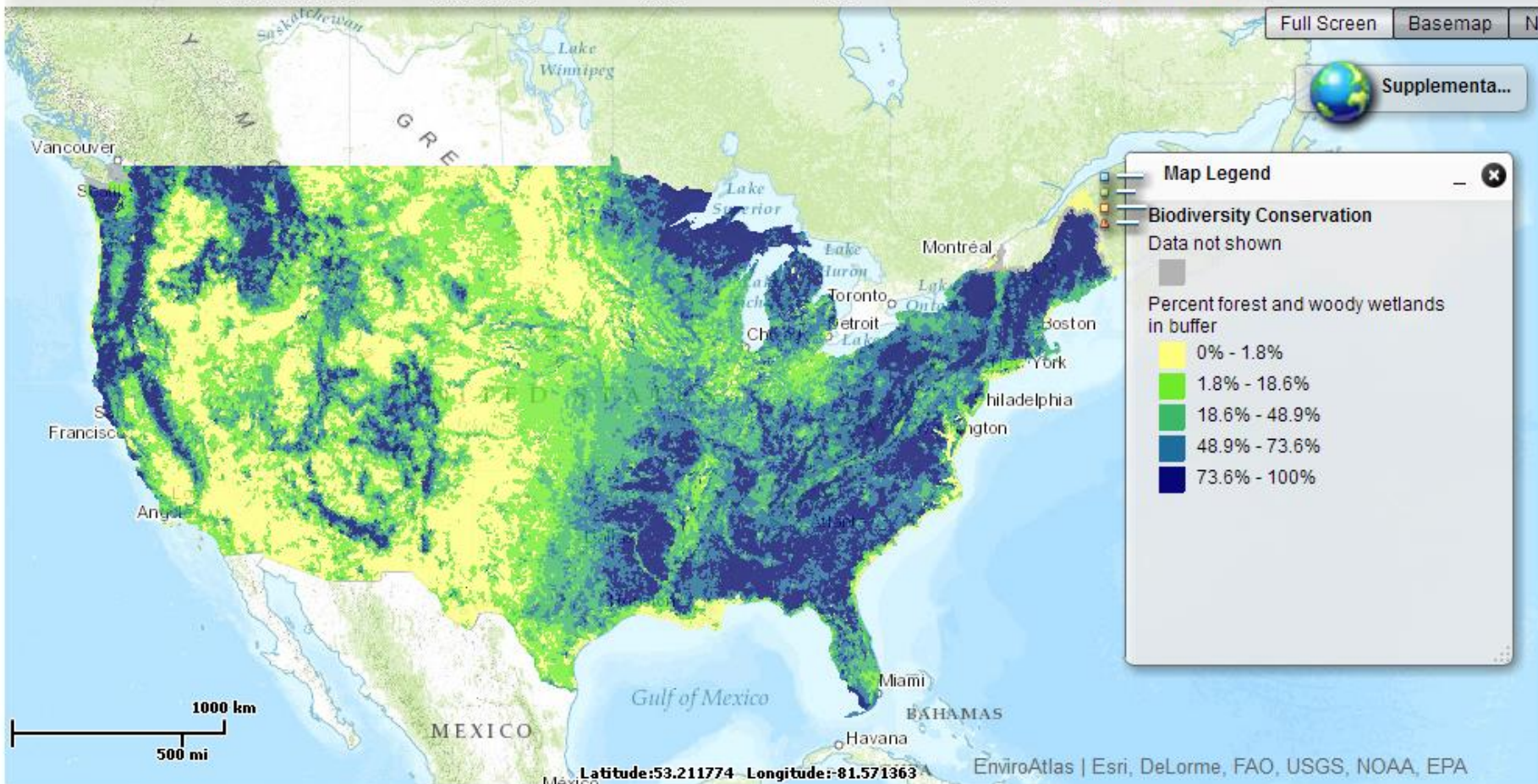
Data Layer Matrix

North Carolina, United States

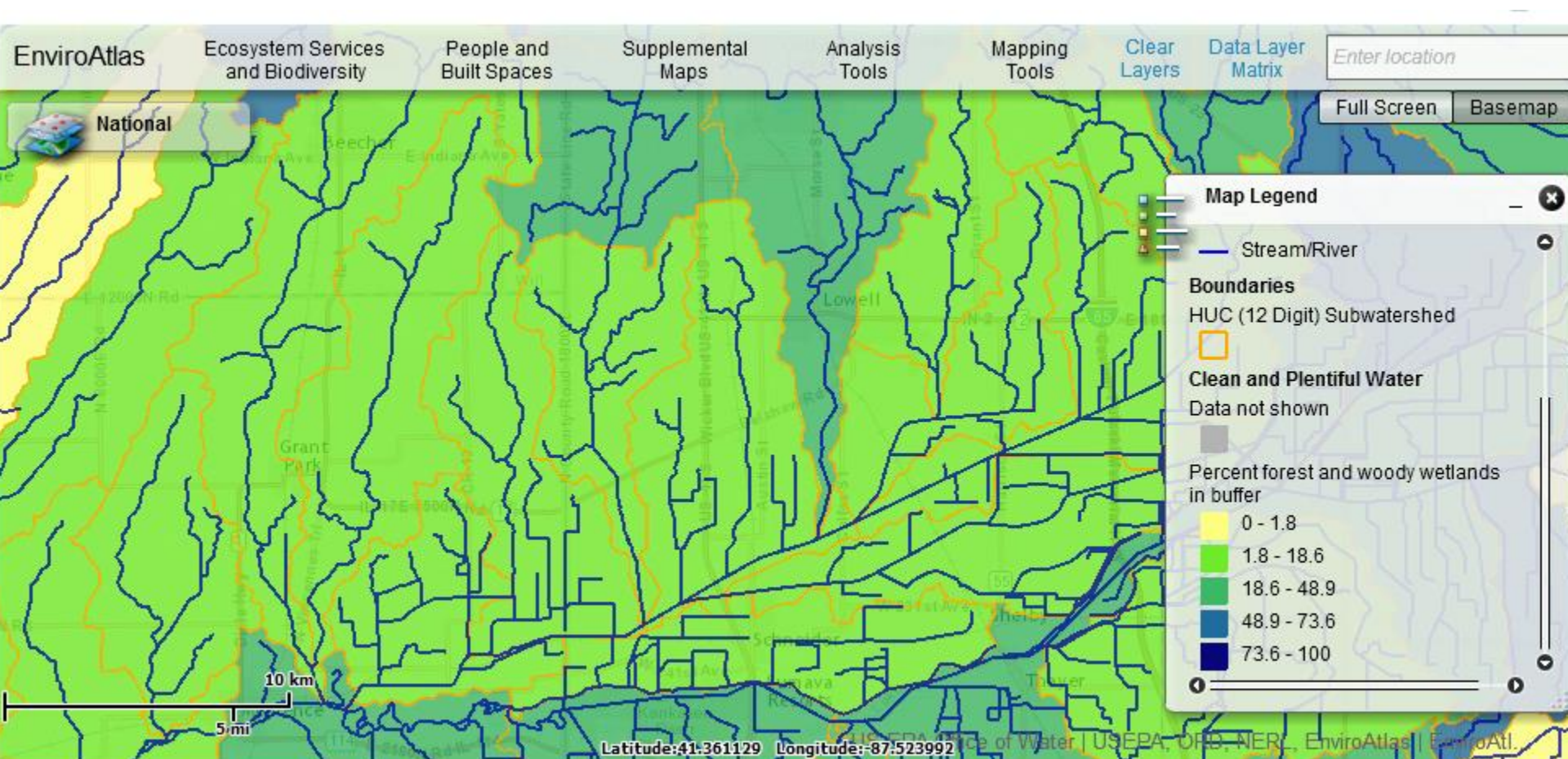
Full Screen Basemap



Supplementa...



Example National Data Layers – Water Body Buffer



Example National Data Layers Protected Lands

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Ecosystem Services
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People and
Built Spaces

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Maps

Analysis
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Clear
Layers

Data Layer
Matrix

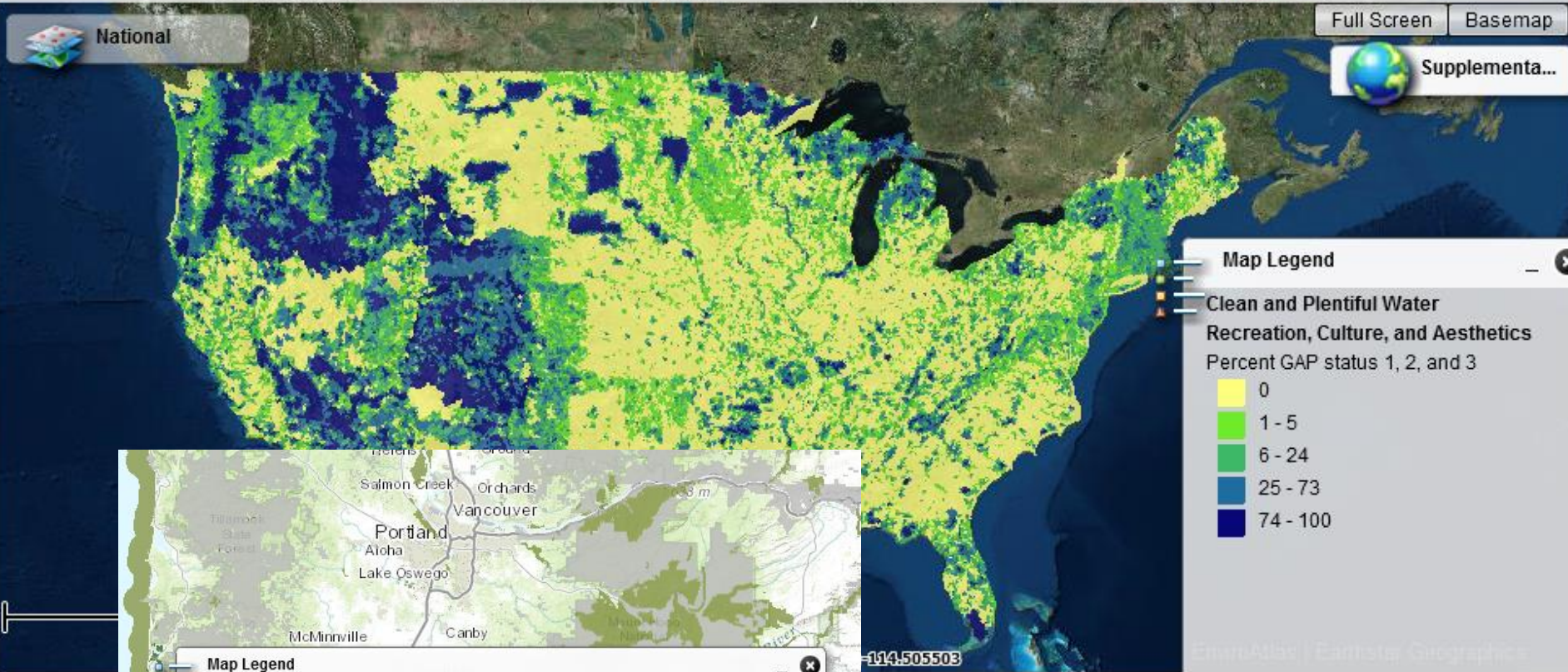
Enter location

Full Screen Basemap



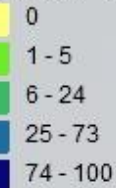
Supplementa...

National



Map Legend

Clean and Plentiful Water
Recreation, Culture, and Aesthetics
Percent GAP status 1, 2, and 3



Map Legend

GAP Status

GAP Status

- 1 - Permanent Protection – ecological disturbance events allowed to proceed
- 2 - Permanent Protection – ecological disturbance events suppressed
- 3 - Permanent Protection – subject to extractive (e.g. mining or logging) or OHV use
- 4 - no known mandate for protection

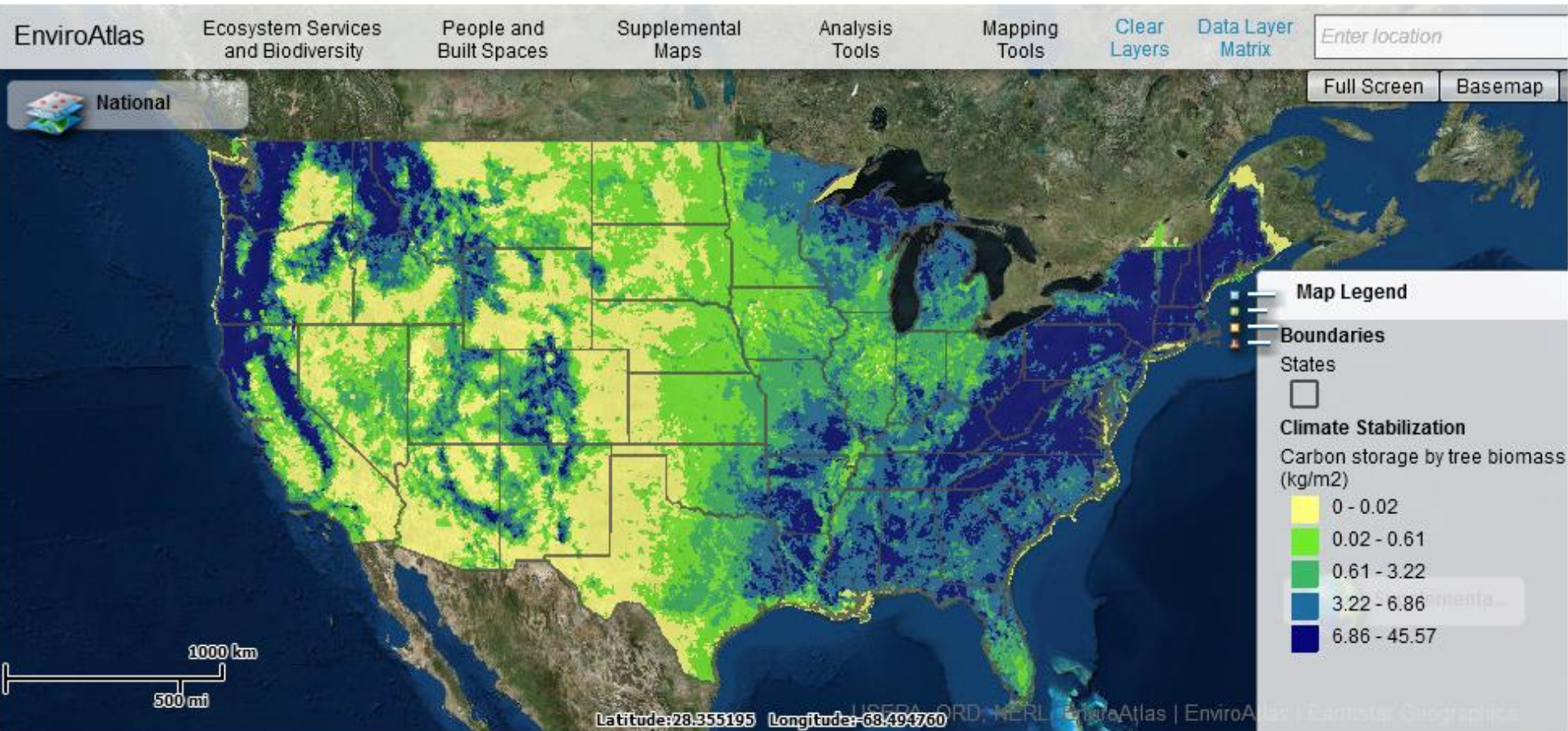
-114.505503

EnviroAtlas | Earthstar Geographic

Example National Data Layers Carbon Storage

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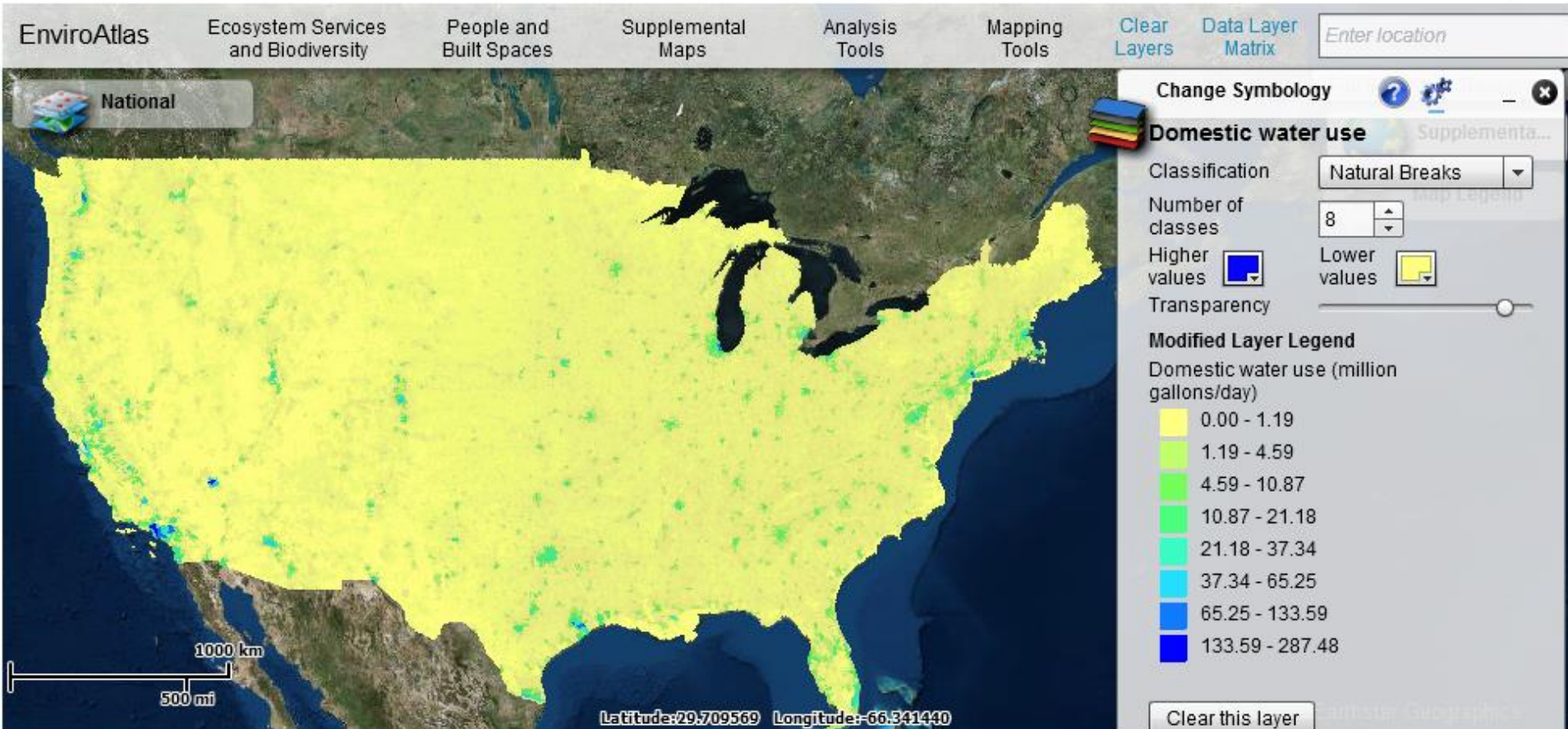


Example National Data Layers

Water Use

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Example National Data Layers - Fragmentation

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National
Biodiversity

People and
Built Spaces

Supplemental
Maps

Analysis
Tools

Mapping
Tools

Clear
Layers

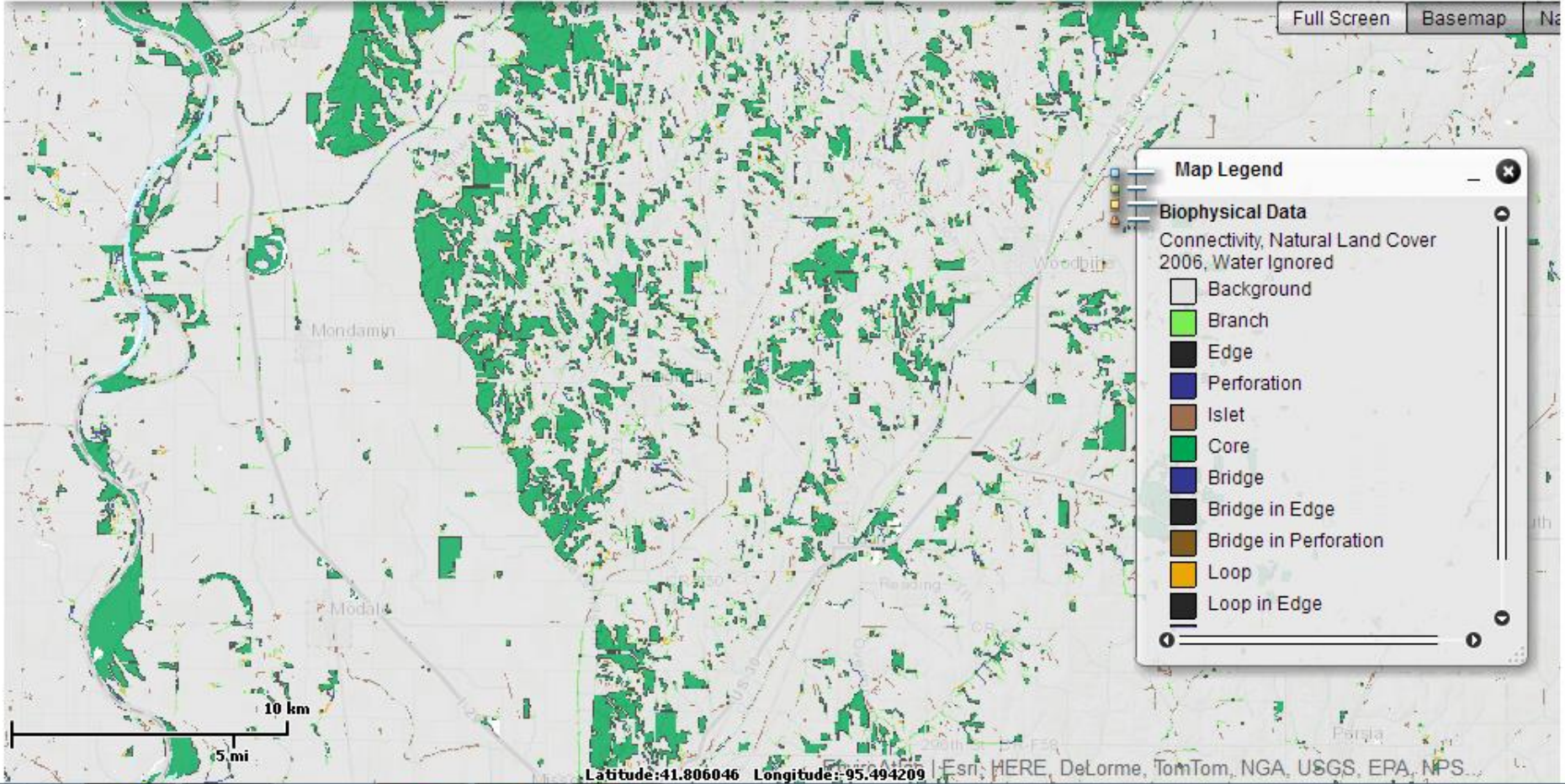
Data Layer
Matrix

Woodbine, Iowa, United States

Full Screen

Basemap

Na



Example National Data Layers

Relative Ecosystem Rarity

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Woodbine, Iowa, United States

Full Screen

Basemap

Na



National



Supplementa...

Map Legend

Rare Ecosystems

Rare Ecosystems

- 1 - 25
- 26 - 50
- 51 - 75
- 76 - 100

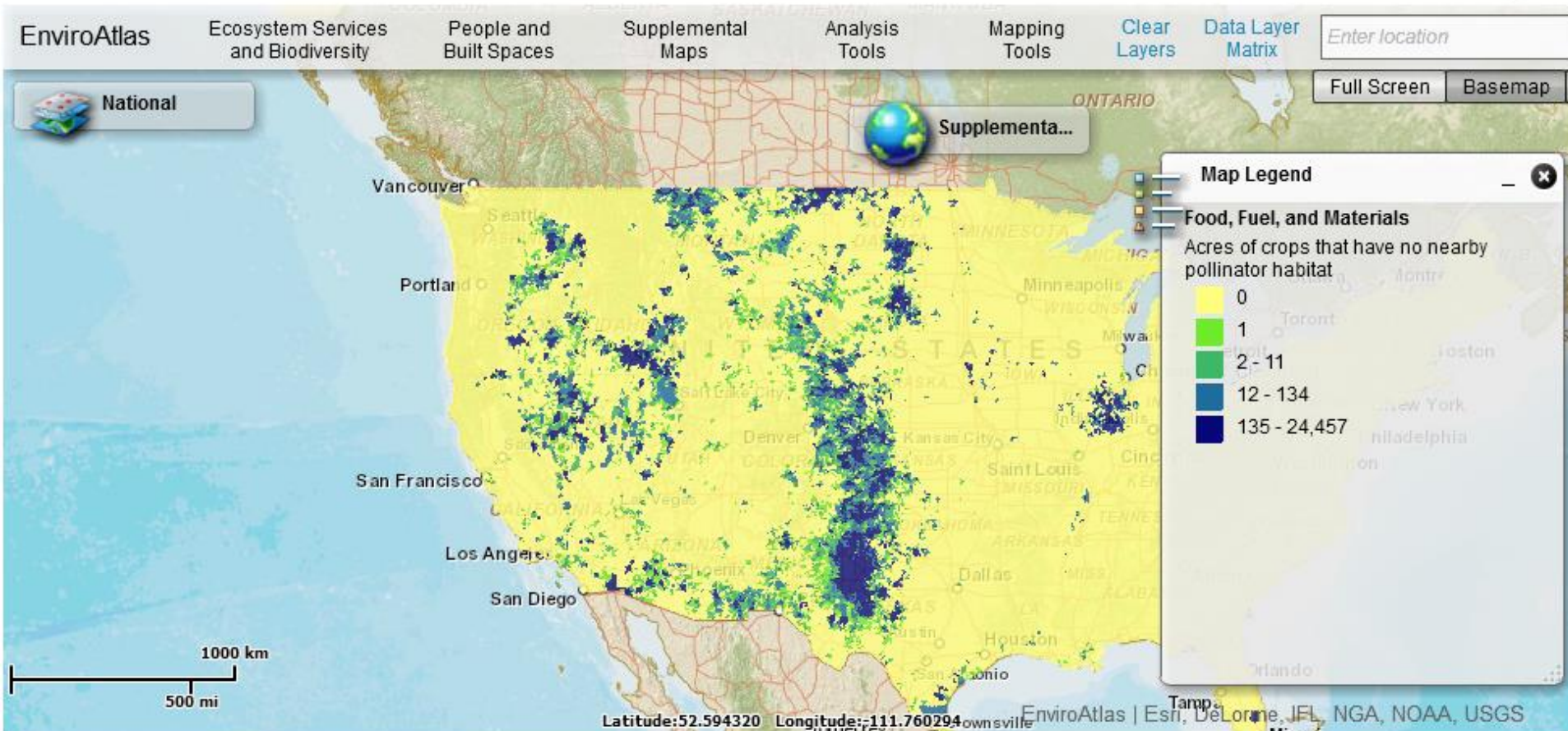
100 km

100 mi

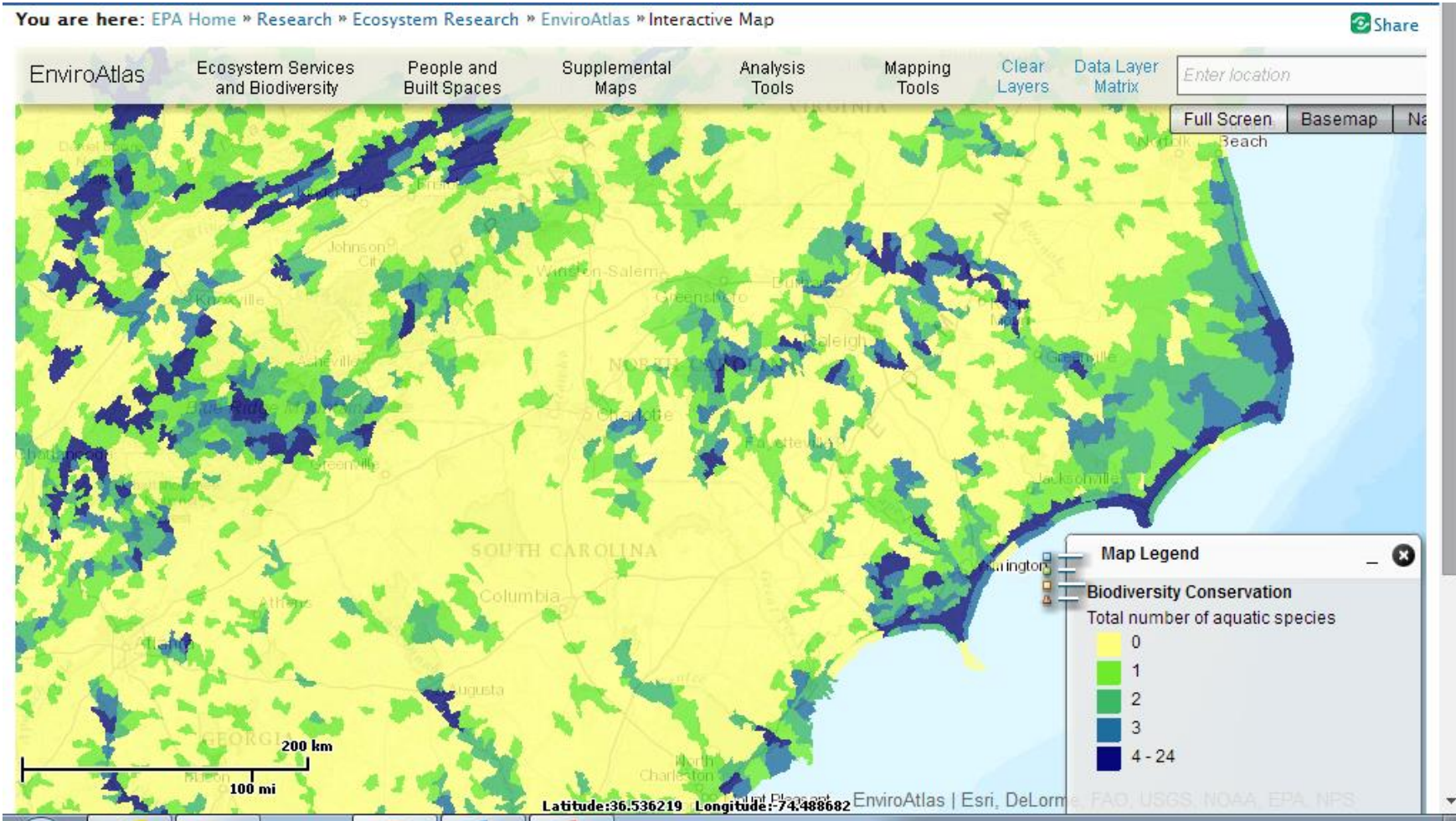
Latitude: 38.529284 Longitude: -96.277671 EnviroAtlas | Esri, DeLorme, FAO, USGS, NOAA, EPA, NPS

Example National Data Layers

Acres of Crops Requiring Pollination with Inadequate Pollinator Habitat



Example National Data Layers – Observed T & E, G1 & G2 Species



Example National Data Layers

Dasymetric Population Allocation

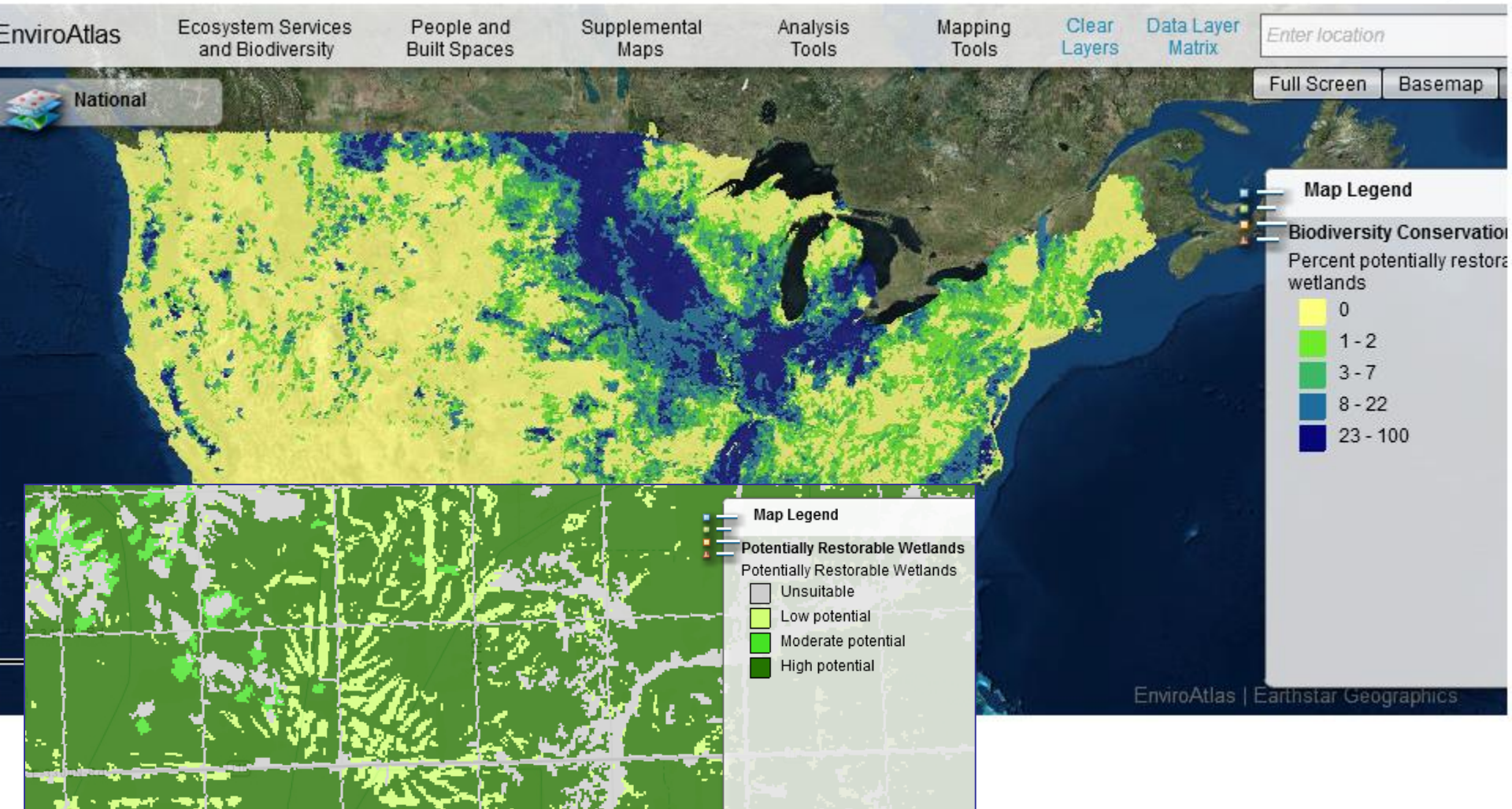
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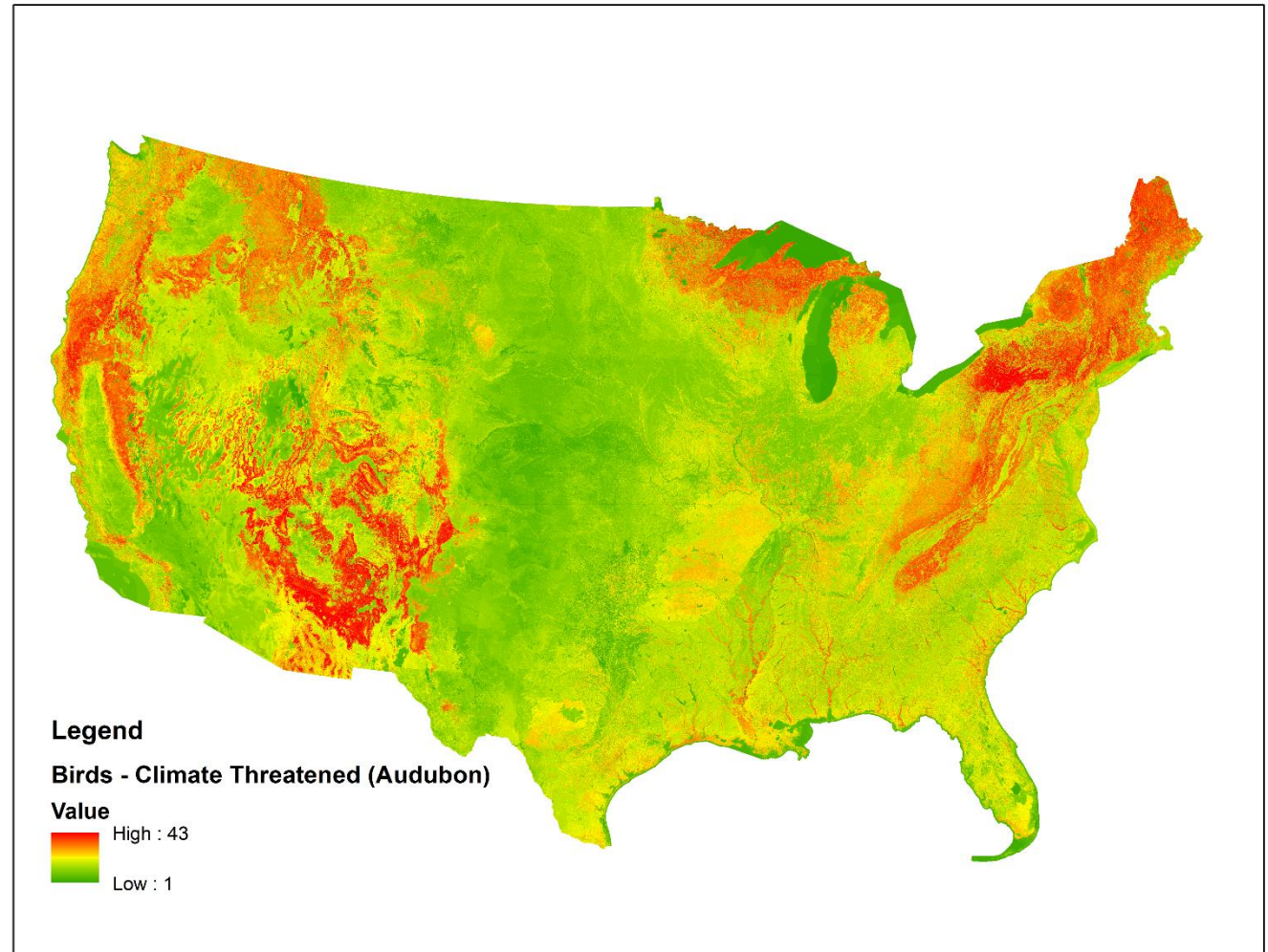
Example National Data Layers

Potentially Restorable Wetlands



Example of Soon-to-be Available Data

- USGS GAP individual species habitat models
- Audubon list of climate change threatened birds



KEEPING COMMON SPECIES COMMON

EnviroAtlas National Data Limitations

- Dependent on National Land Cover Data
 - Currently produced every five years
 - Production lags real time
- Dependent on best available data at time of production, hydrography, soils, topography, etc
- Summary data currently limited to 12 digit HUCs
- Limited uncertainty data

Thank You!

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