

Road-Stream Crossing Assessment in the Chesapeake Bay

North Atlantic Aquatic Connectivity Collaborative

Julie Devers, Kari Bradberry & Chris Reily
USFWS, Maryland Fish and Wildlife Conservation Office

Flood Resiliency and Fish Passage



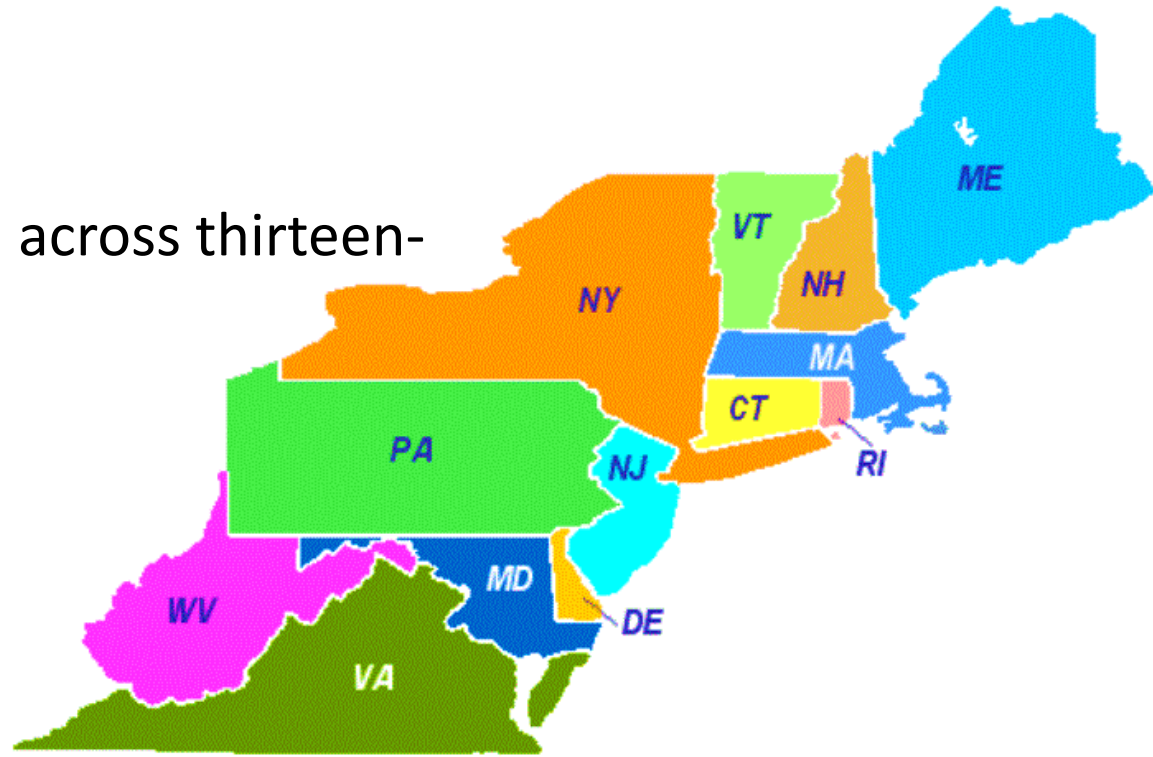
North Atlantic Aquatic Connectivity Collaborative

- Objective: improve

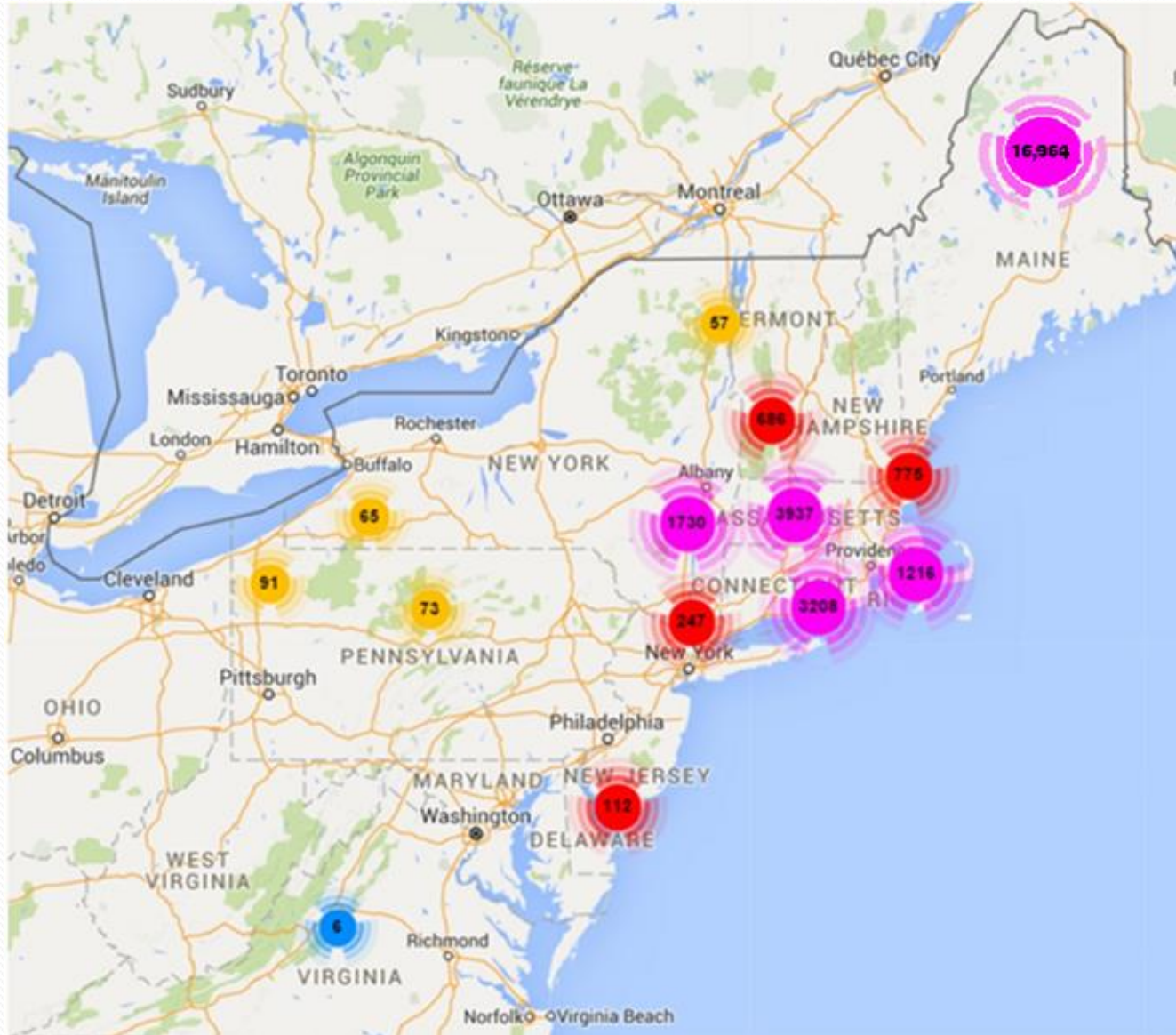
aquatic connectivity across thirteen-

state region, from Maine

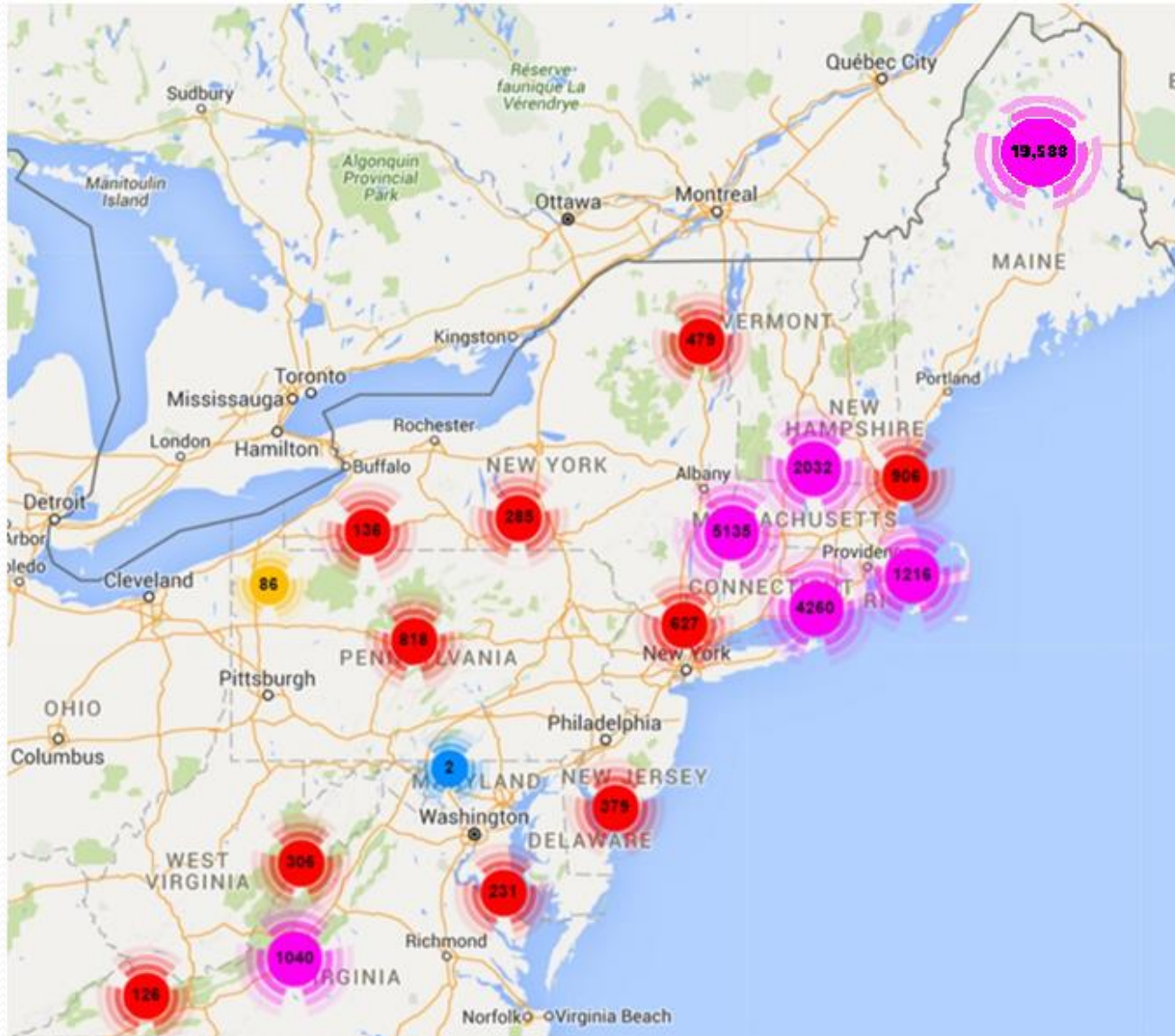
to West Virginia



Assessed Culverts-Pre June 2015



Assessed Culverts - Today



NAACC

- Common protocols and training
- Regional database
- Tool to identify high priority watersheds
- Evaluate the road-stream crossings

- www.streamcontinuity.org



Funding

**North
Atlantic LCC**



North Atlantic Landscape
Conservation Cooperative



Organization

L₃ – Central Coordinators (UMass)



L₂ – Regional Coordinators



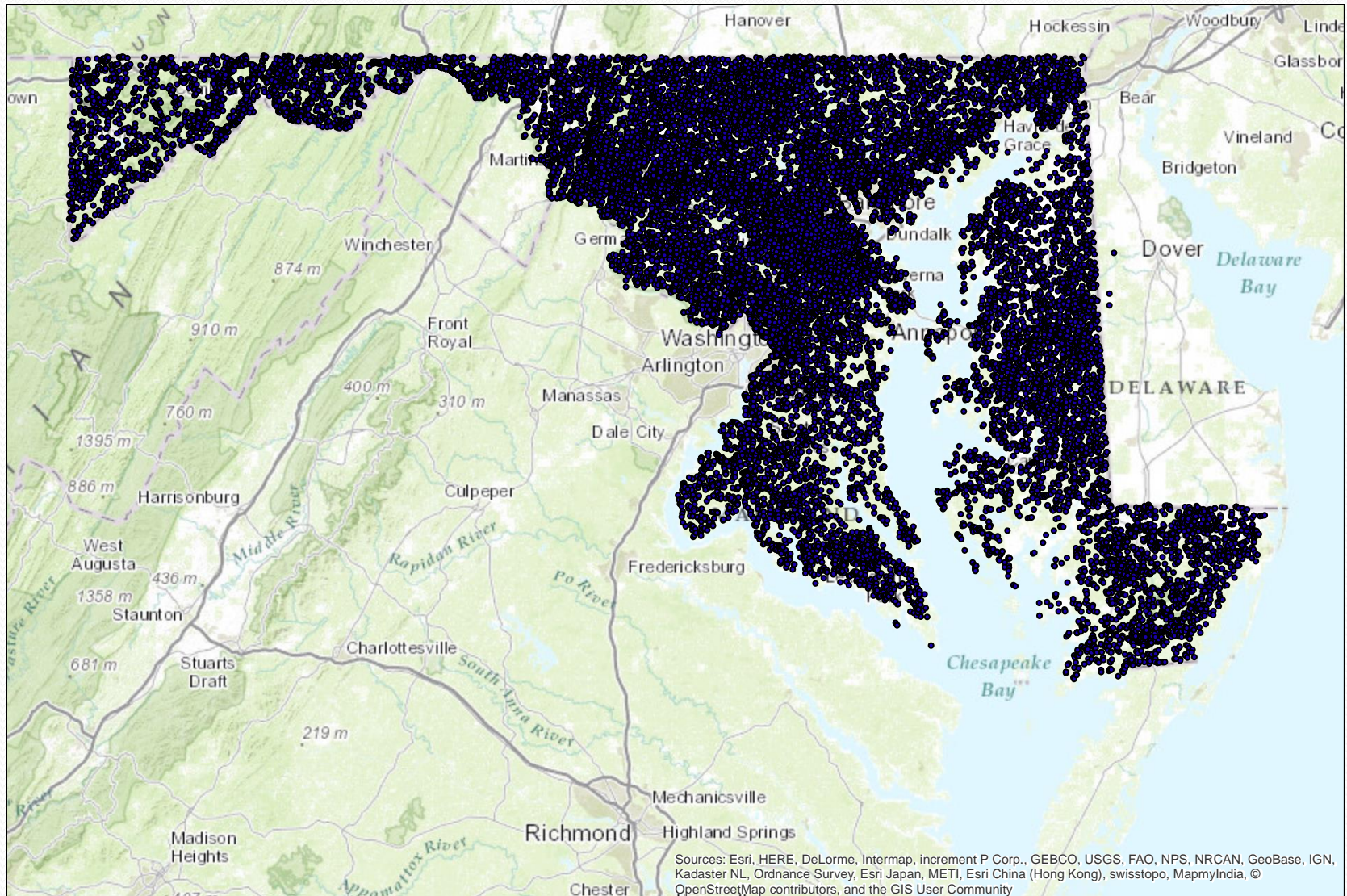
L₁ – Local
Coordinators



Lead
Observers

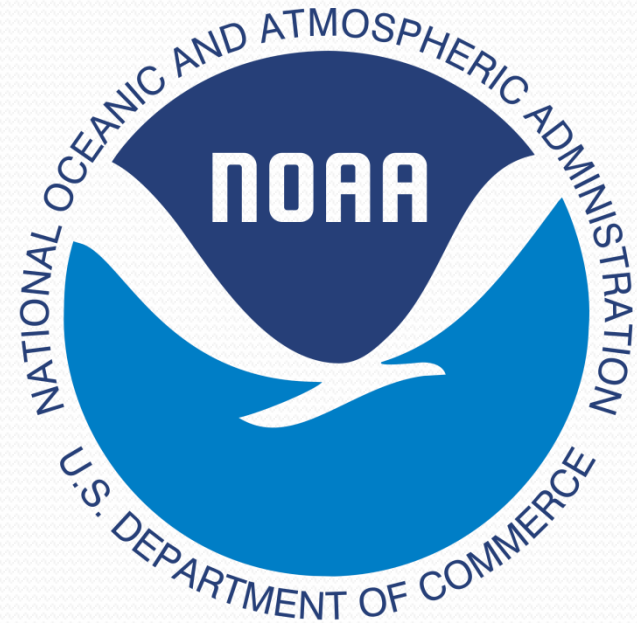


To Be Completed...





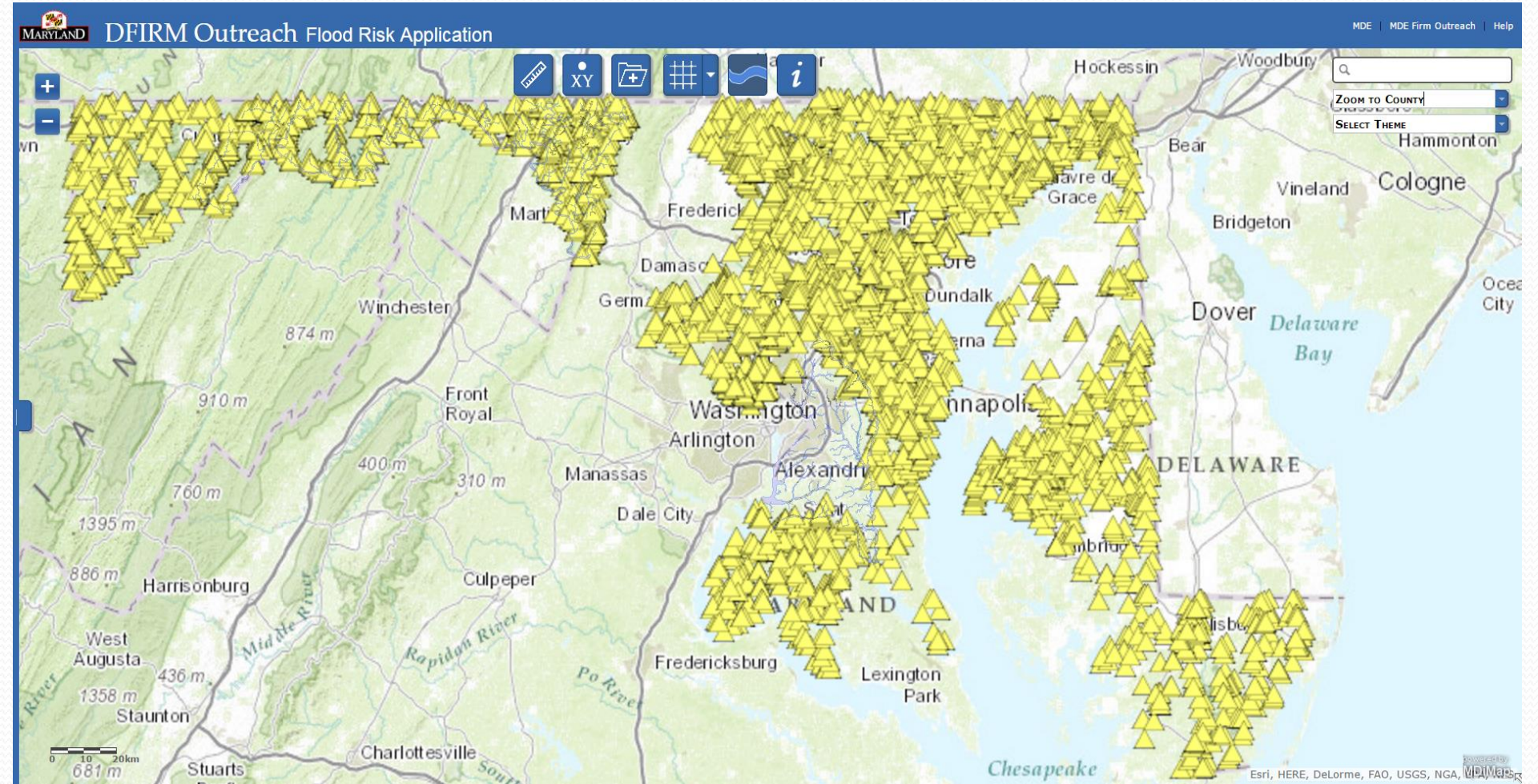
MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

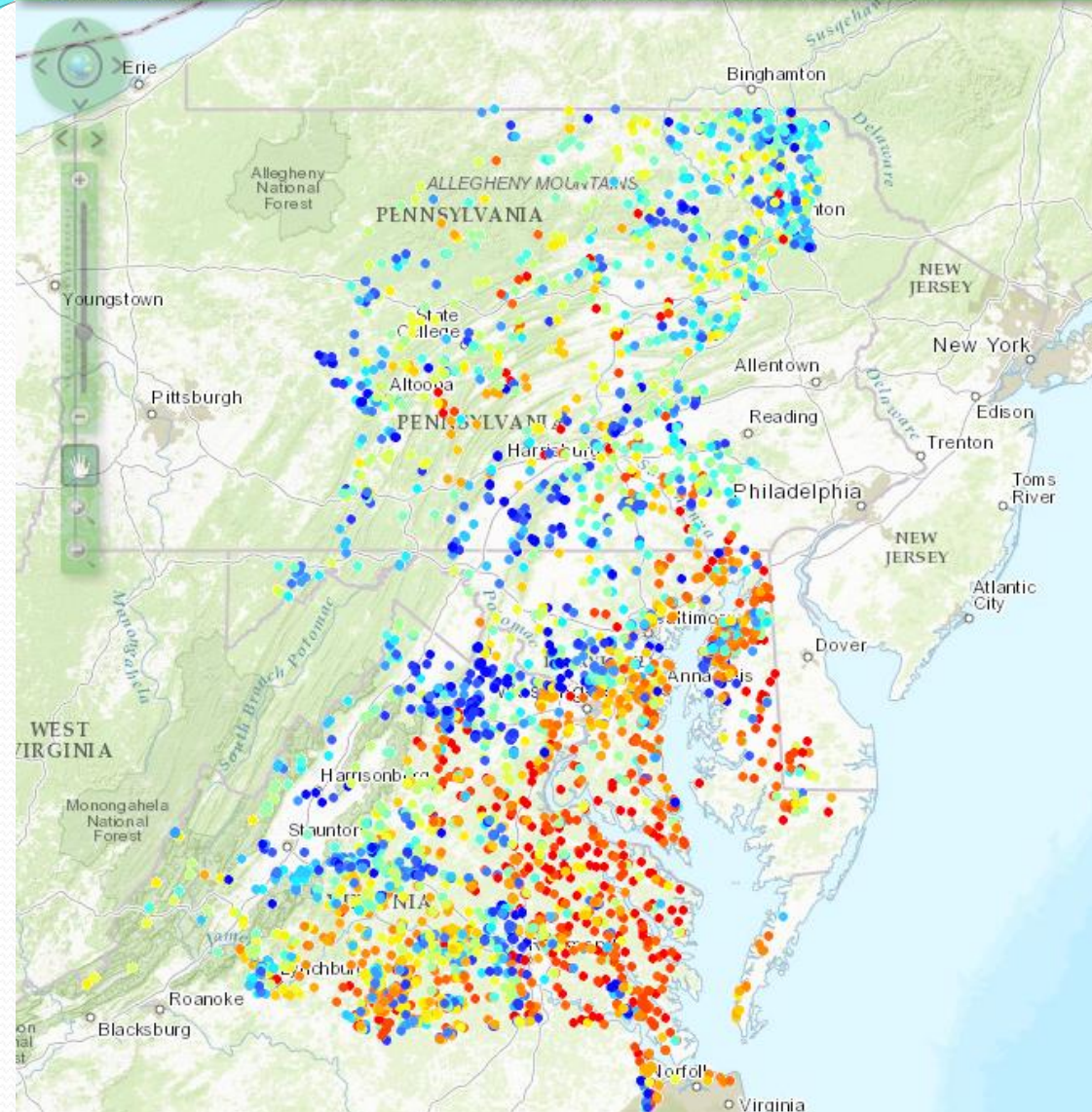


American Rivers
Rivers Connect Us



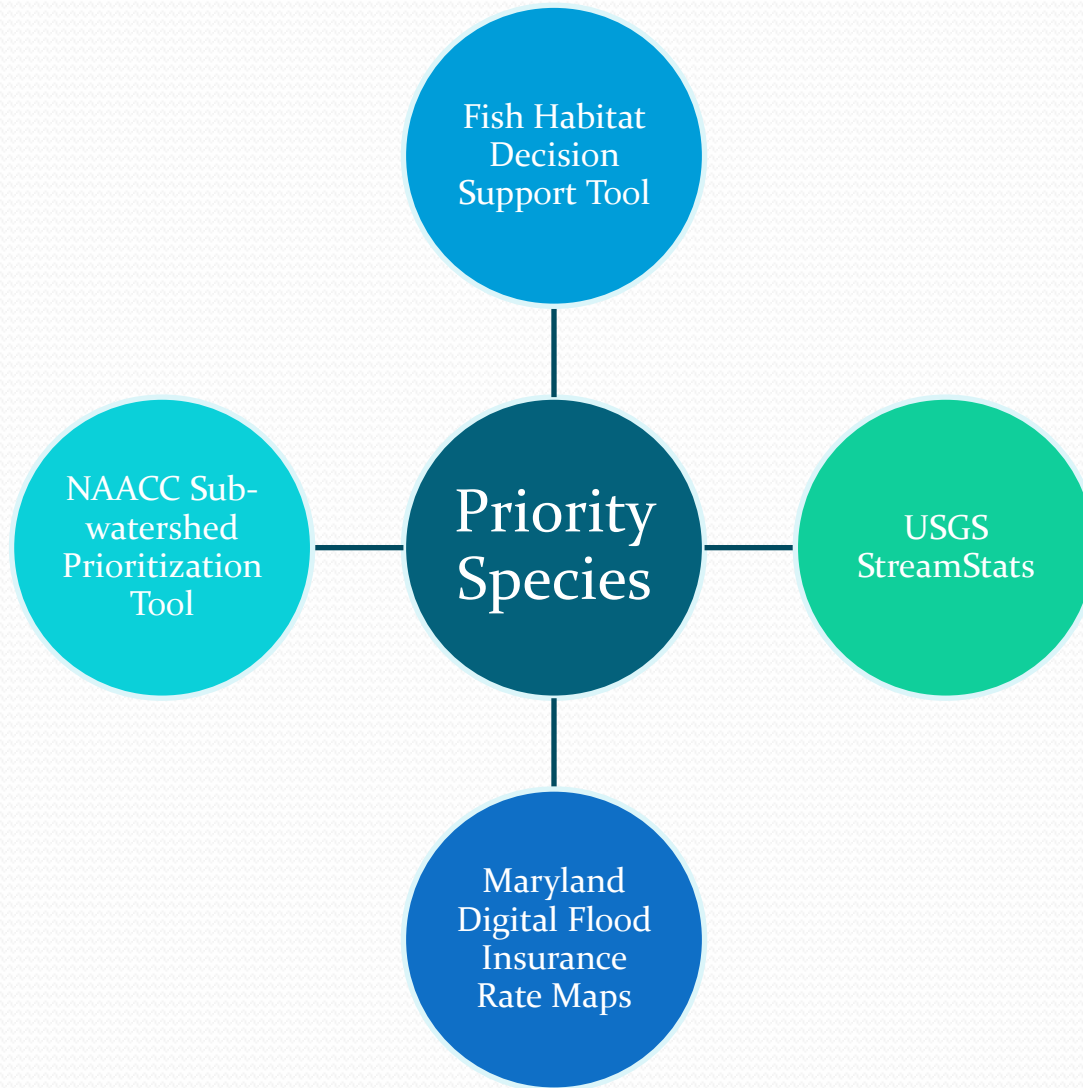
DEIRM



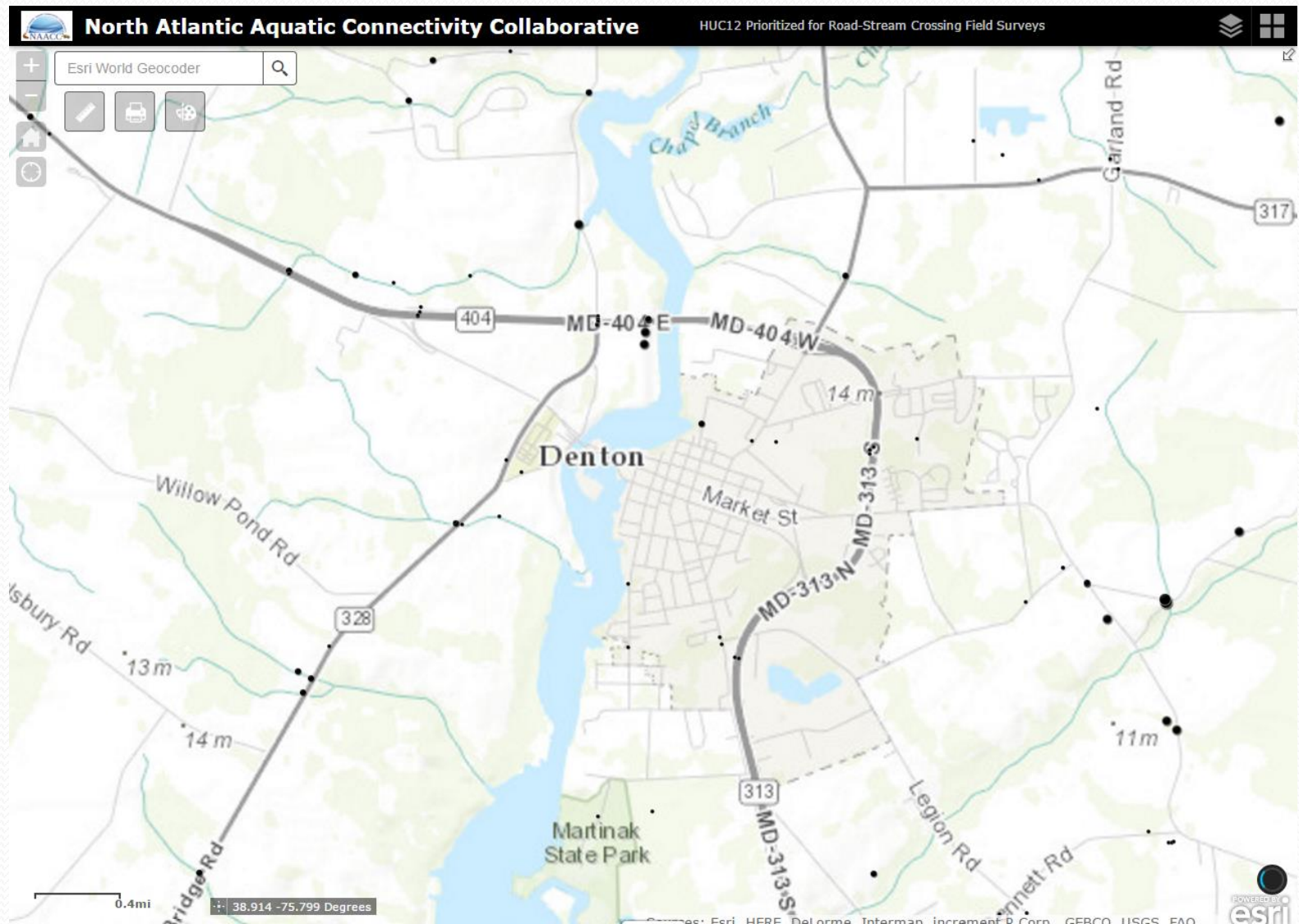


Chesapeake Fish Passage Prioritization

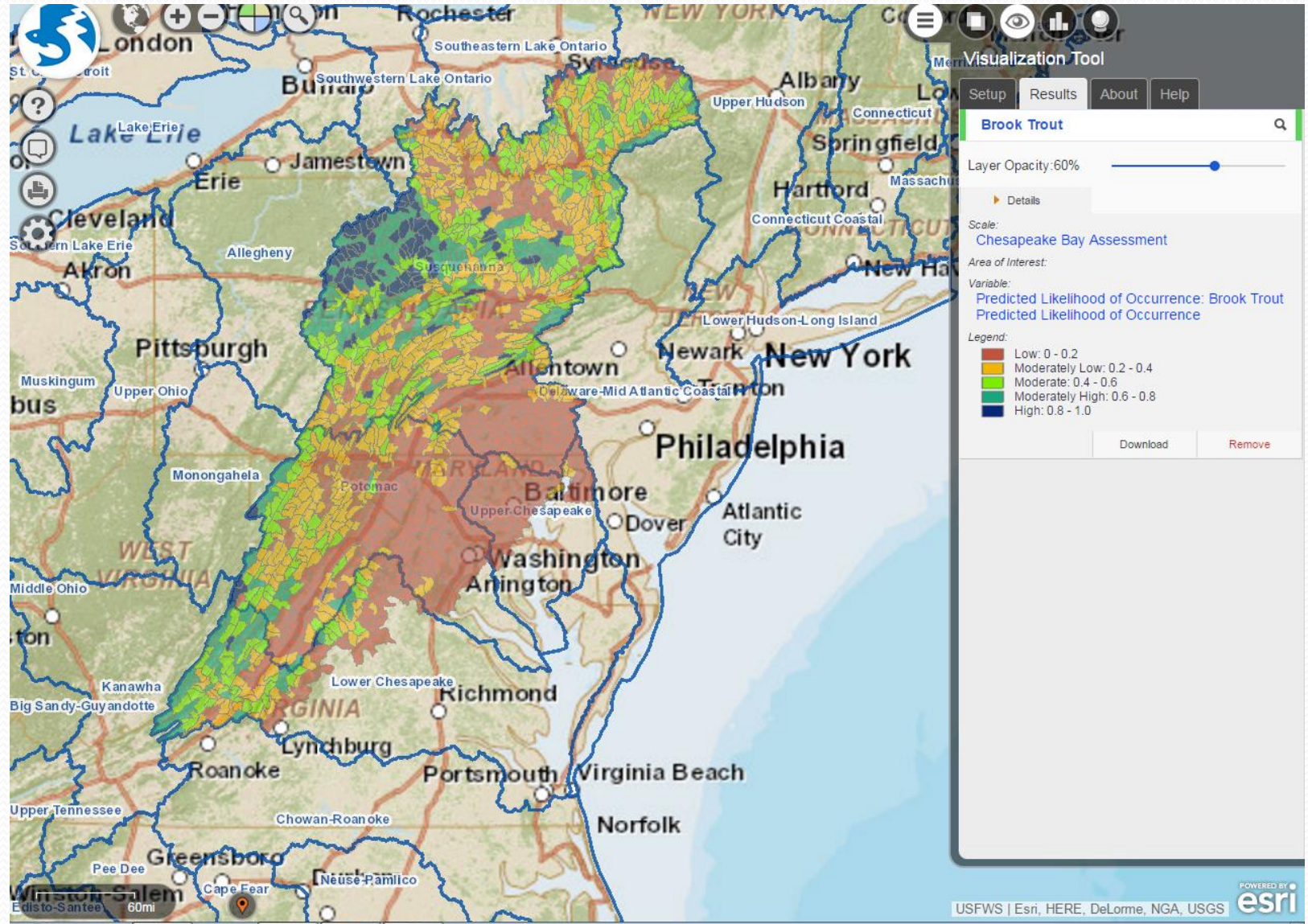
Site Selection



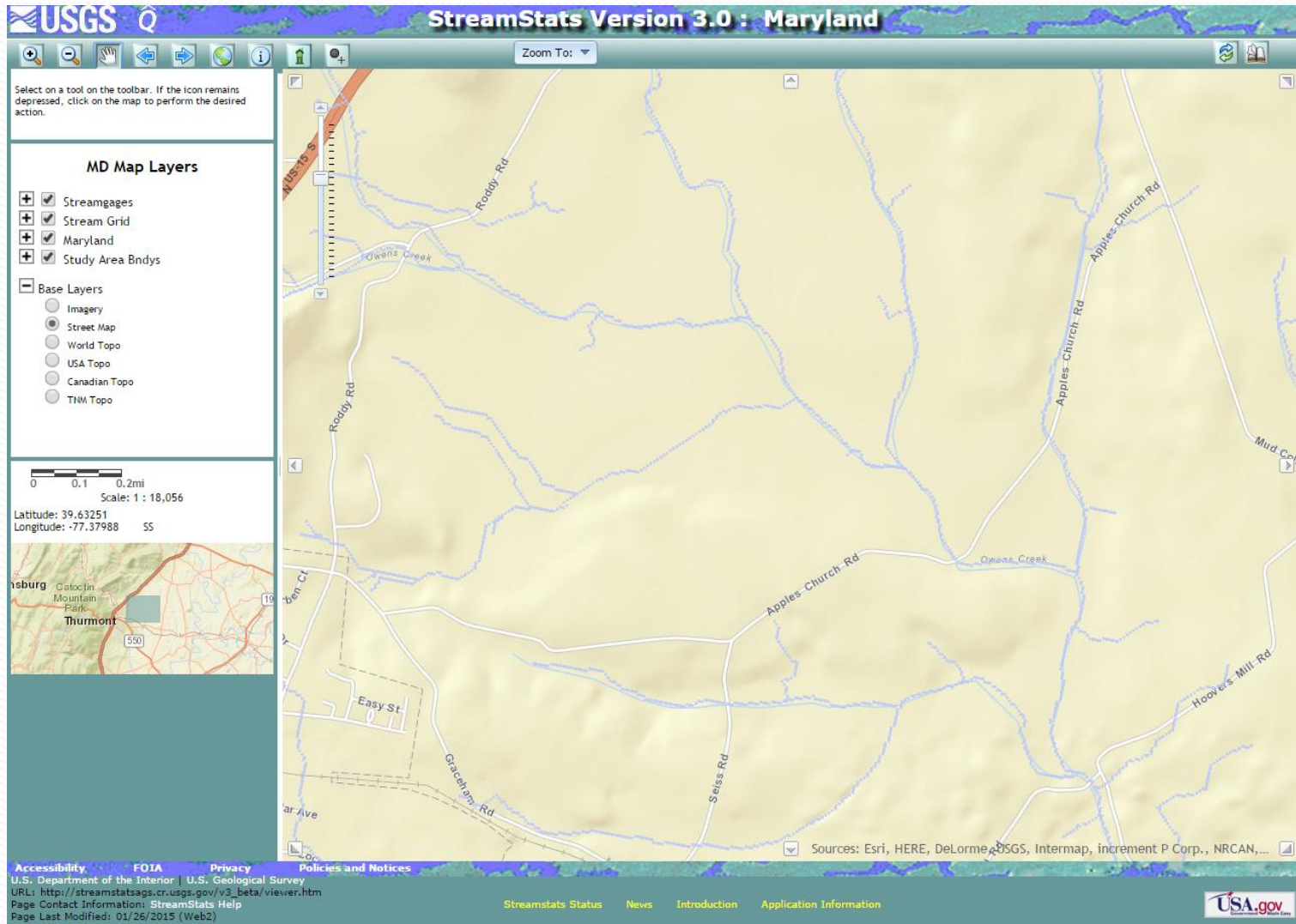
NAACC Sub-watershed Prioritization Tool



Fish Habitat Decision Support Tool



USGS StreamStats



Site Selection

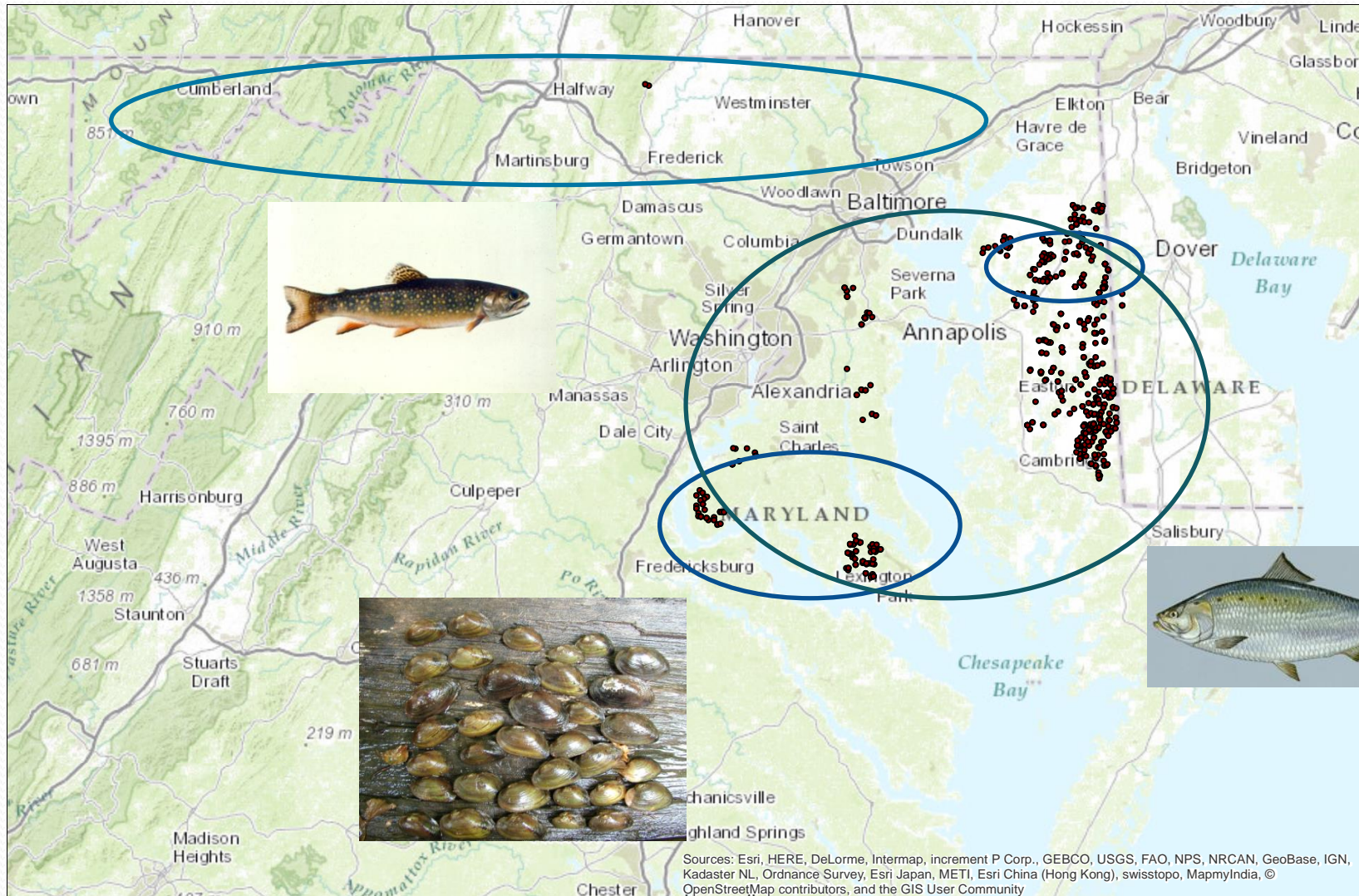


Assess sites lower in the system first...

...moving upstream as you go



Maryland Crossings - Completed



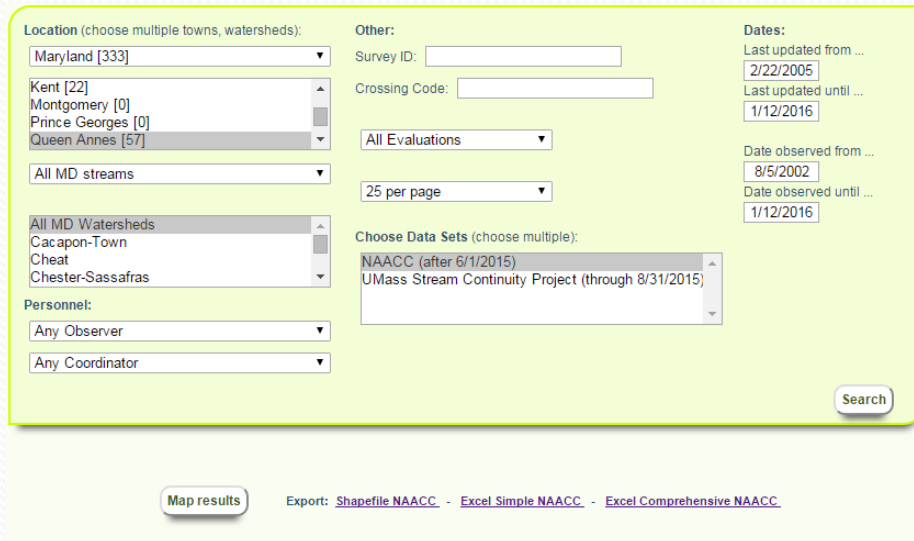
Data Collection

- Inlet/Outlet dimensions
- Total length
- Inlet/outlet drop
- Substrate/water depth and width
- Crossing Condition
- Bankfull width
- Structures and barriers
- At least 50 descriptors and measurements collected per crossing...

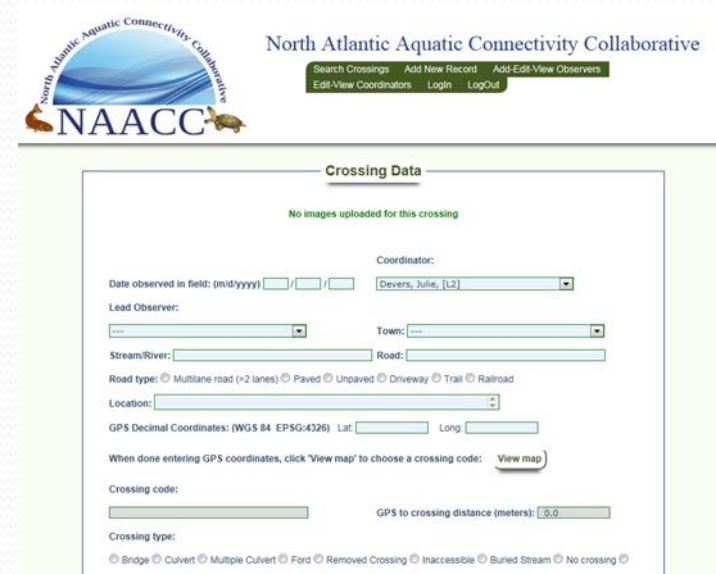


Data Entry and Access

- Almost 450 stream-road crossing assessments completed and entered into the database



This screenshot shows the data entry interface for the North Atlantic Aquatic Connectivity Collaborative (NAACC). The form is organized into several sections: 'Location' with dropdowns for Maryland (333), Kent (22), Montgomery (0), Prince Georges (0), Queen Annes (57), and All MD streams; 'Other' with fields for Survey ID, Crossing Code, and All Evaluations; 'Dates' with fields for Last updated from/to (2/22/2005 to 1/12/2016) and Date observed from/to (8/5/2002 to 1/12/2016); 'Choose Data Sets' with a list including NAACC (after 6/1/2015) and UMass Stream Continuity Project (through 8/31/2015); and 'Personnel' with dropdowns for Any Observer and Any Coordinator. A 'Search' button is located at the bottom right. Below the form, there are links for 'Map results' and 'Export: Shapefile NAACC - Excel Simple NAACC - Excel Comprehensive NAACC'.



This screenshot shows the 'Crossing Data' form on the NAACC website. The form includes a header with the NAACC logo and navigation links: Search Crossings, Add New Record, Add/Edit-View Observers, Edit-View Coordinators, Login, and LogOut. The main form area contains fields for Date observed in field (m/d/yyyy), Coordinator (Devers, Julie, [2]), Lead Observer, Town, Stream/River, Road, Road type (Multilane road (+2 lanes), Paved, Unpaved, Driveway, Trail, Railroad), Location, GPS Decimal Coordinates (WGS 84 EPSG:4326) Lat and Long, and Crossing code. A 'View map' button is present. At the bottom, there is a 'Crossing type' section with radio buttons for Bridge, Culvert, Multiple Culvert, Ford, Removed Crossing, Inaccessible, Buried Stream, and No crossing.

- www.streamcontinuity.org
- All crossings entered into database are available to the public
- Search by county, watershed, lead observer, date, etc.
 - Simple and comprehensive Excel files
 - Shapefiles (without base layer)

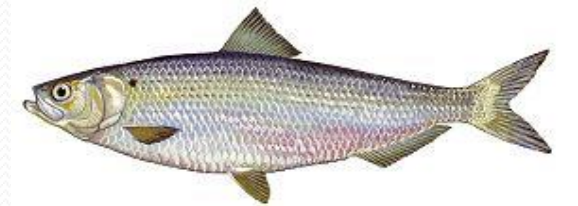
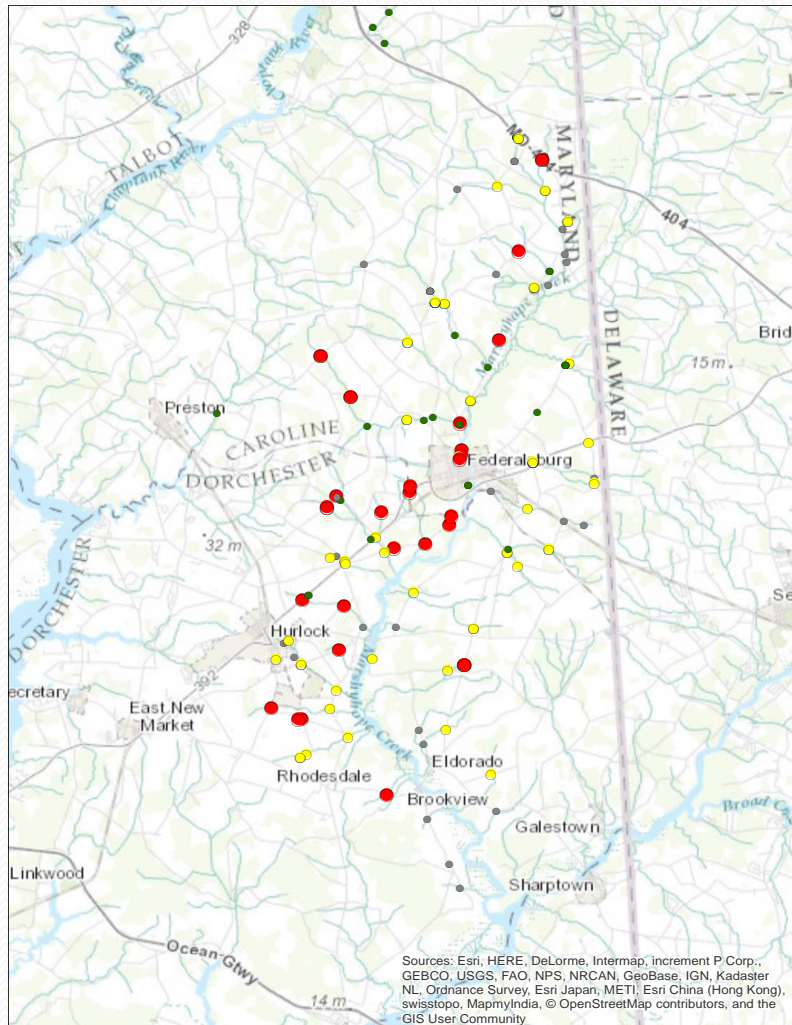
Aquatic Organism Passage

Metric	Flow Condition	Crossing Classification		
		Full AOP <i>If all are true</i>	Reduced AOP <i>If any are true</i>	No AOP <i>If any are true</i>
Inlet Grade		At Stream Grade	Inlet Drop or Perched	
Outlet Grade		At Stream Grade		Cascade, Free Fall onto Cascade
Outlet Drop to Water Surface		= 0		≥ 1 ft
Outlet Drop to Water Surface/ Outlet Drop to Stream Bottom				> 0.5
Inlet or Outlet Water Depth	Typical-Low	> 0.3 ft		< 0.3 ft
	Moderate	> 0.4 ft		< 0.4 ft
Structure Substrate Matches Stream		Comparable or Contrasting		
Structure Substrate Coverage		100%	< 100%	
Physical Barrier Severity		None	Minor or Moderate	Severe

- Classification Score: Full AOP, Reduced AOP, No AOP
- Numerical Score: 0.0 – 1.0 scale
- Potential is there to generate species-specific scoring

Marshyhope River

Aquatic Organism Passage



AOP

- Missing data
- Full AOP
- Reduced AOP
- No AOP

Future Plans

- Continue to assess road-stream crossings in MD
- Work with the Fish Passage Work group to assess road-stream crossings throughout the Chesapeake Bay
- Recruit additional observers to get trained in the assessment protocol
- Work with partners to improve aquatic organism passage at road-stream crossings



Resources

- www.streamcontinuity.org
 - Subwatershed prioritization tool, database and search page, documents and protocols
- <http://www.mdfloodmaps.net/dfirmimap/index.html>
 - MDE database of stream crossings and flood risk assessments