Road-Stream Crossing Assessment in the Chesapeake Bay

North Atlantic Aquatic Connectivity Collaborative

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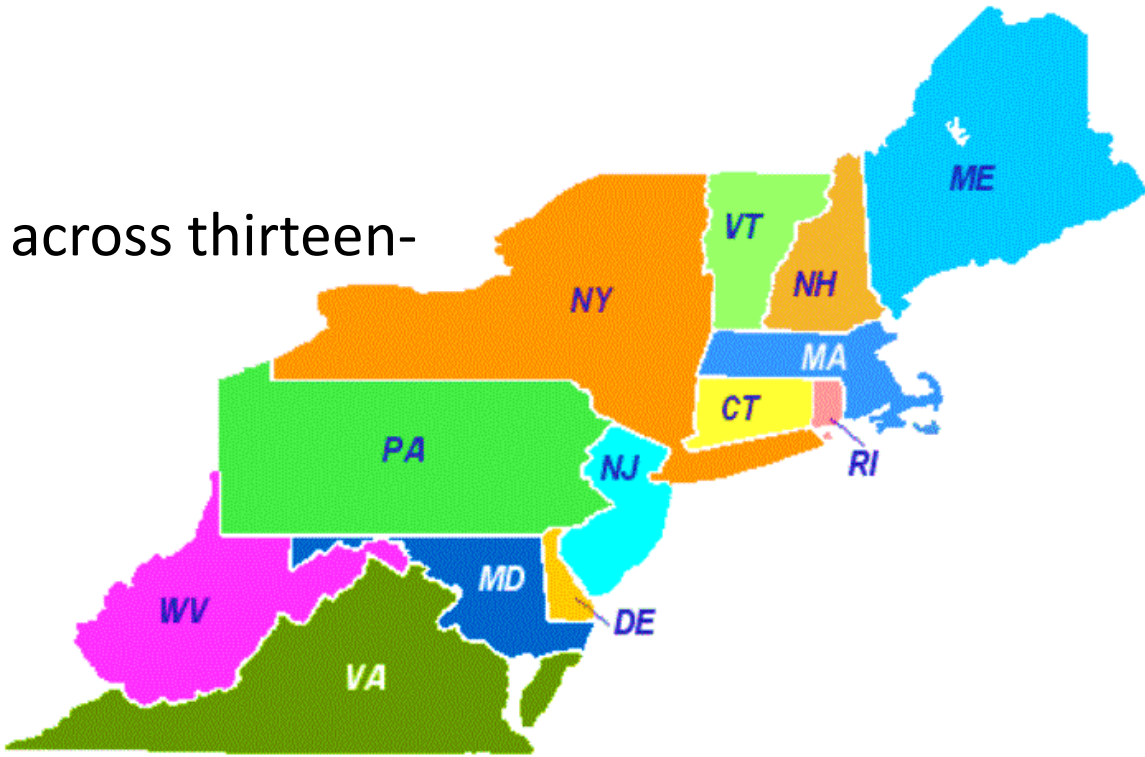
USFWS, Maryland Fish and Wildlife Conservation Office

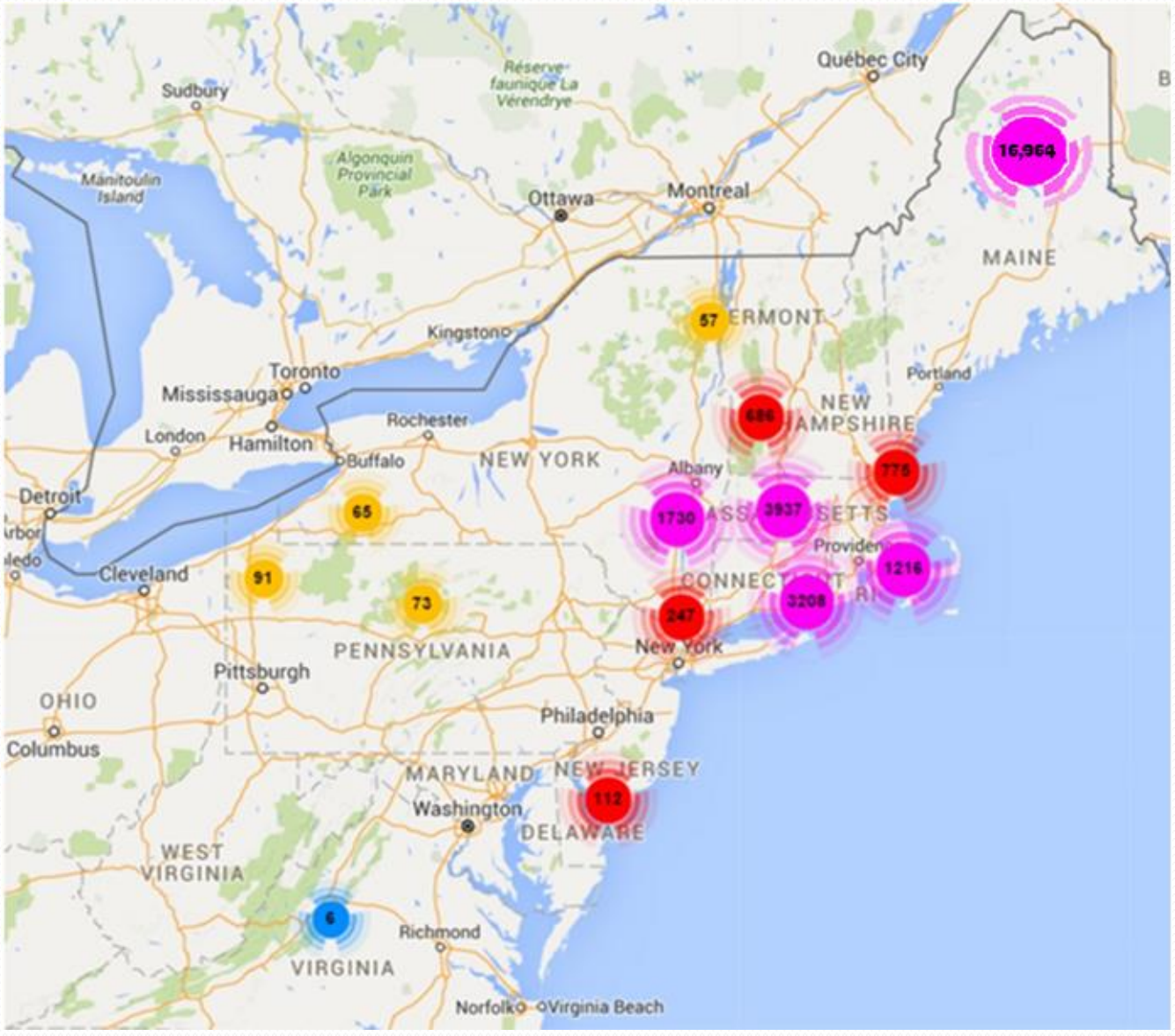
Flood Resiliency and Fish Passage

North Atlantic Aquatic Connectivity Collaborative

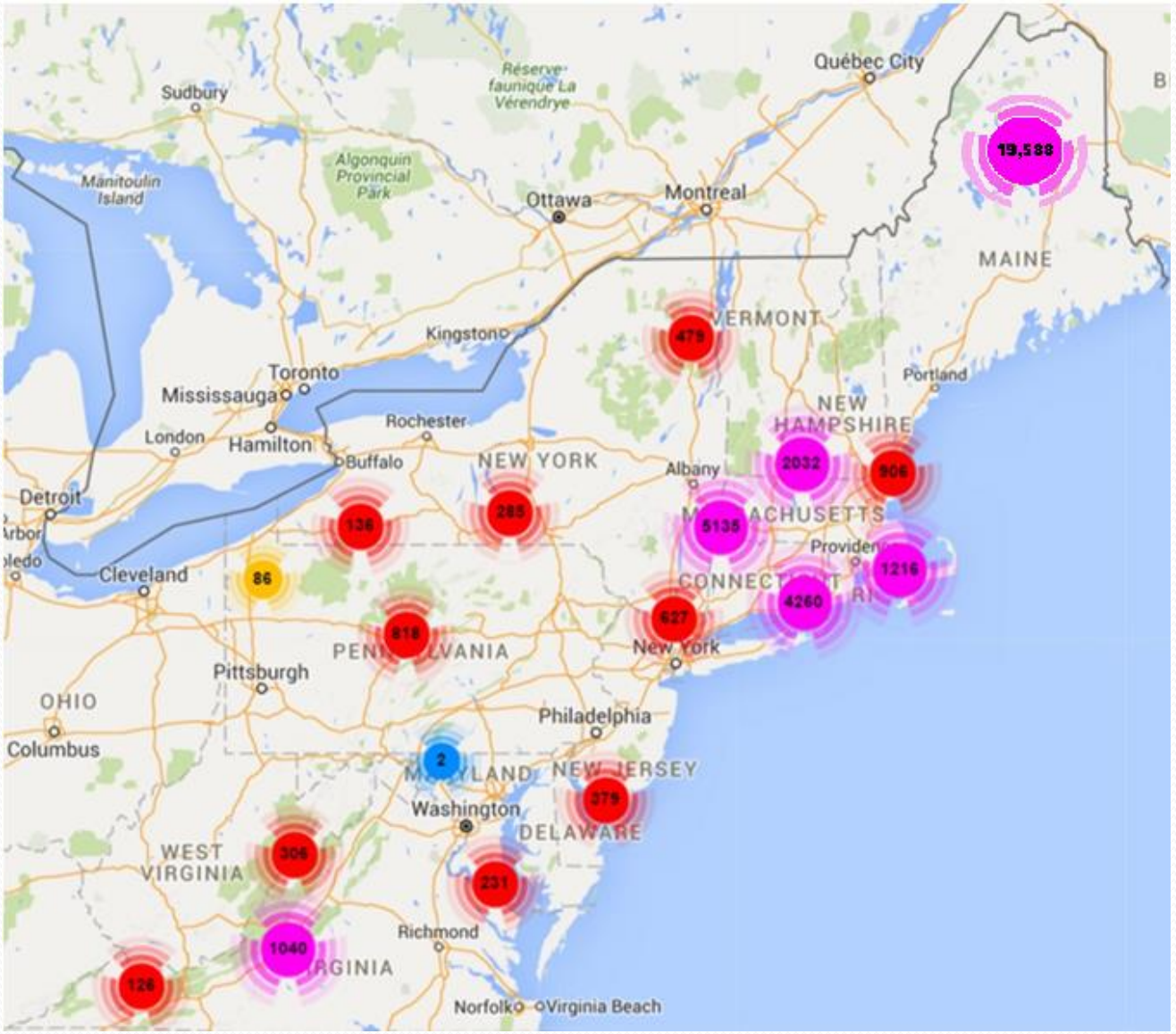
- Objective: improve *aquatic connectivity* across thirteen-state region, from Maine to West Virginia



Assessed Culverts-Pre June 2015



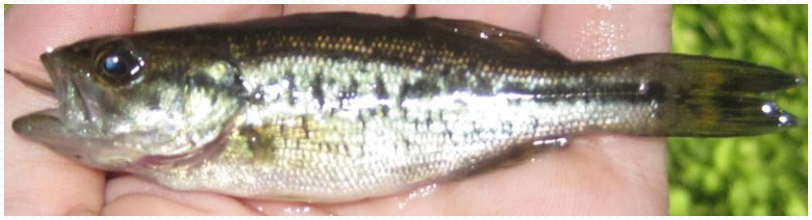
Assessed Culverts - Today



NAACC

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

- www.streamcontinuity.org

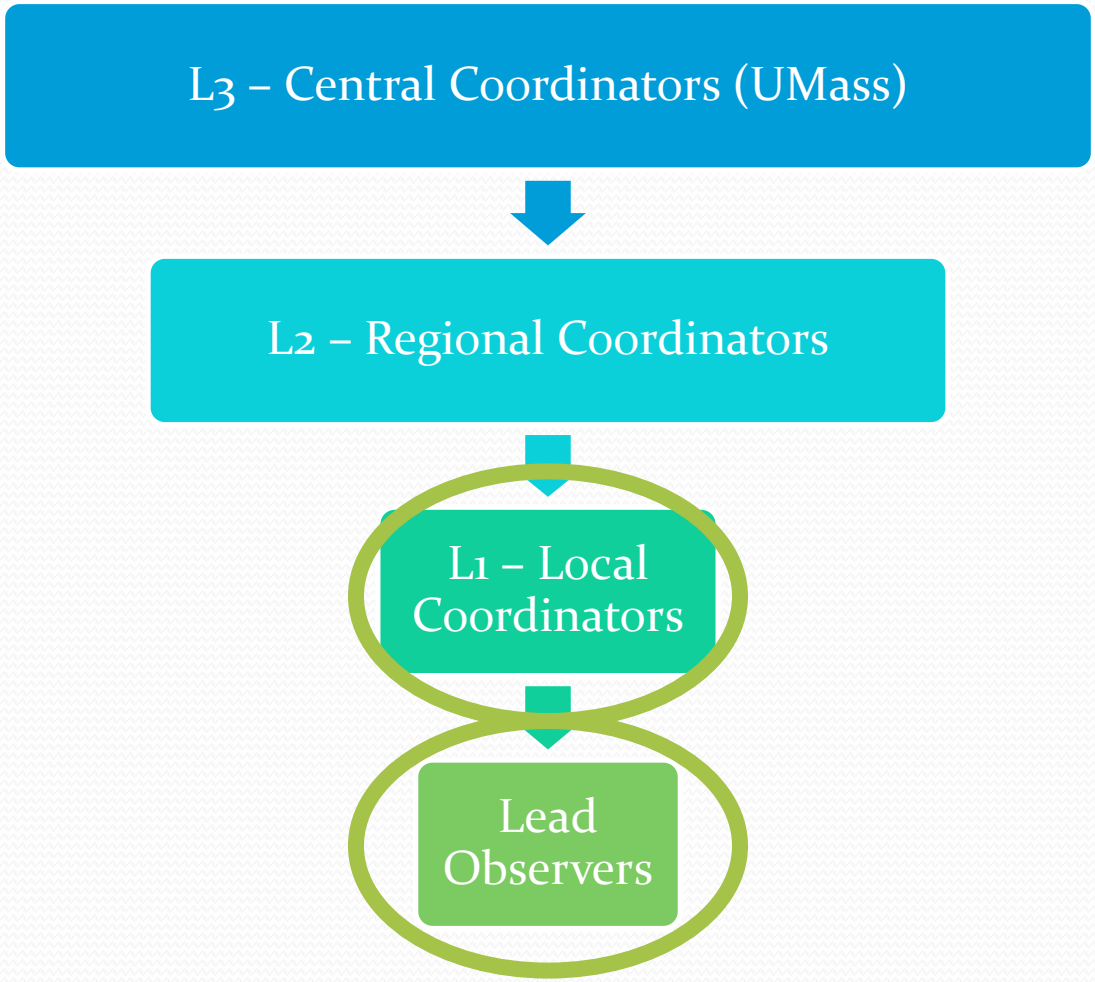


Funding

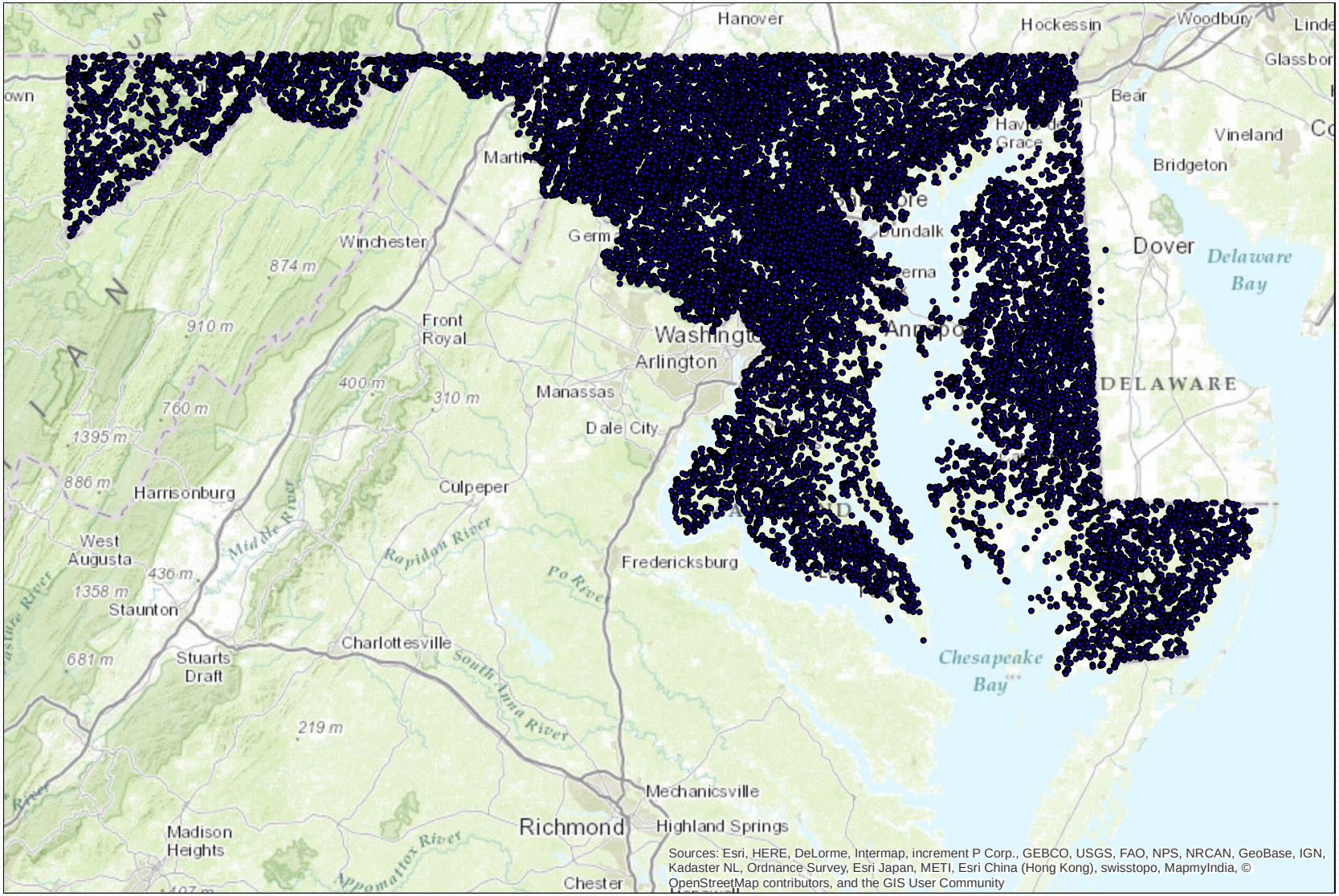
North Atlantic LCC

North Atlantic Landscape Conservation Cooperative

Organization



To Be Completed…




MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

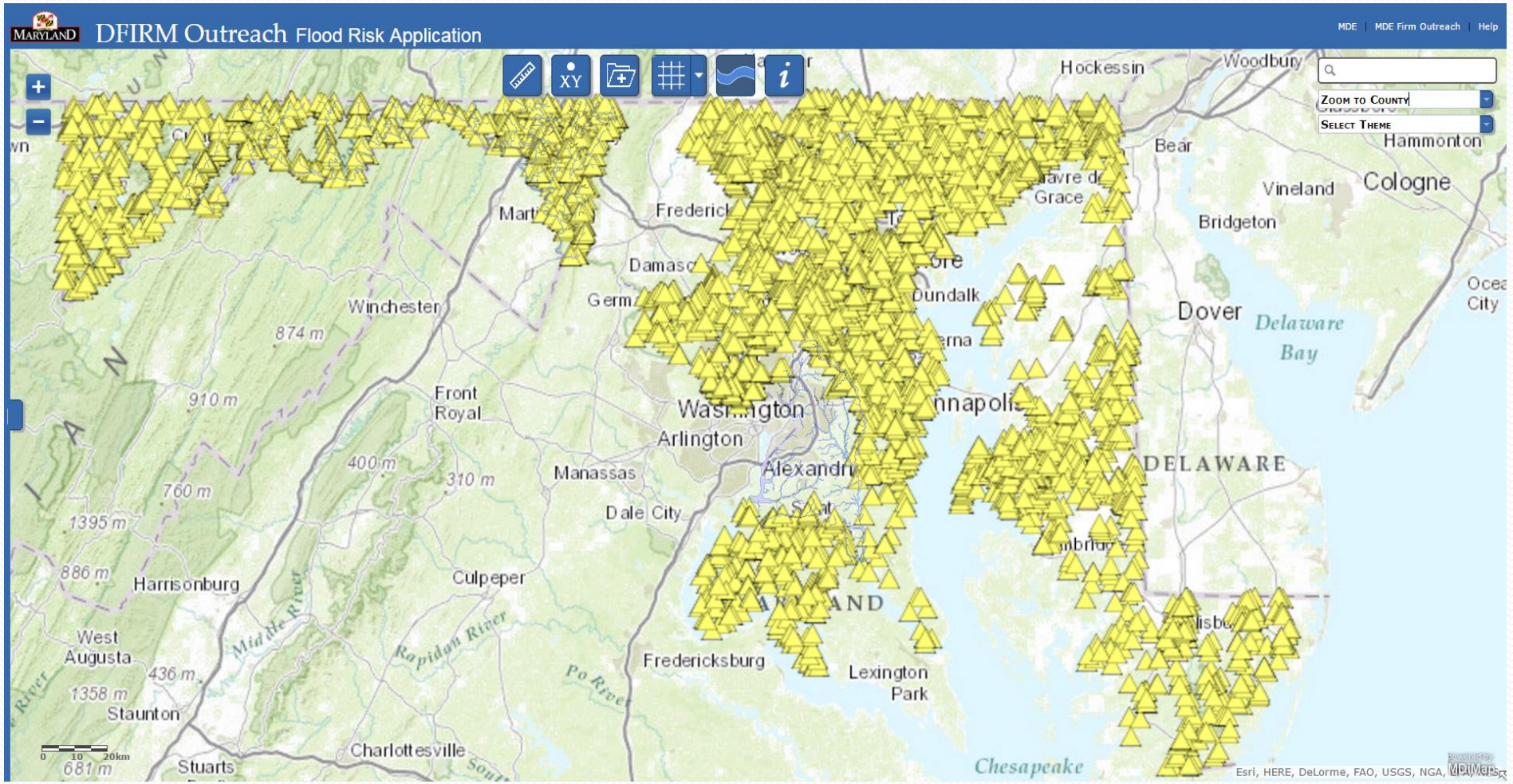

SHA
State Highway
Administration

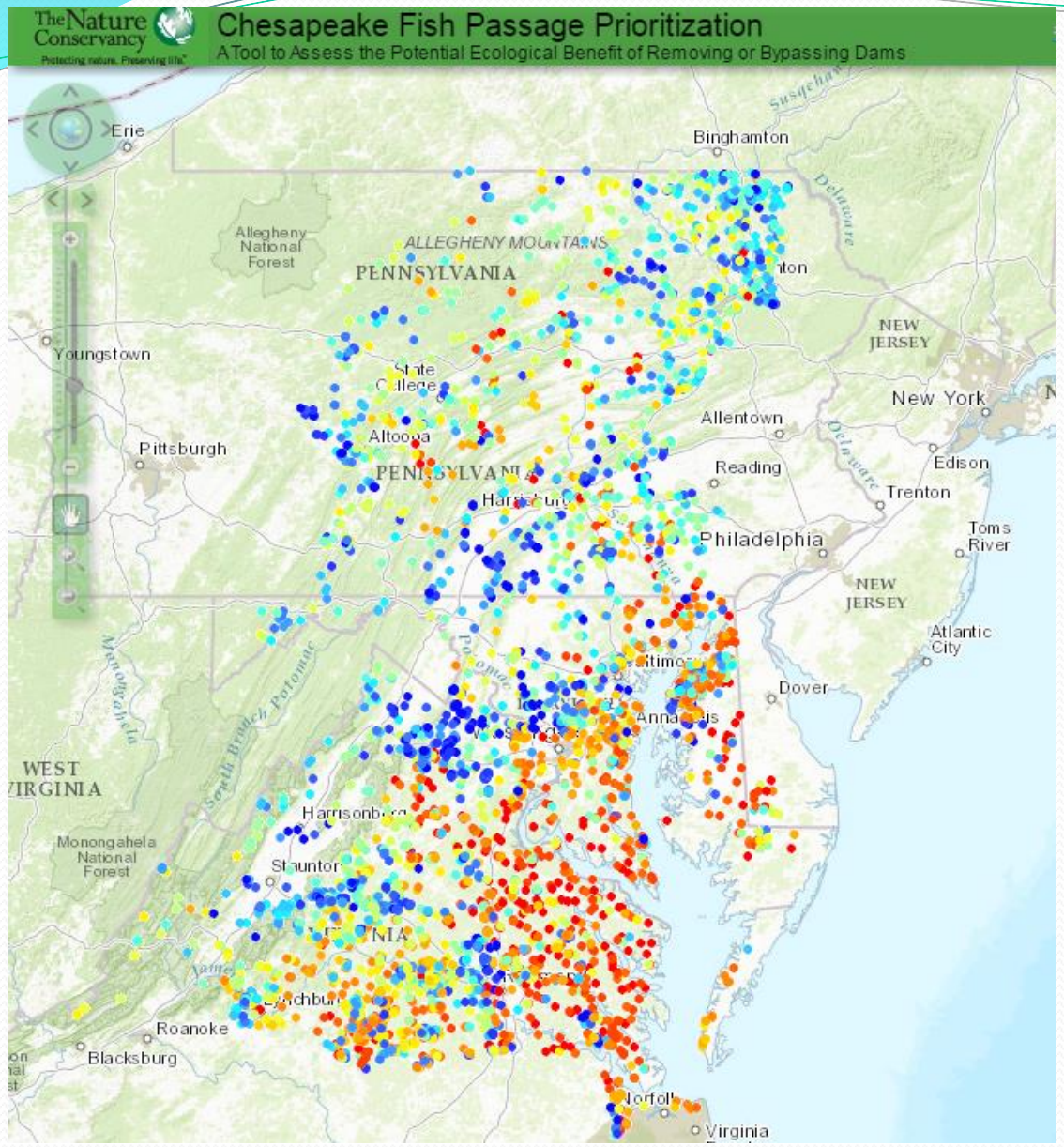

MDE


NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOAA
U.S. DEPARTMENT OF COMMERCE


American Rivers
Rivers Connect Us

DFIRM

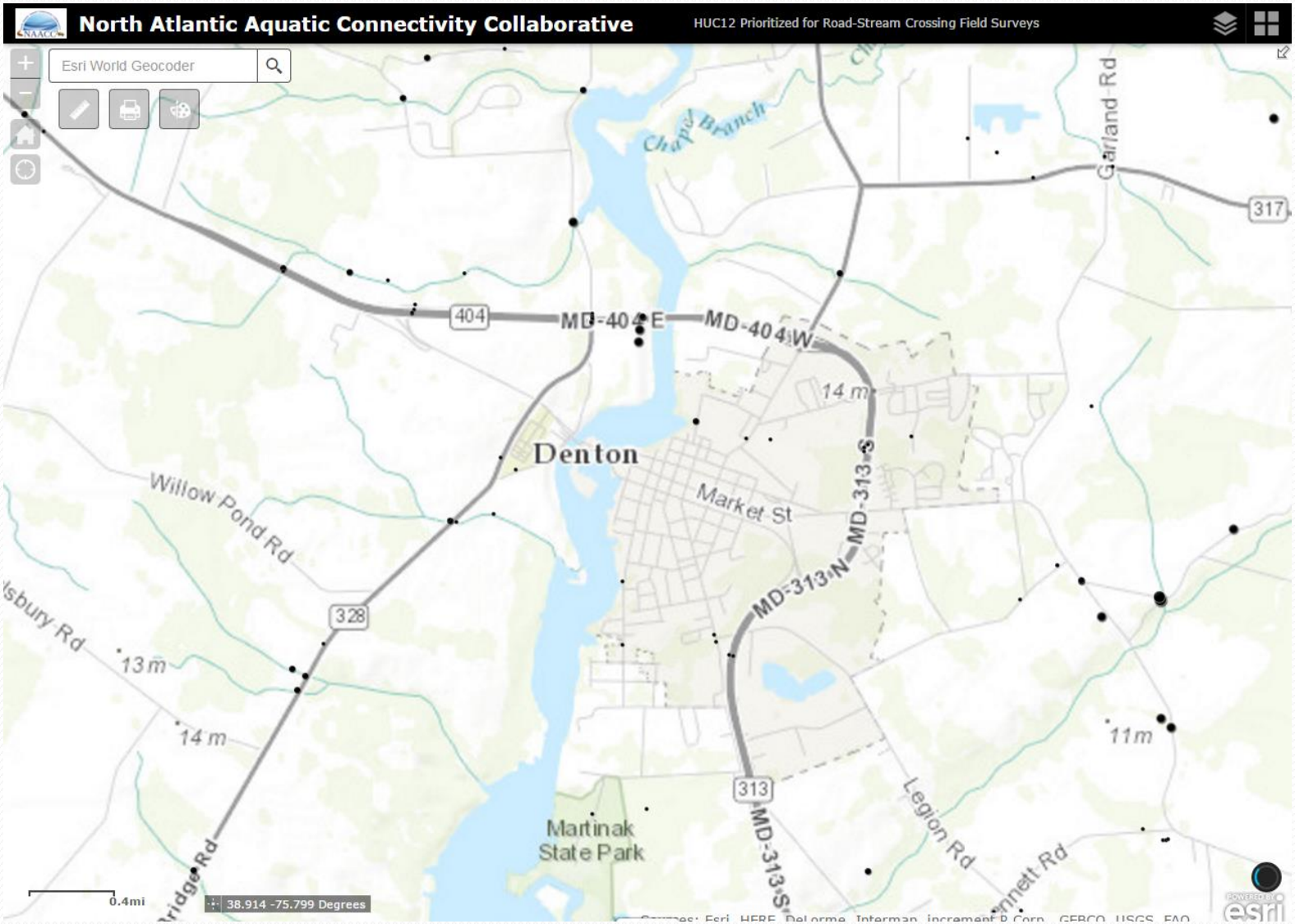

DFIRM Outreach Flood Risk Application
MDE | MDE Firm Outreach | Help
Zoom to County
Select Theme
Hockessin
Woodbury
Bear
Hammonton
Vineland
Cologne
Bridgeton
Grace
Frederick
Damasc
Germ
Dundalk
Dover
Delaware Bay
Winchester
874 m
910 m
Front Royal
Wash...ington
Arlington
Alexandri
Manassas
400 m
310 m
760 m
1395 m
886 m
Dale City
Harrisonburg
Culpeper
DELAWARE
West Augusta
436 m
1358 m
Staunton
Middle River
Rapidan River
Po River
Fredericksburg
Lexington Park
Charlottesville
Stuarts
681 m
Chesapeake
Esri, HERE, DeLorme, FAO, USGS, NGA, EPA, MDP



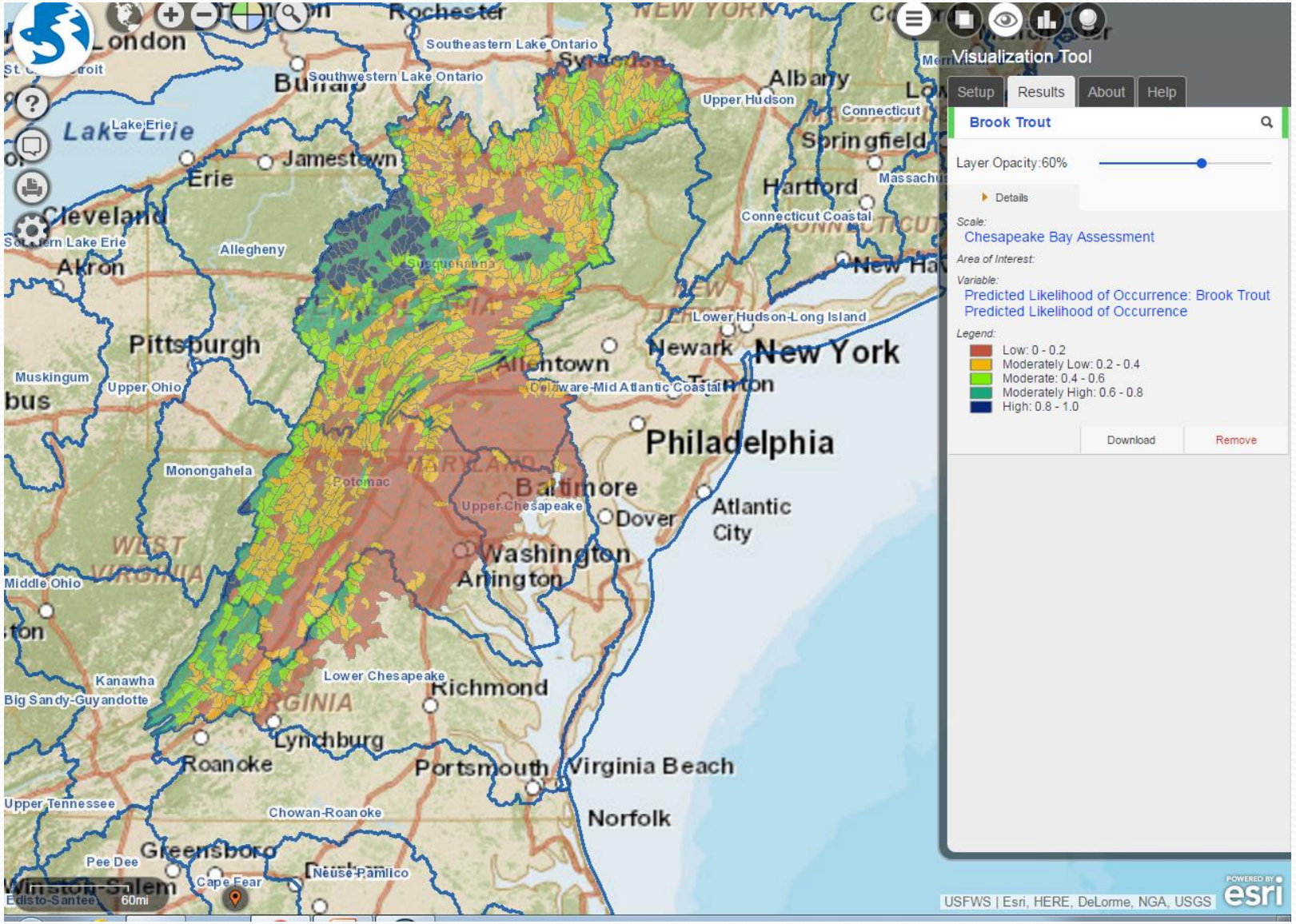
Chesapeake Fish Passage Prioritization

Site Selection

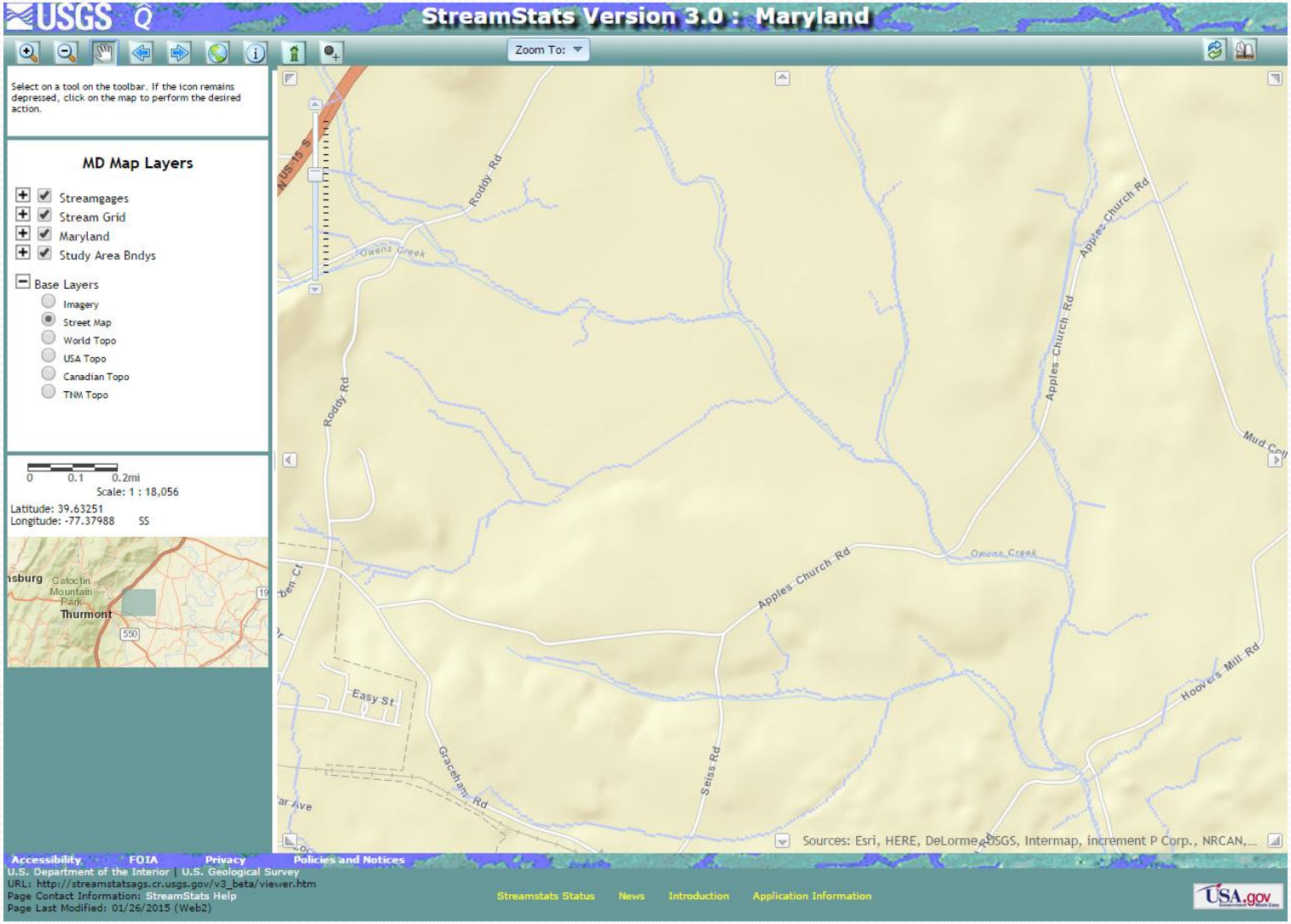
NAACC Sub-watershed Prioritization Tool



Fish Habitat Decision Support Tool



USGS StreamStats

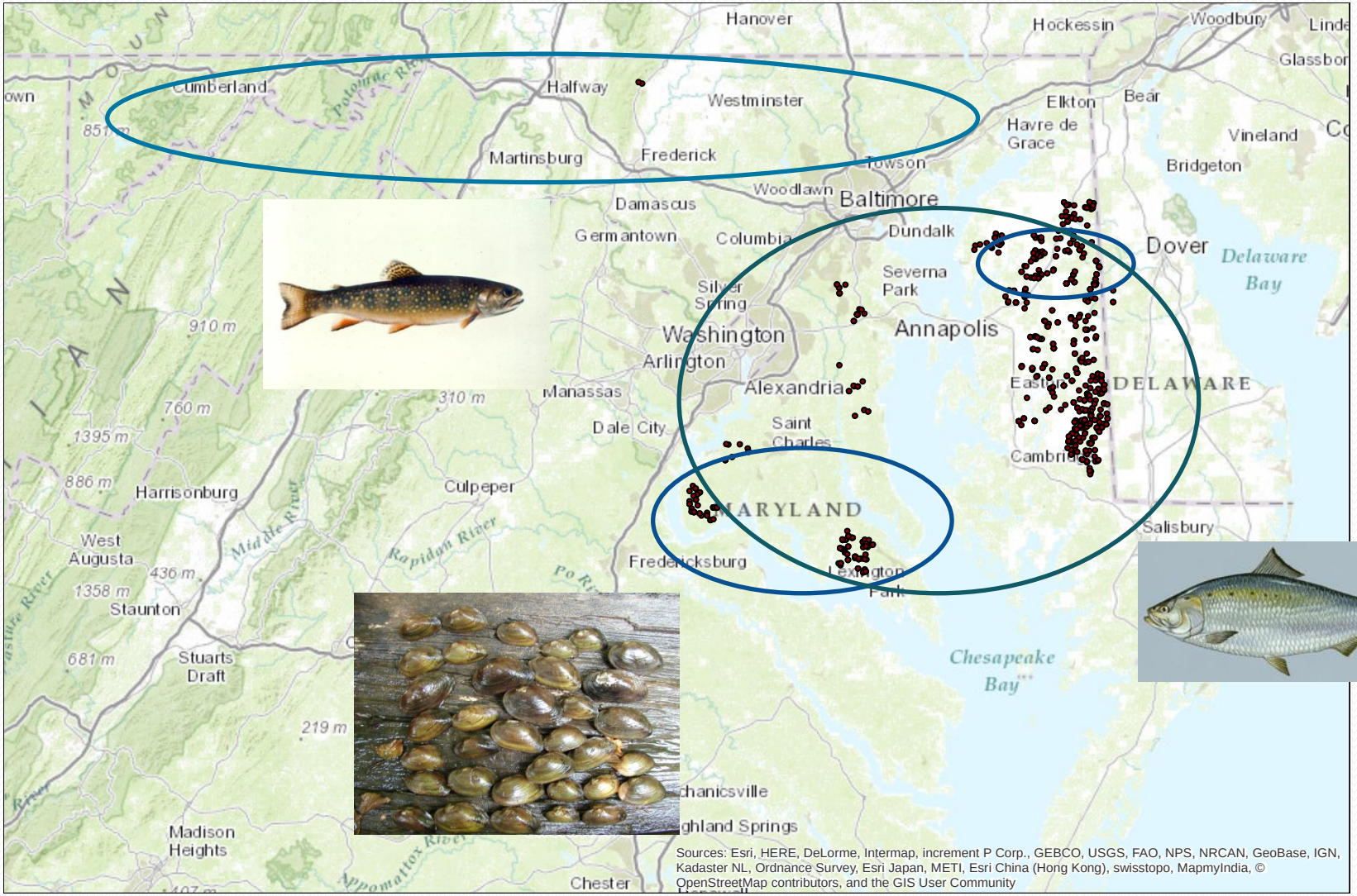


Site Selection

Assess sites lower in the system first…

…moving upstream as you go

Maryland Crossings - Completed

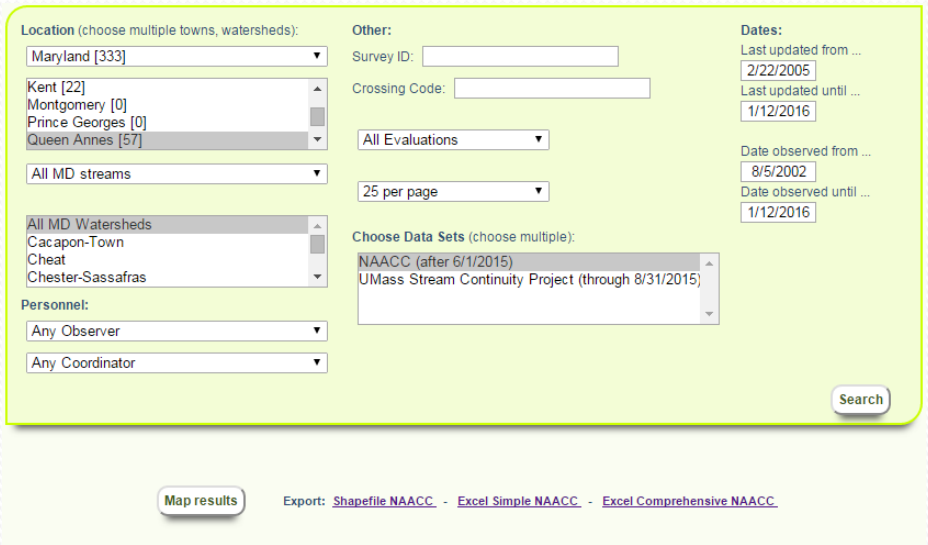


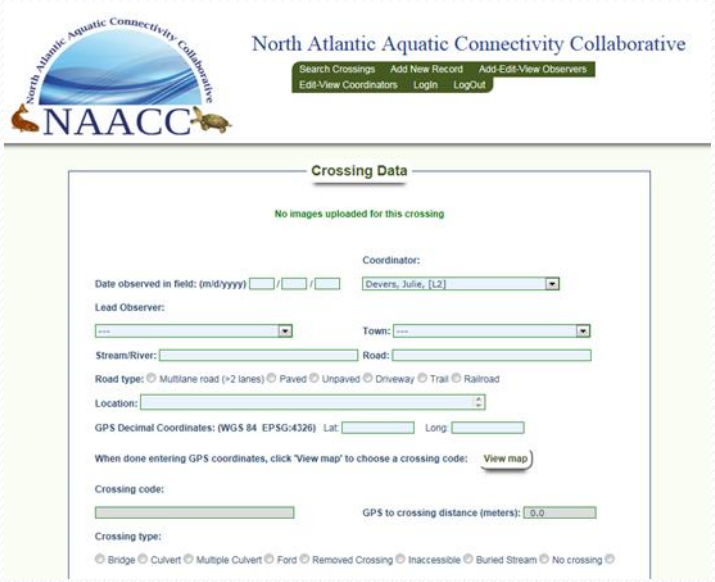
Data Collection

- 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





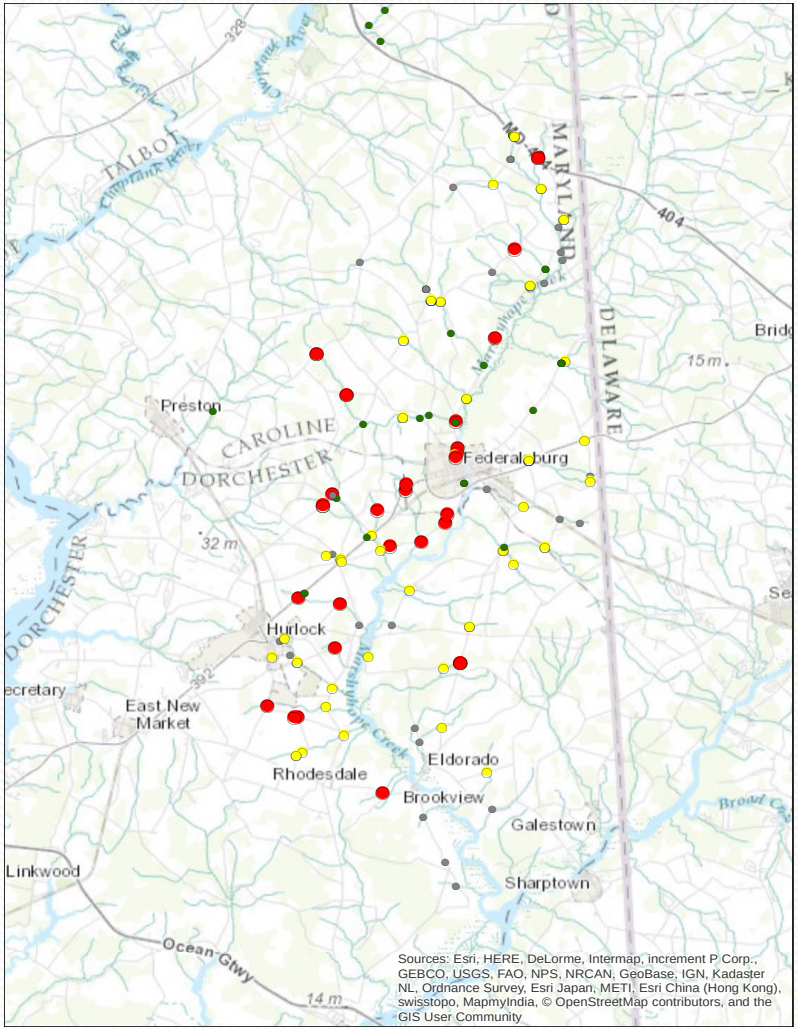
- www.streamcontinuity.org
- All crossings entered into database are available to the public
- Search by county, watershed, lead observer, date, etc.
  - Simple and comprehensive Excel files
  - Shapefiles (without base layer)

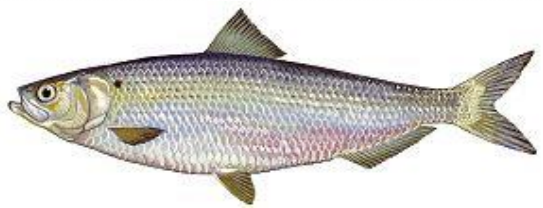
Aquatic Organism Passage

Metric	Flow Condition	Crossing Classification		
		Full AOP	Reduced AOP	No AOP
		If all are true	*If any are true*	*If any are true*
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 toStream 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



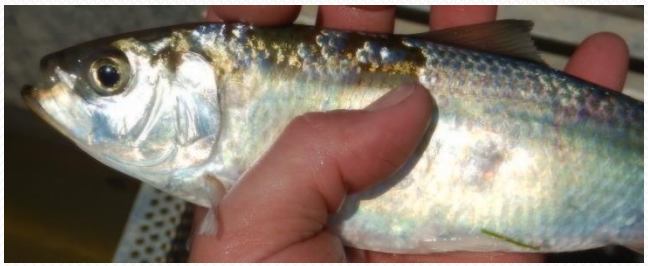


AOP

- 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