USGS Nonindigenous Aquatic Species Program updates and new Northeast region Alerts

Northeast ANS Panel Meeting

May 6, 2020

At home

Ian Pfingsten

U.S. Geological Survey

Wetland and Aquatic Research Center, Gainesville, FL

Species profiles

Actionable maps and tools

NAS Database

Data reference library

Distribution maps

USGS science for a changing world

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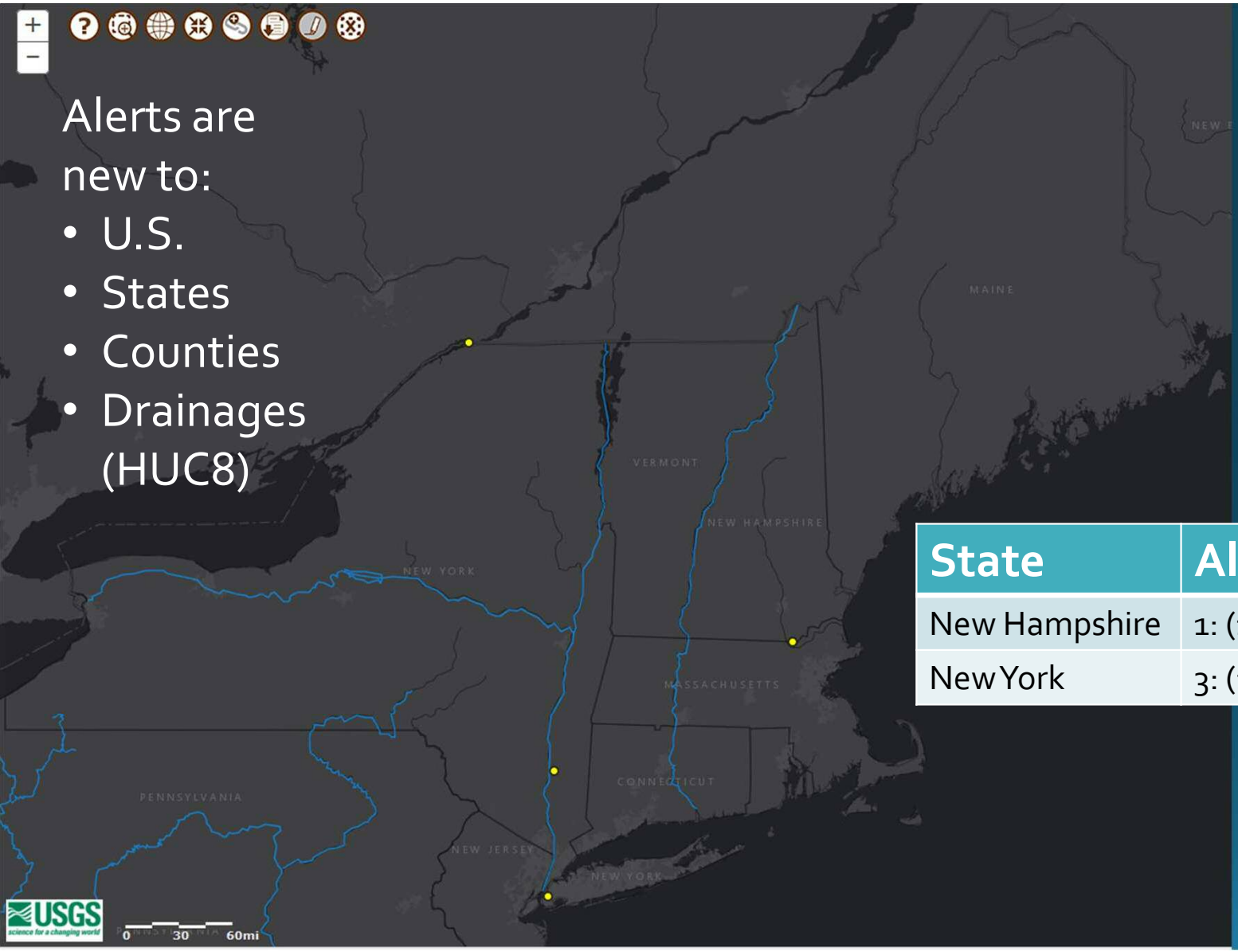


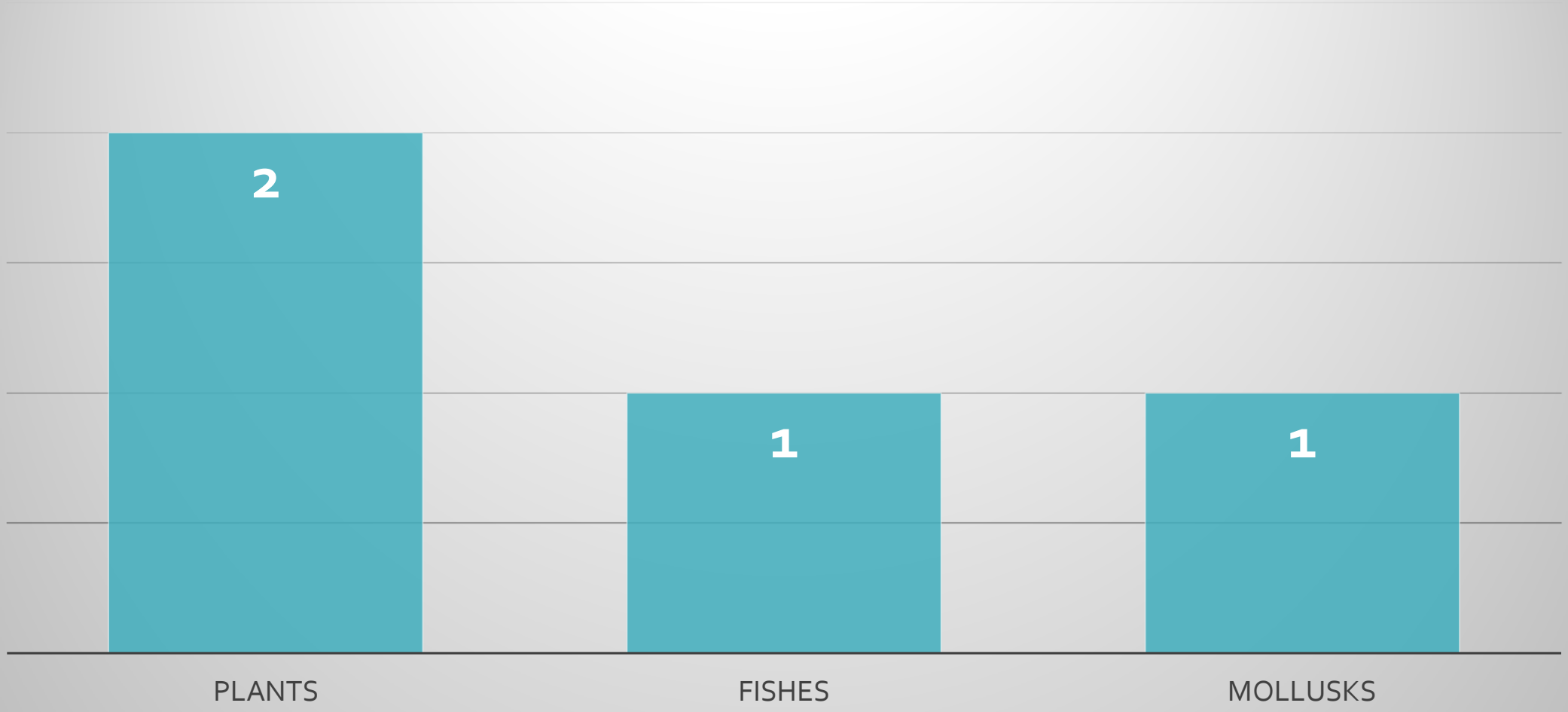
Alerts are new to:

- U.S.
- States
- Counties
- Drainages (HUC8)

4 NAS Alerts since December 2019 (reported)

State	Alerts by type
New Hampshire	1: (1 State)
New York	3: (1 State, 1 Drainage, 1 County)

Alerts since December 2019



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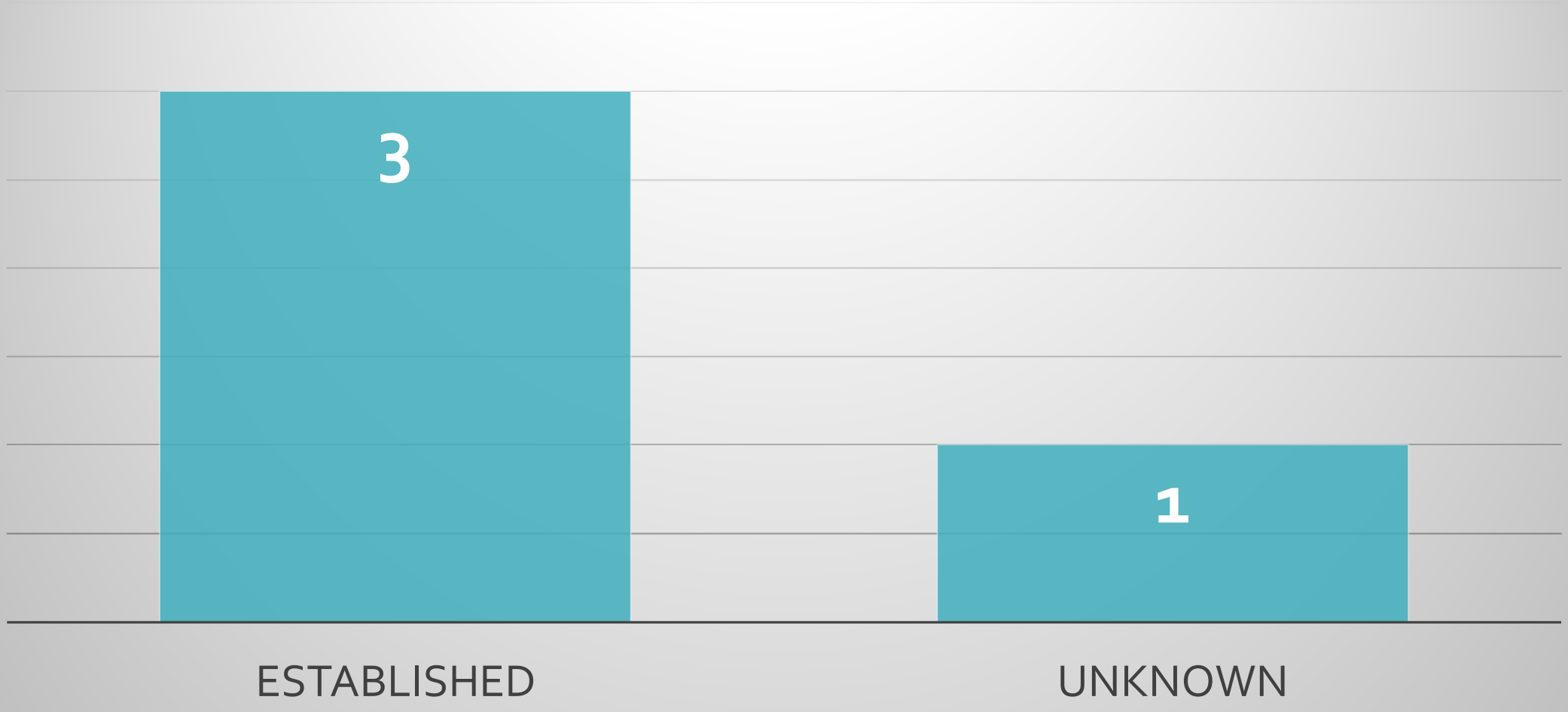

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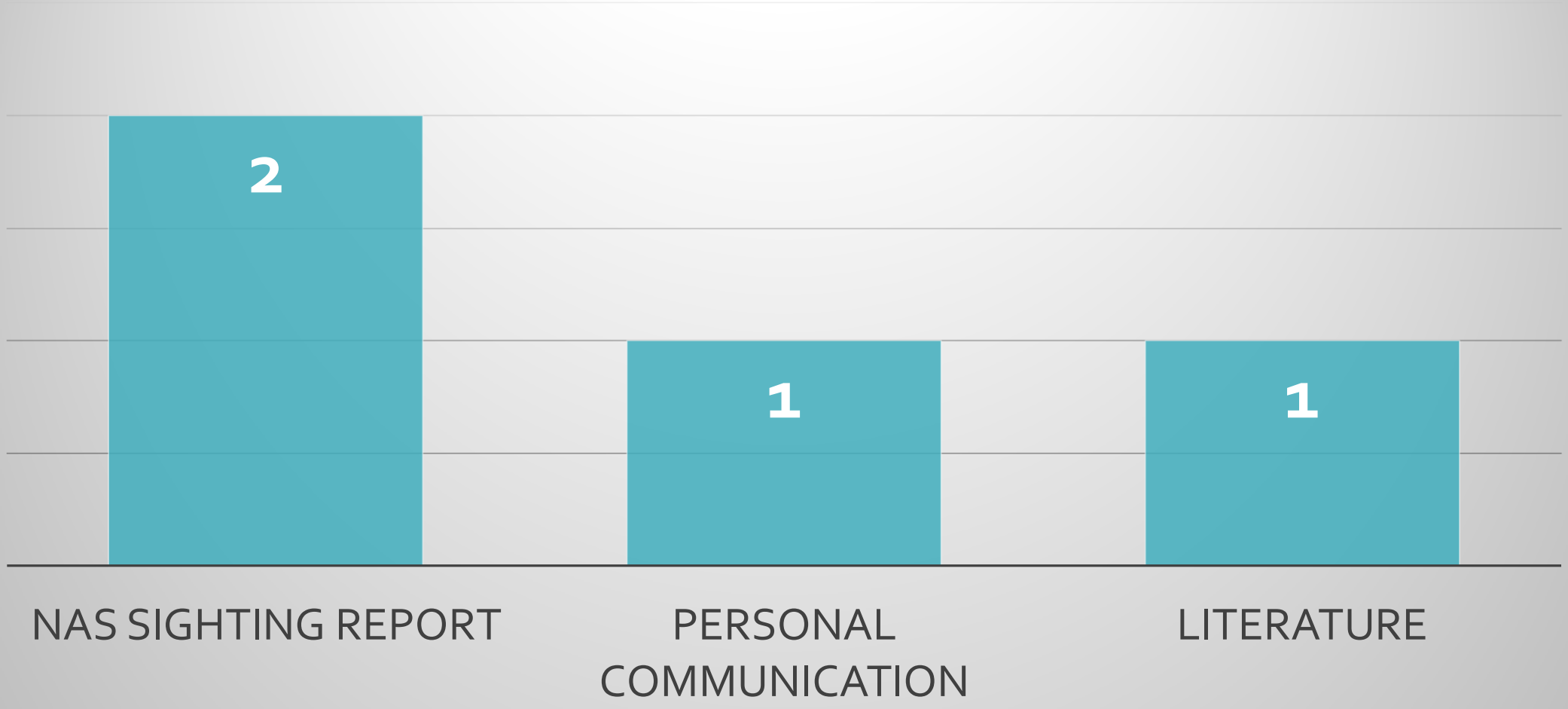

New to St. Lawrence County

One fish caught

Stocked for sport or food

Likely established population

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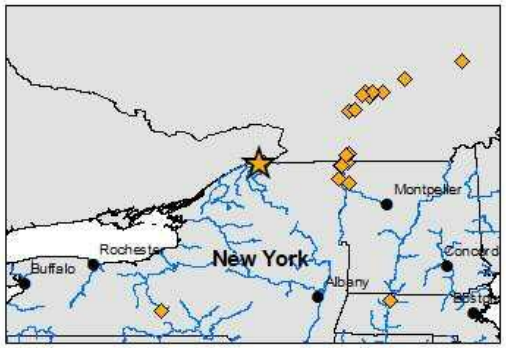
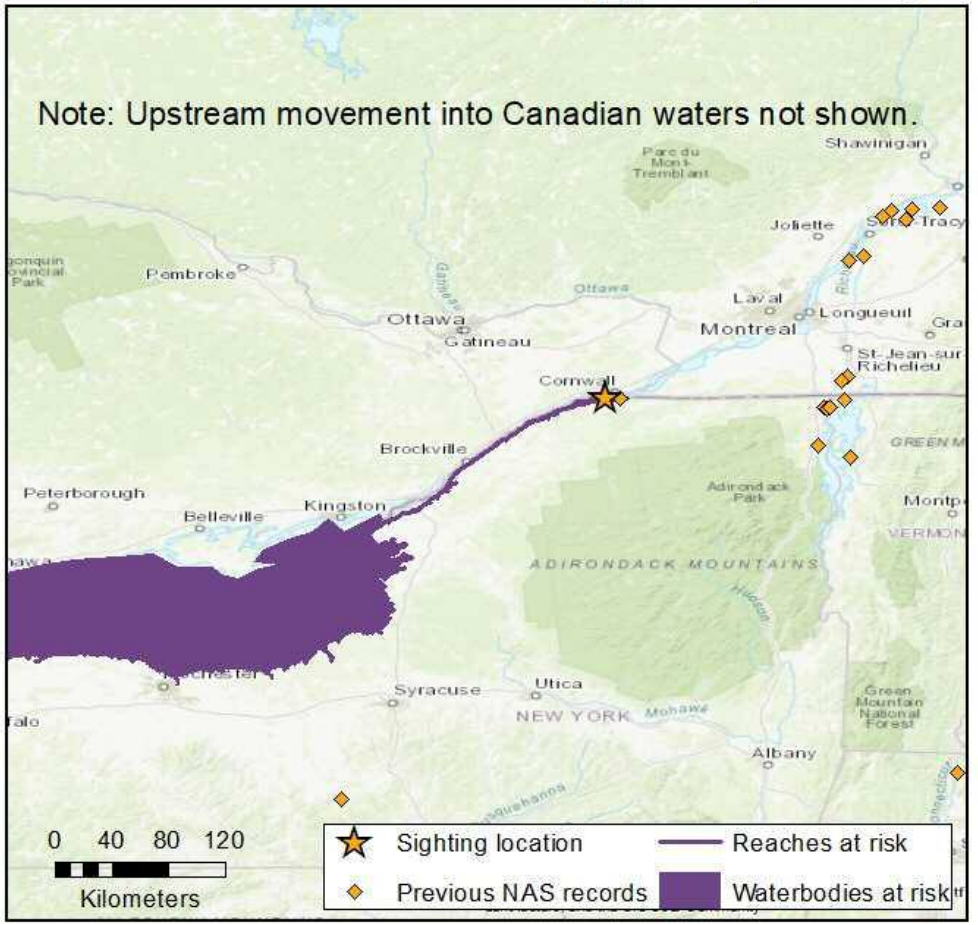
Specimen ID:	1635394
Species:	*Tinca tinca (Tench)*
Alert level:	County: St. Lawrence (NY);
Alert date:	03/24/2020
State:	New York
Locality:	St. Lawrence River, eastern tip of Barnhart Island
Latitude (N):	45.0013
Longitude (W):	-74.801
Collection date:	10/09/2019



Data Disclaimer: These data are preliminary or provisional and are subject to revision. They are being provided to meet the need for timely best science. The data have not received final approval by the U.S. Geological Survey (USGS) and are provided on the condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the data.

NAS Alert Risk Mapper (ARM)



The map shows waterbodies at short-term risk of invasion from the species sighting. The at-risk areas are determined by species mobility and drainage barriers (dams).

Not the first in the drainage, but not reported since 1974 in Central Park

One collected, but status unknown

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Specimen ID:	1633884
Species:	*Cipangopaludina sp. (mysterysnail)*
Alert level:	County: Kings (NY); Drainage: Southern Long Island (2030202)
Alert date:	01/06/2020
State:	New York
Locality:	[Prospect Park Lake] in prospect park near the boathouse
Latitude (N):	40.6611
Longitude (W):	-73.9654
Collection date:	08/24/2019

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Specimen ID	1633794
Group	Plants
Genus	Typha
Species	laxmannii
Common Name	graceful cattail
State	NY
County	Dutchess
Locality	Vassar College Farm, near Casper Creek
Mapping Accuracy	Accurate
HUC8 Name	Hudson-Wappinger
HUC8 Number	02020008
HUC10 Name	Landsman Kill-Hudson River
HUC10 Number	0202000801
HUC12 Name	Twaalfskill Creek-Hudson River
HUC12 Number	020200080106
Map	
Collection Day	1
Collection Month	8
Collection Year	2019
Year Accuracy	Actual
Potential Pathway	planted ornamental | dispersed
Status	established

Eurasian native

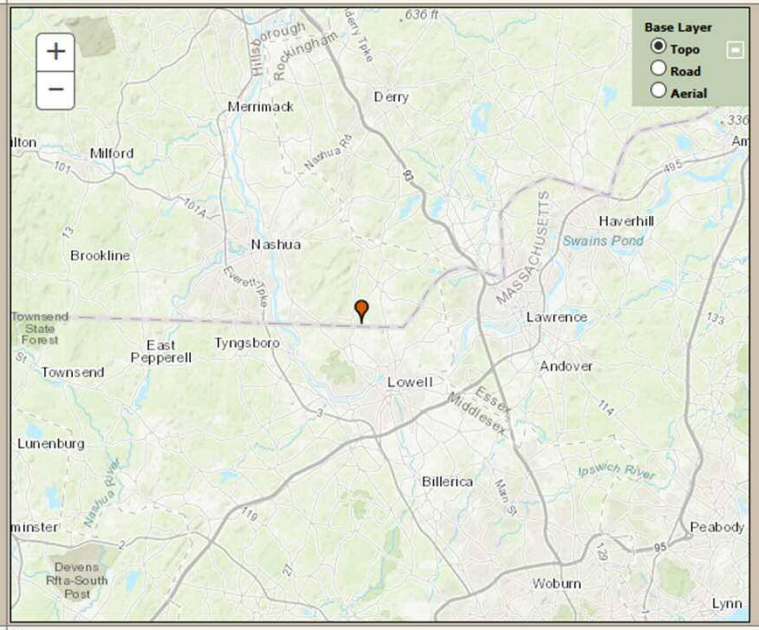
Relatively new in the US; in Wisconsin since 2017

Found in online trade; likely ornamental escapee

Usually in ditches, retention ponds, and now experimental farms

whorl of traps with prey - Lubomir Adamec

turions at Fort A.P. Hill, VA - Robert Floyd, ENRD

Specimen ID	1634530
Group	Plants
Genus	Aldrovanda
Species	vesiculosa
Common Name	waterwheel plant
State	NH
County	Hillsborough
Locality	[coordinates obscured to hide population]
Mapping Accuracy	Accurate
HUC8 Name	Merrimack River
HUC8 Number	01070006
HUC10 Name	Stony Brook-Merrimack River
HUC10 Number	0107000612
HUC12 Name	Lower Beaver Brook
HUC12 Number	010700061205
Map	
Collection Day	15
Collection Month	11
Collection Year	2019
Year Accuracy	Actual
Potential Pathway	planted
Status	established
Comments	Potentially present since July 3rd 2016.

Aldrovanda vesiculosa - Lubomir Adamec

Globally endangered in Eastern Europe and extirpated from most of Asia and Western Europe.

Established populations in VA (1990), NJ (1999), & NY (1999)

Found in online trade
Likely ornamental escapee or stocked for hobbyists

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Flood and Storm Tracker (FaST)

- Flooding during storm and hurricane events has the potential to transport nonindigenous aquatic species.
- As part of the EDRR system, the NAS program is interested in alerting managers of these possible new introductions.
- Help natural resource managers determine potential new locations for individual species, or to develop a watchlist of potential new species within a watershed.

NAS.ER.USGS.GOV/VIEWER/FLOODING

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Query

Hurricane Sandy - Historic map

Click on a drainage in the map or select a species from below.

Select a species:

Oriental Weatherfish (Misgurnus anguillicaudatus)

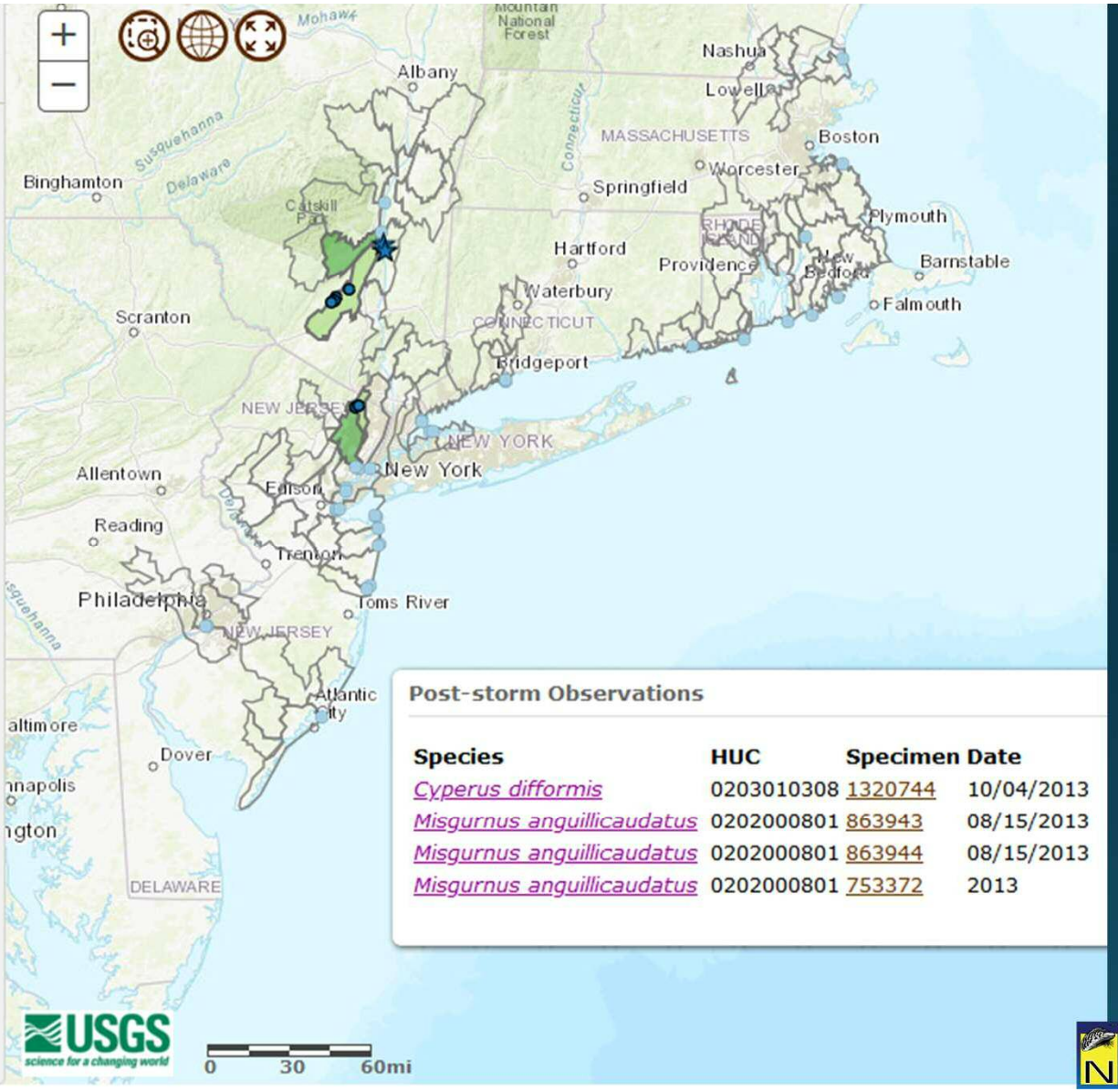
Map updated 03/03/2020

Misgurnus anguillicaudatus
Oriental Weatherfish
Fishes
Exotic
View Species Profile

- Present in watershed
- Potential spread due to flooding
- Connection points
- Pre-storm Species Observations
- Post-storm Species Observations

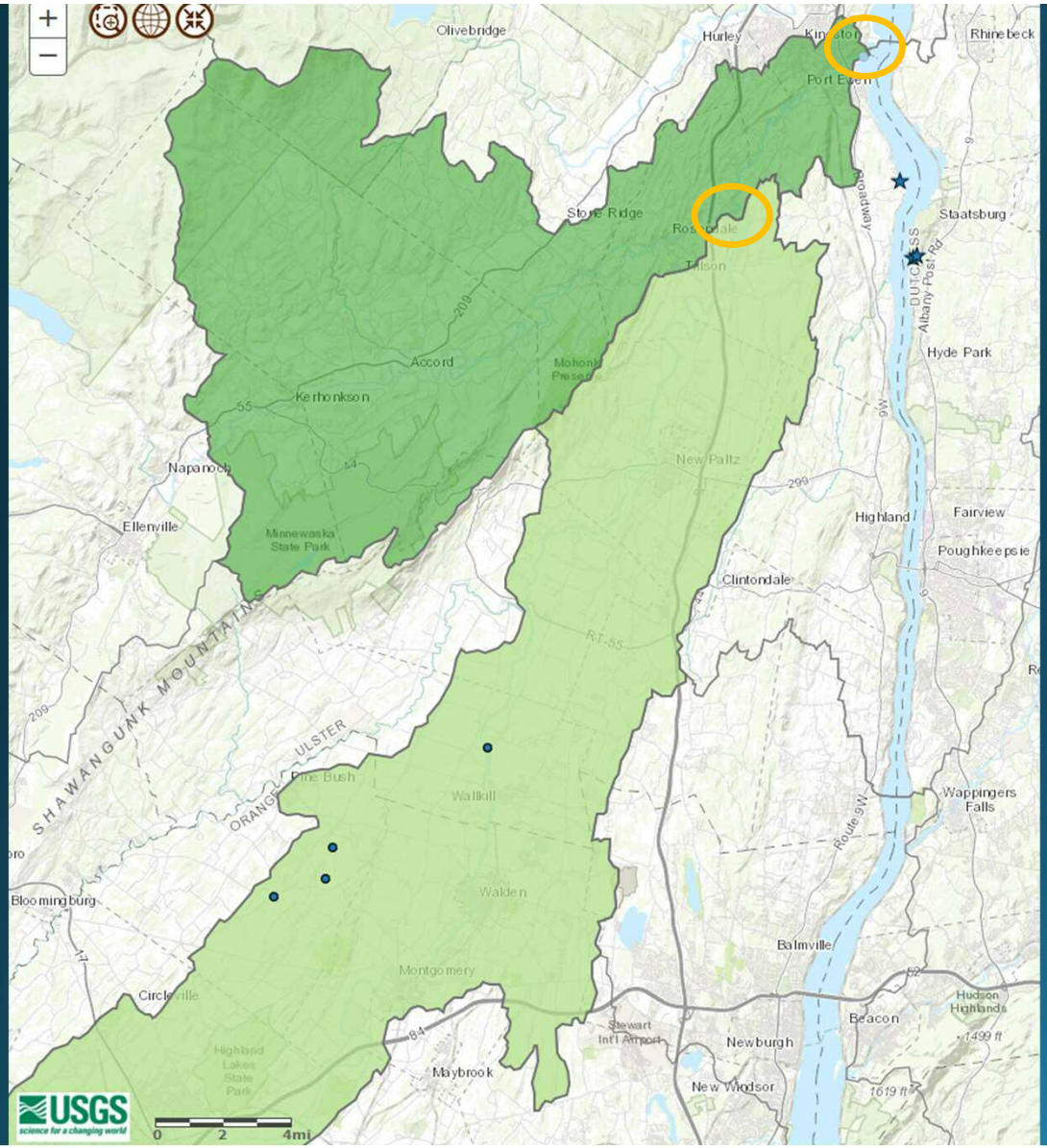
View List of All Post-storm Observations

Suggested Citation:
Pfingsten, I.A., Daniel, W.M., and Neilson, M.E., 2020, Hurricane Sandy - Historic Flood and Storm Tracker map: U.S. Geological Survey, Nonindigenous Aquatic Species Program, Gainesville, FL, https://nas.er.usgs.gov/viewer/Flooding/Sandy.aspx, Revision Date: 03/03/2020, Access Date: 04/28/2020.



Post-storm Observations

Species	HUC	Specimen	Date
Cyperus difformis	0203010308	1320744	10/04/2013
Misgurnus anguillicaudatus	0202000801	863943	08/15/2013
Misgurnus anguillicaudatus	0202000801	863944	08/15/2013
Misgurnus anguillicaudatus	0202000801	753372	2013



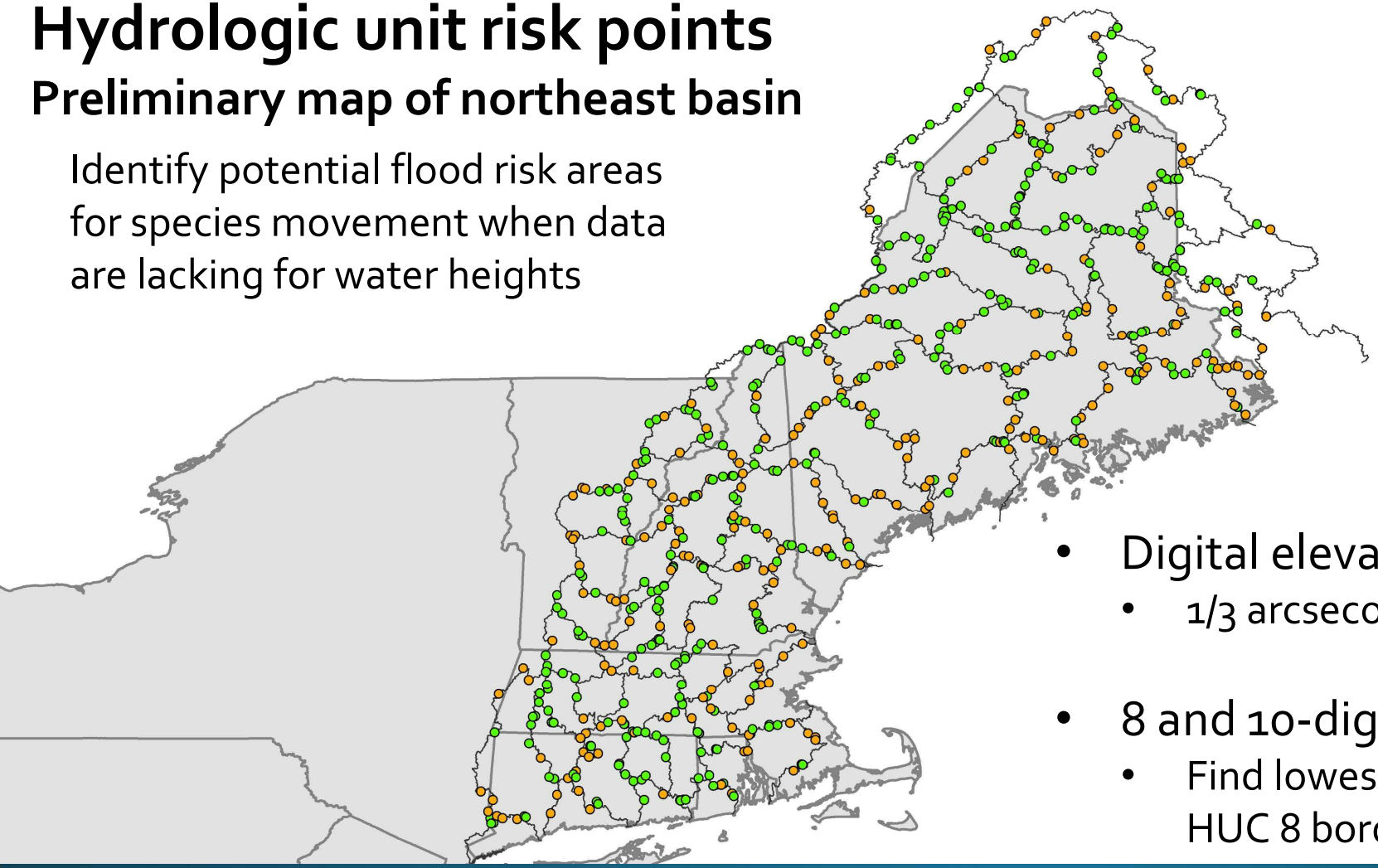
"Recent large flooding events may be responsible for what appears to be accelerated dispersal of this species throughout these watersheds via climate change, which has been implicated as the driving force behind the increased prevalence of large storm systems along the east coast." – Scott Wells, NY DEC

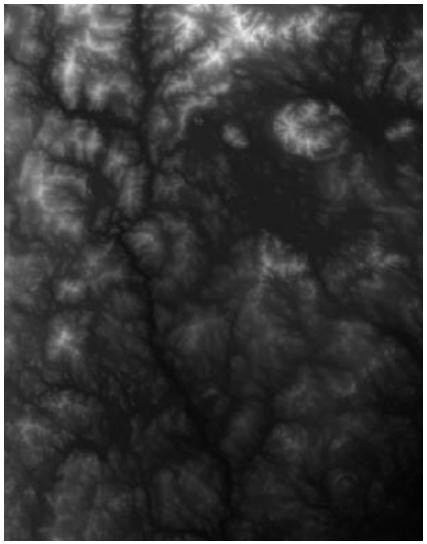
Wells, S. 2014. Monitoring feral Oriental Weatherfish infestations in New York state. American Currents 39(3):18-21

Hydrologic unit risk points

Preliminary map of northeast basin

Identify potential flood risk areas for species movement when data are lacking for water heights

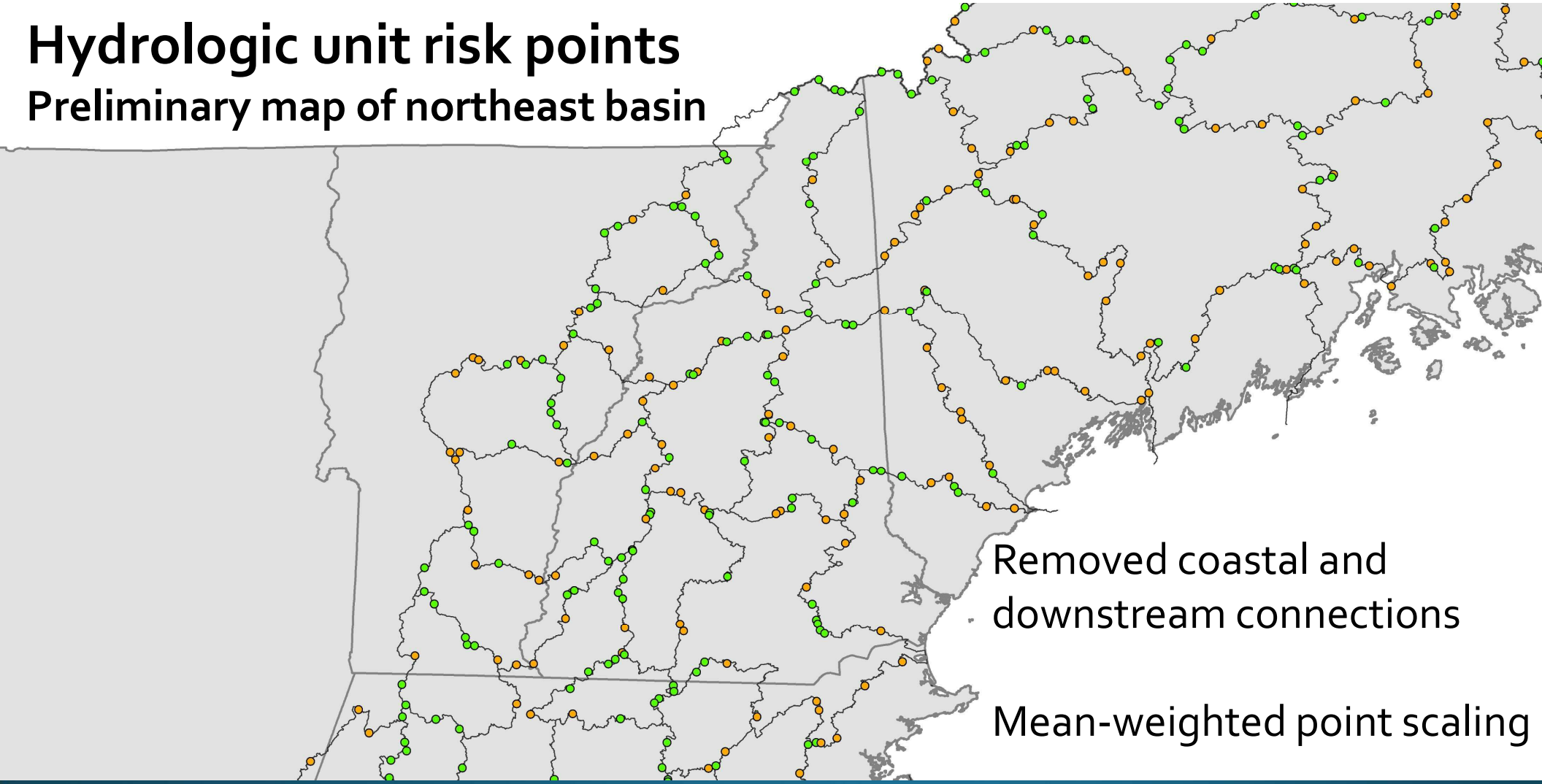




- Digital elevation models
  - 1/3 arcsecond (~10 m)
- 8 and 10-digit HUCs
  - Find lowest point along HUC 8 border

Hydrologic unit risk points

Preliminary map of northeast basin

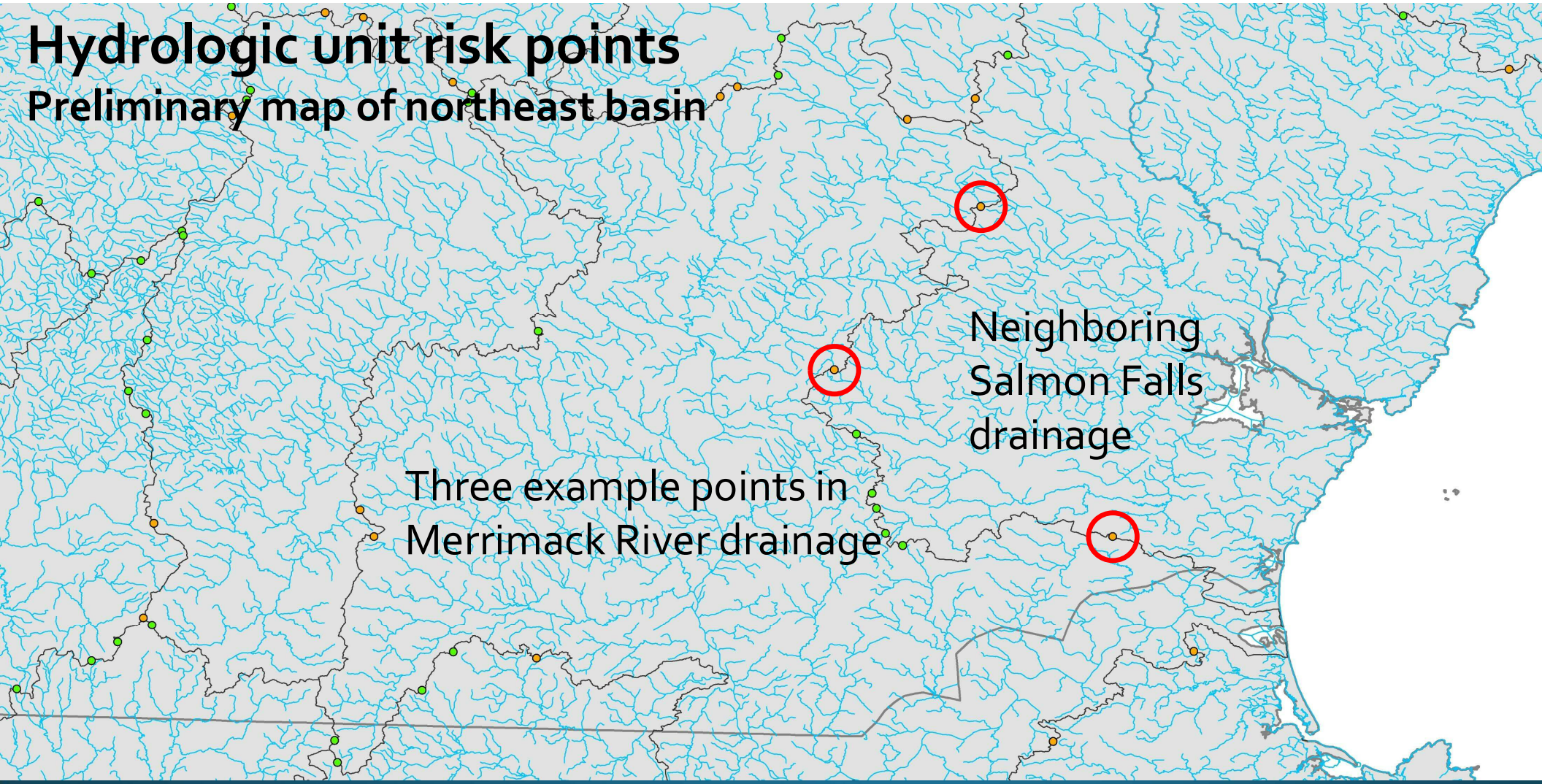


Removed coastal and downstream connections

Mean-weighted point scaling

Hydrologic unit risk points

Preliminary map of northeast basin



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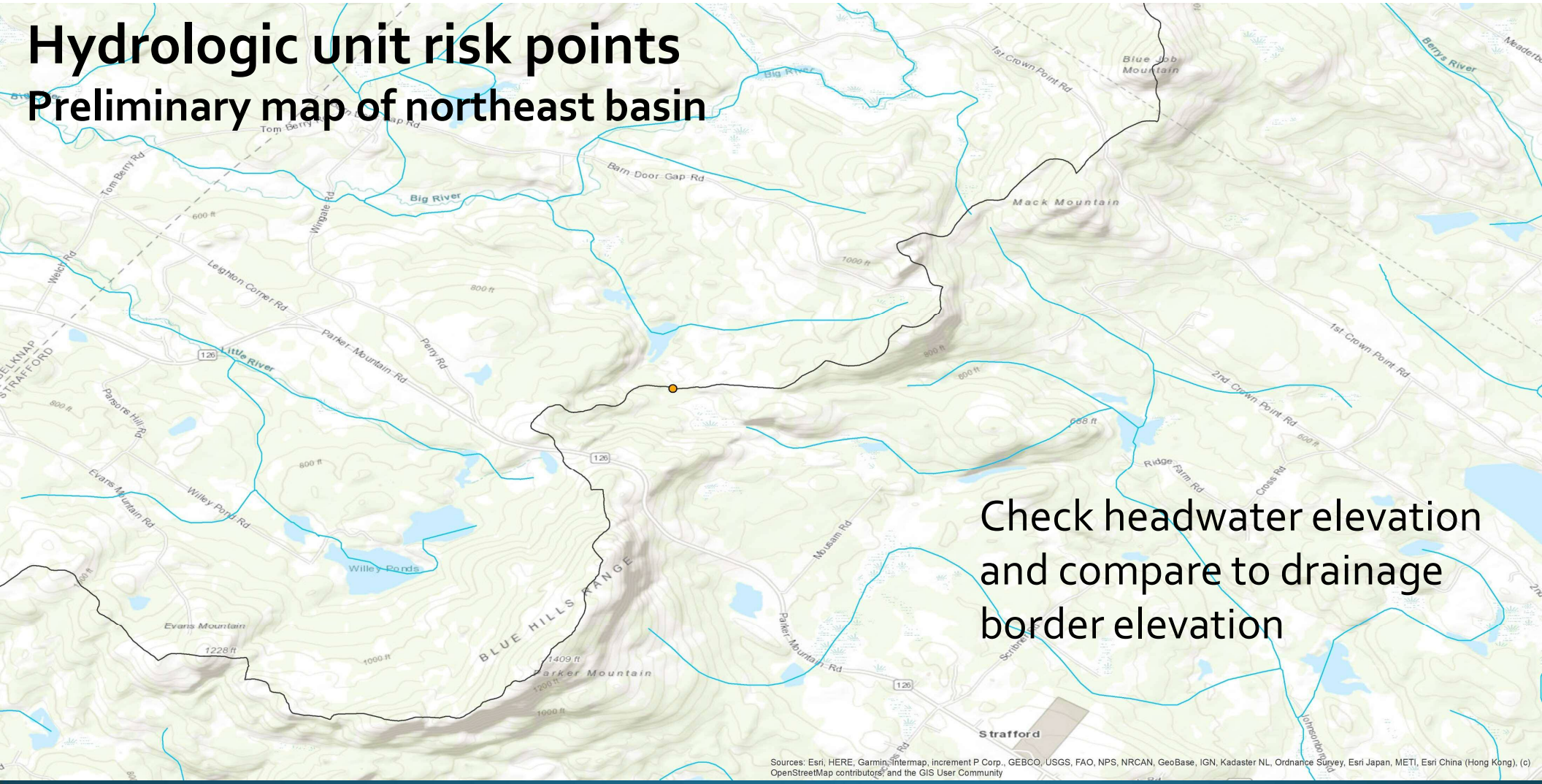
Hydrologic unit risk points

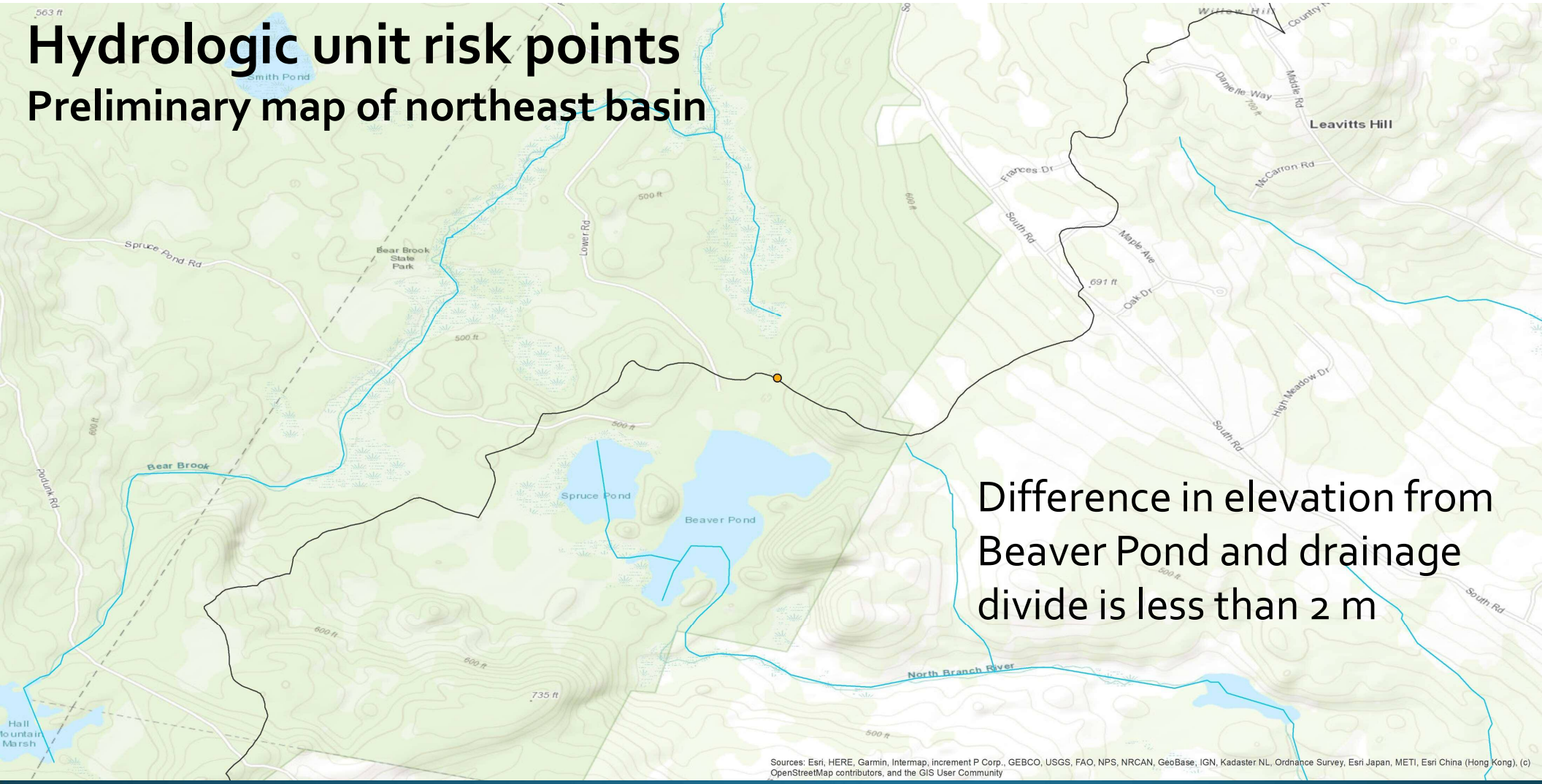
Preliminary map of northeast basin



Check headwater elevation and compare to drainage border elevation

Hydrologic unit risk points

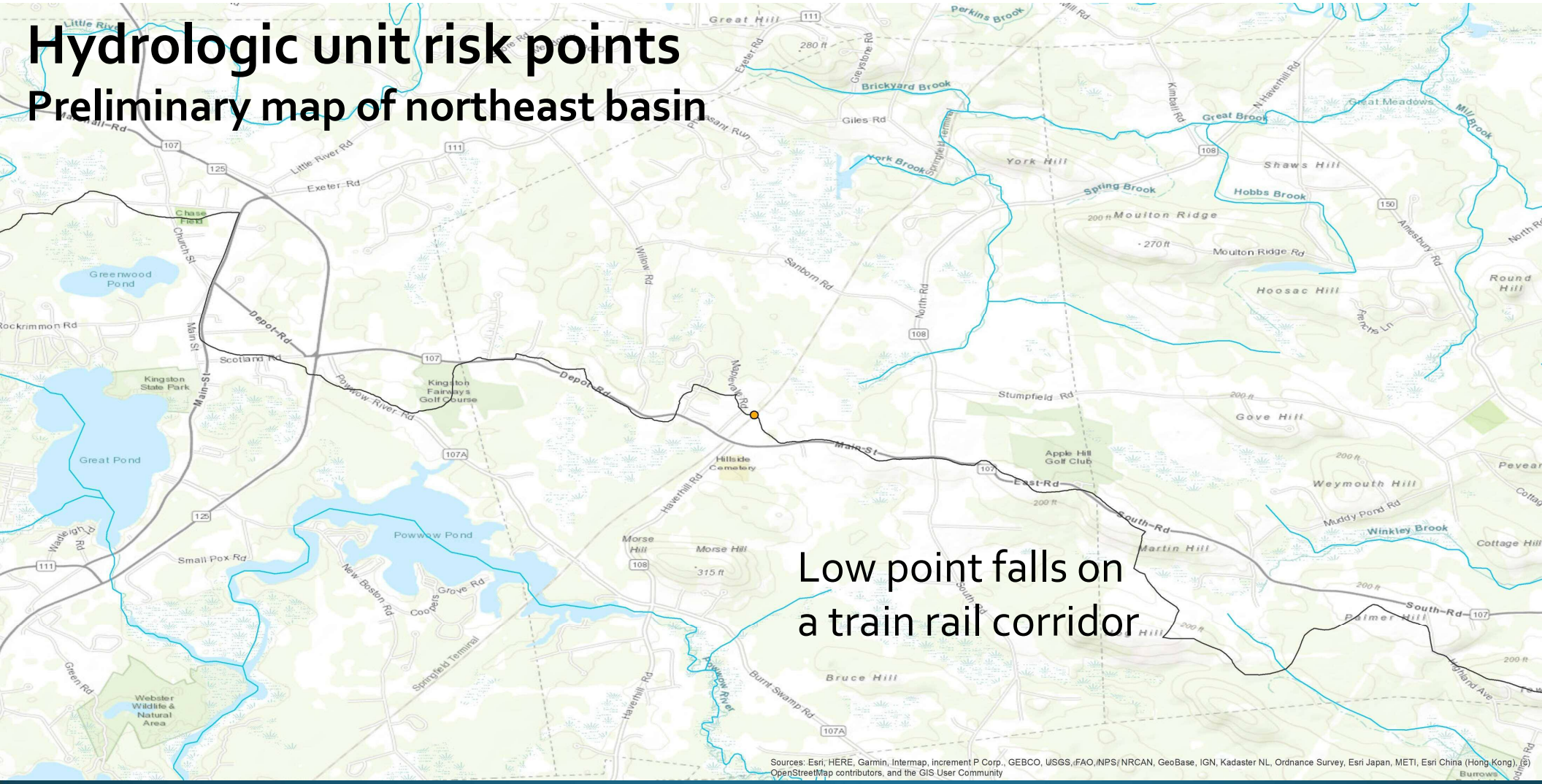
Preliminary map of northeast basin



Difference in elevation from Beaver Pond and drainage divide is less than 2 m

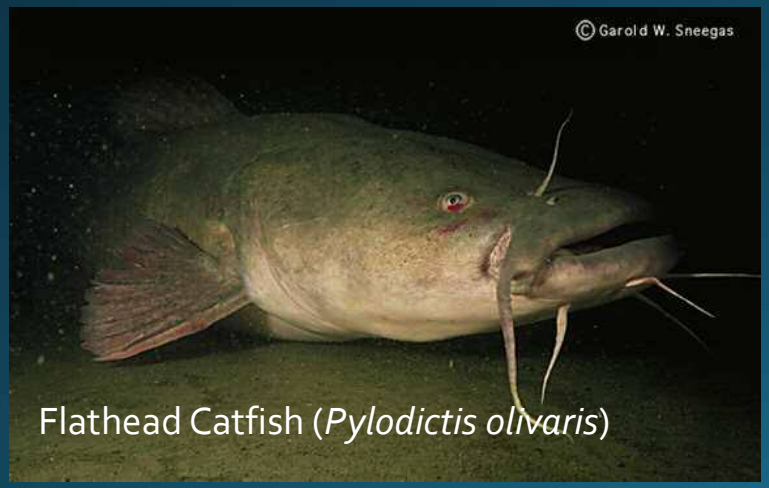
Hydrologic unit risk points

Preliminary map of northeast basin



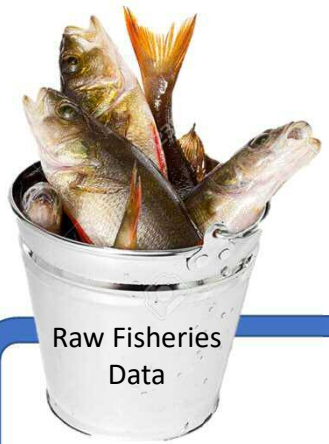
SEINeD tool live as of May 4th!

- The Screen and Evaluate Invasive and Non-native Data (SEINeD) tool will allow stakeholders to upload a biological dataset collected anywhere in the conterminous US, Alaska, Hawaii, or US Territory that can be screened for invasive or non-native aquatic species occurrences.

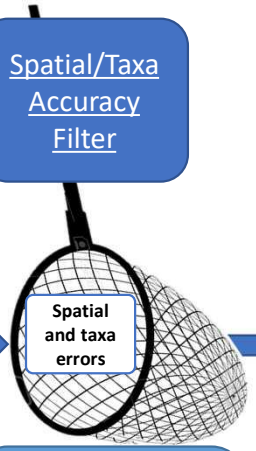


Flathead Catfish (*Pylodictis olivaris*)

SEINeD Tool



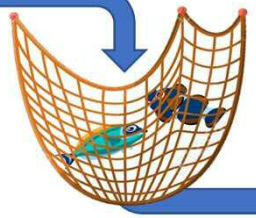
Spatial/Taxa Accuracy Filter



Check the spatial accuracy of the sighting location

- Based on user provided state and county information

Native Status Filter



Check the indigenous status of the species at the sighting location

- Native ranges developed for USGS NAS and CSAS's Aquatic Gap

Data Enhancement

Provide additional spatial information about the sighting location

- Hydrologic Unit Codes (HUCs)
- National Hydrography Dataset (NHDPlusV2

Data returned to user

Species	Latitude	Longitude	State	County
Noturus insignis	39.59	-77.82	MD	Washington
Micropterus salmoides	39.59	-77.82	MD	Montgomery
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Species	Latitude	Longitude	State	County	Taxa error	Spatial error	Non-native	HUC 8 (Number)	HUC 8 (Name)
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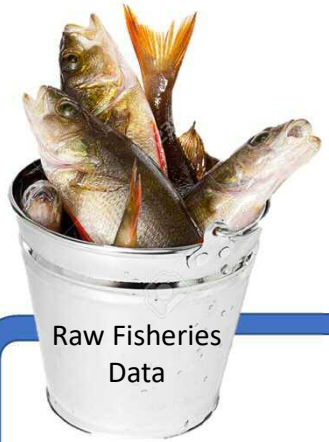
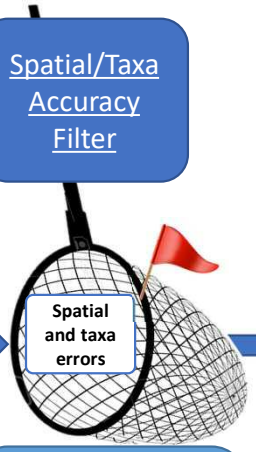


Raw Fisheries Data

Spatial/Taxa Accuracy Filter



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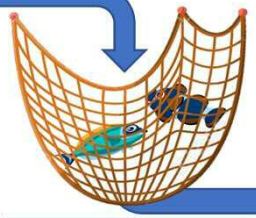

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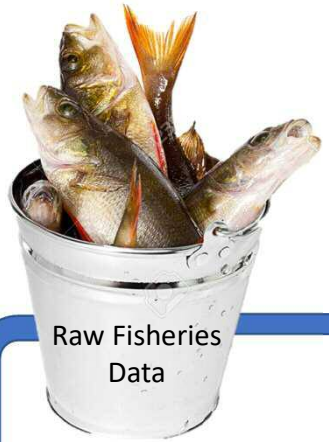

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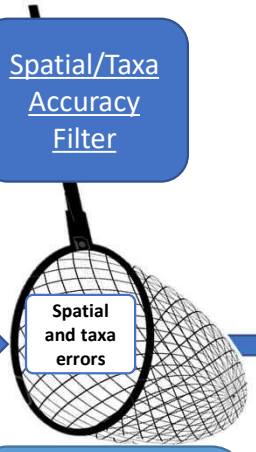

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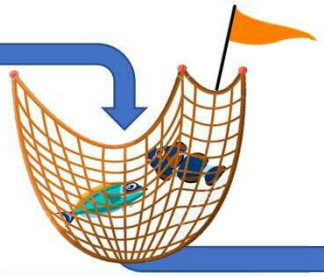

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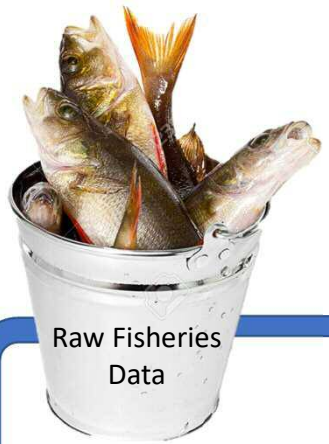

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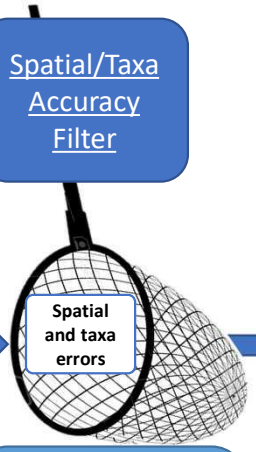

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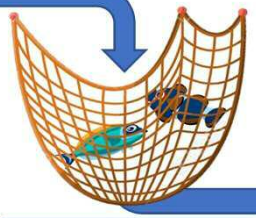

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eDNA NAS Webinar feedback

- We received an overwhelming amount of support for the eDNA work.
- 166 people RSVP'd to the seven webinars.

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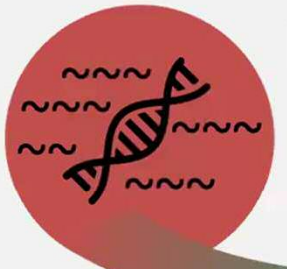
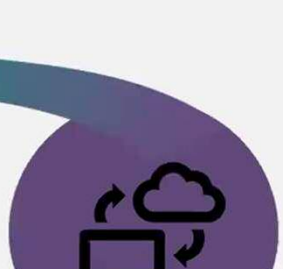


1 Experimental Standards

- Environmental DNA literature review
- Establish standard criteria regarding:
  - Sampling design and collection
  - Laboratory processing
  - Data analysis

2 Stakeholder Backing

- Review of criteria by a core contingent of stakeholders
- Input by eDNA Community of Practice
- Teleconferences to gain consensus
- Produce a white paper



3 Integration into NAS

- Community Standards
- Web submission form/ template
- Prototype web viewer (map)

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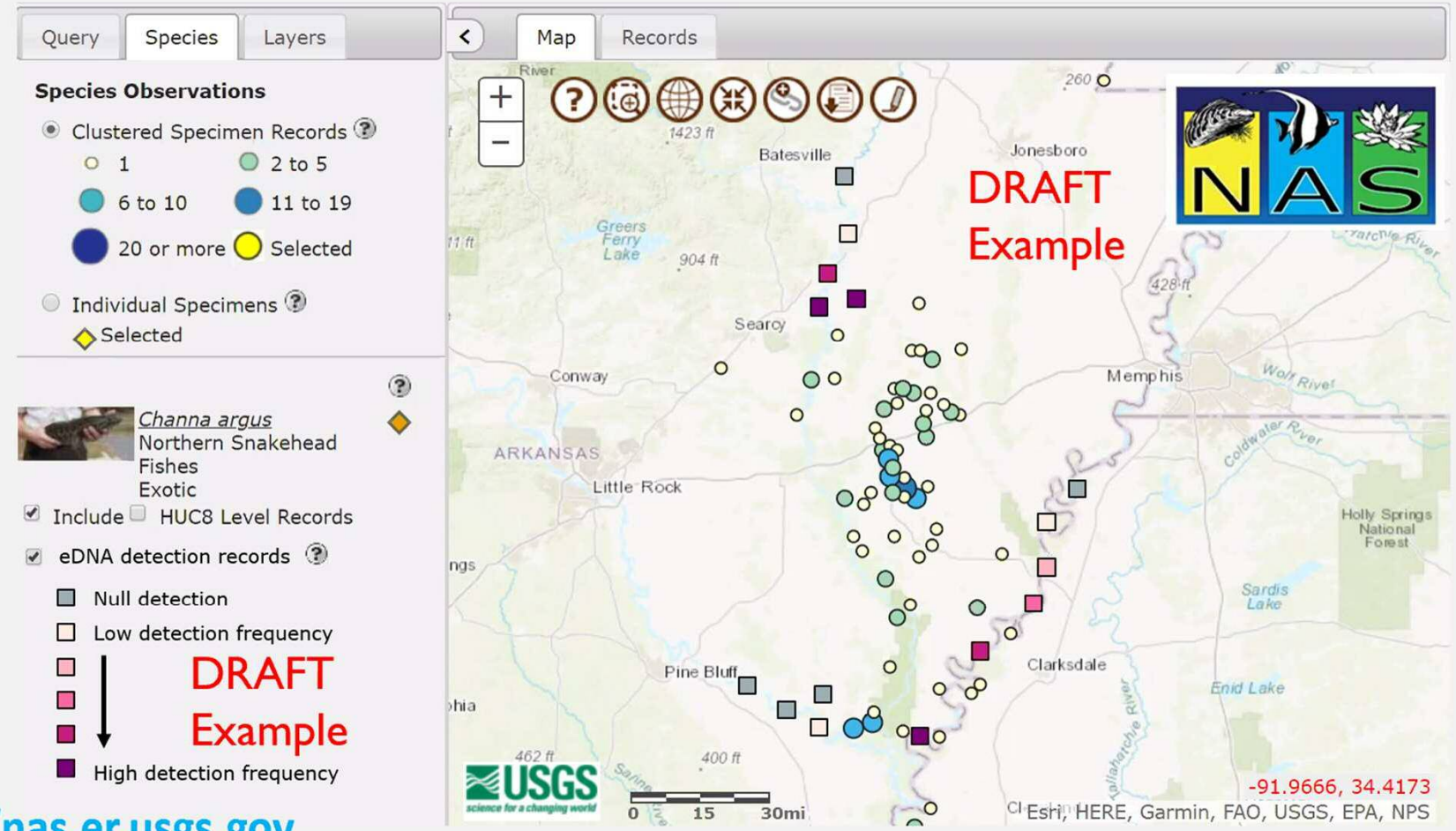
NAS DISTRIBUTION MAP MOCK-UP



https://nas.er.usgs.gov

eDNA in the NAS Database

- The next step is underway, where we have invited nine additional eDNA experts from outside DOI (federal and university scientists) to review the draft products.

- There will be an option for the panels to review the draft products in the 3rd round of reviews in early June.

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Purple loosestrife along the Allegheny River – Ian Pfingsten, USGS 2019

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