

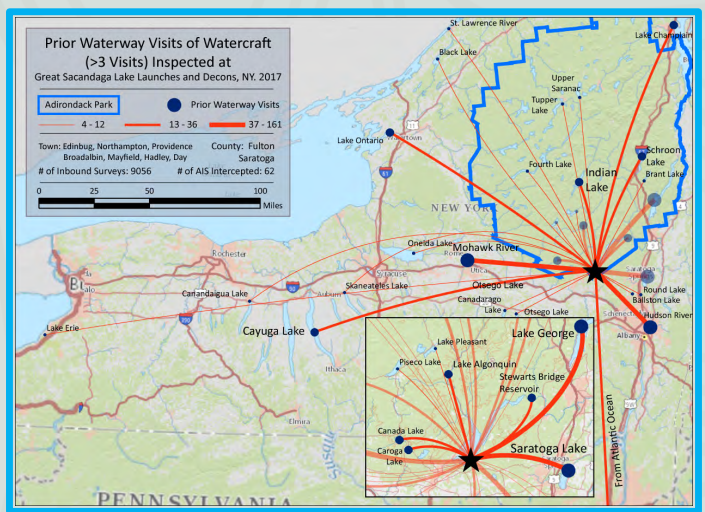
Aquatic Invasive Species Spread Prevention in the Adirondacks & Lake Champlain

Good Data Drives the Program

Mid Atlantic Panel on AIS

Mid-Atlantic States Lake Forum, Annapolis, MD, 4/9/19

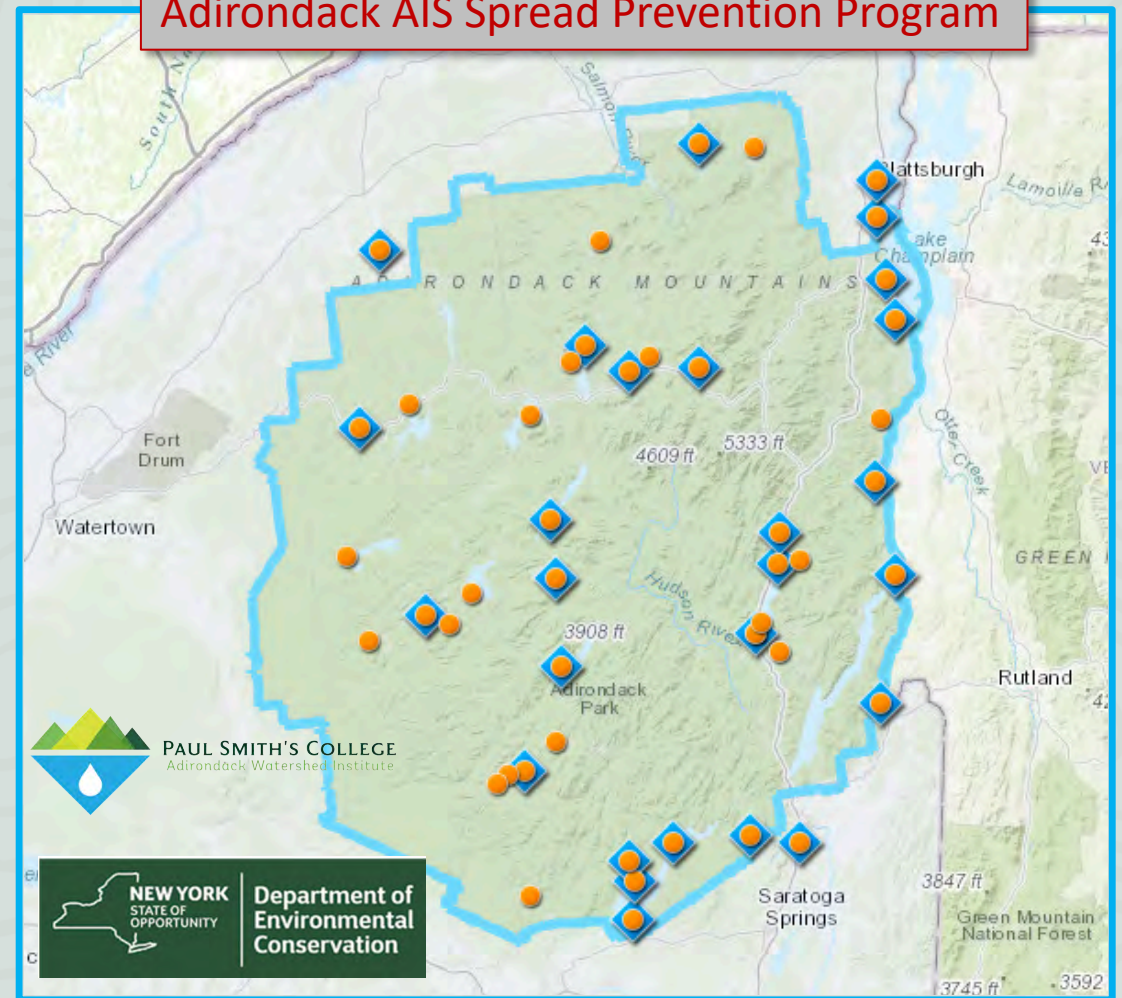
Dr. Eric Holmlund, Paul Smith's College



Overview of presentation

- *Adirondacks*
- *The “Data – Base”*
- *Data → Program Design*
- *Drill Down Data*
- *Lessons Learned*

Adirondack AIS Spread Prevention Program







Adirondacks as Setting for AIS Prevention

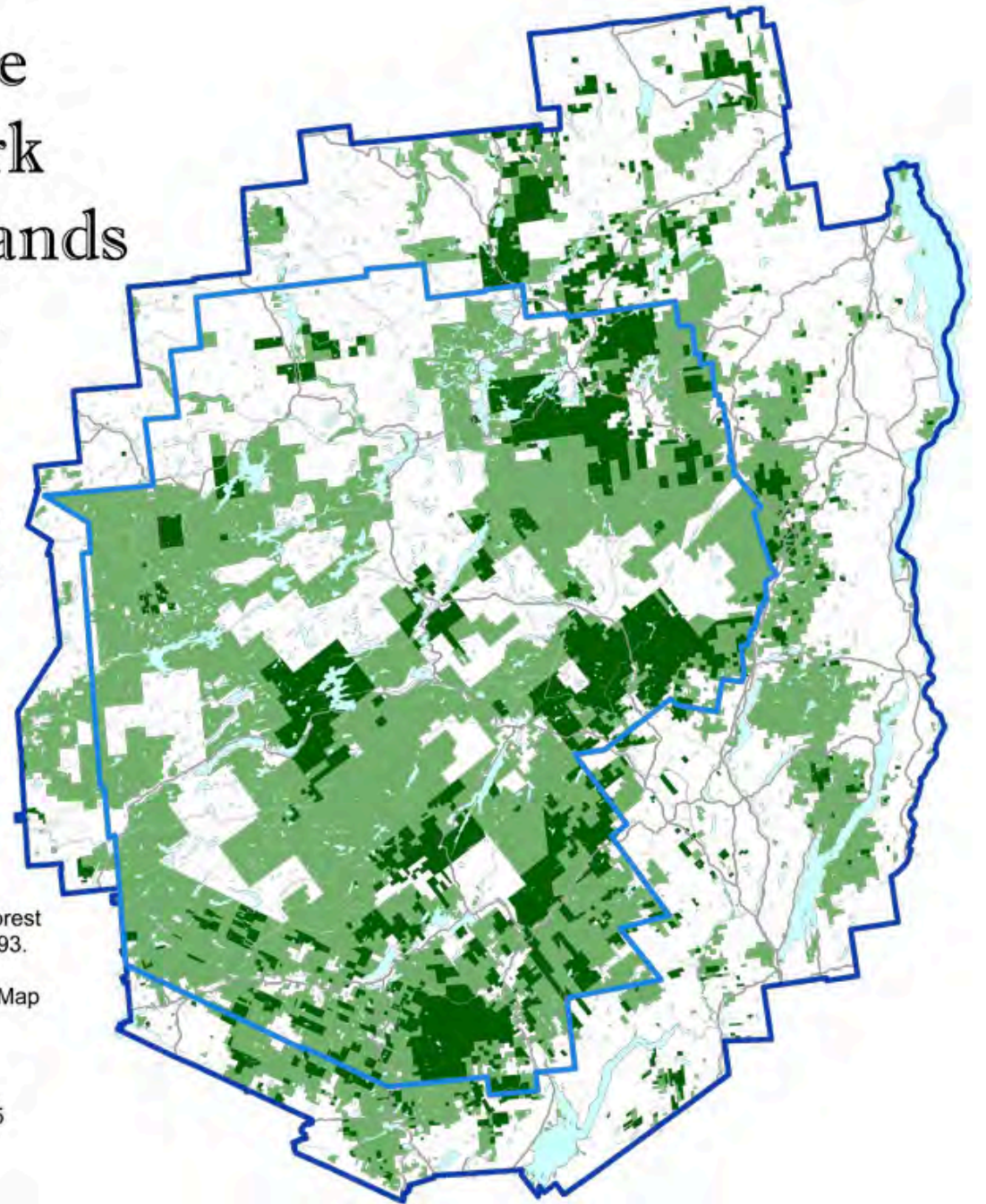


PAUL SMITH'S COLLEGE
Adirondack Watershed Institute



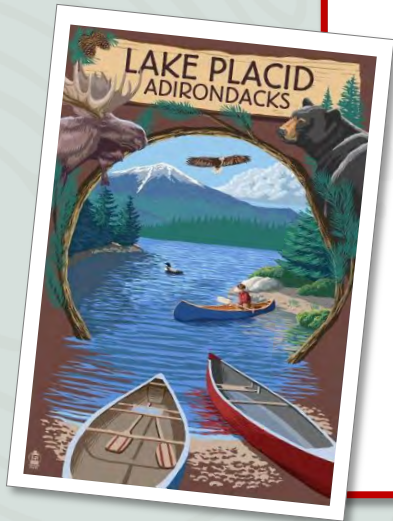
New York State Adirondack Park Forest Preserve Lands 1892 and 2014

-  1892 Adirondack Park Blue Line
-  2014 Adirondack Park Blue Line
-  1892 Forest Preserve Lands
-  2014 Forest Preserve Lands



1892 data compiled from the Map of the Adirondack Forest and Adjoining Territory, State Forest Commission, 1893.

2014 data compiled from Adirondack Park State Land Map by the NYS Adirondack Park Agency Geographic Information Services.



**Adirondack
Park Agency**

February 2015

Endless Lakes and Mountains

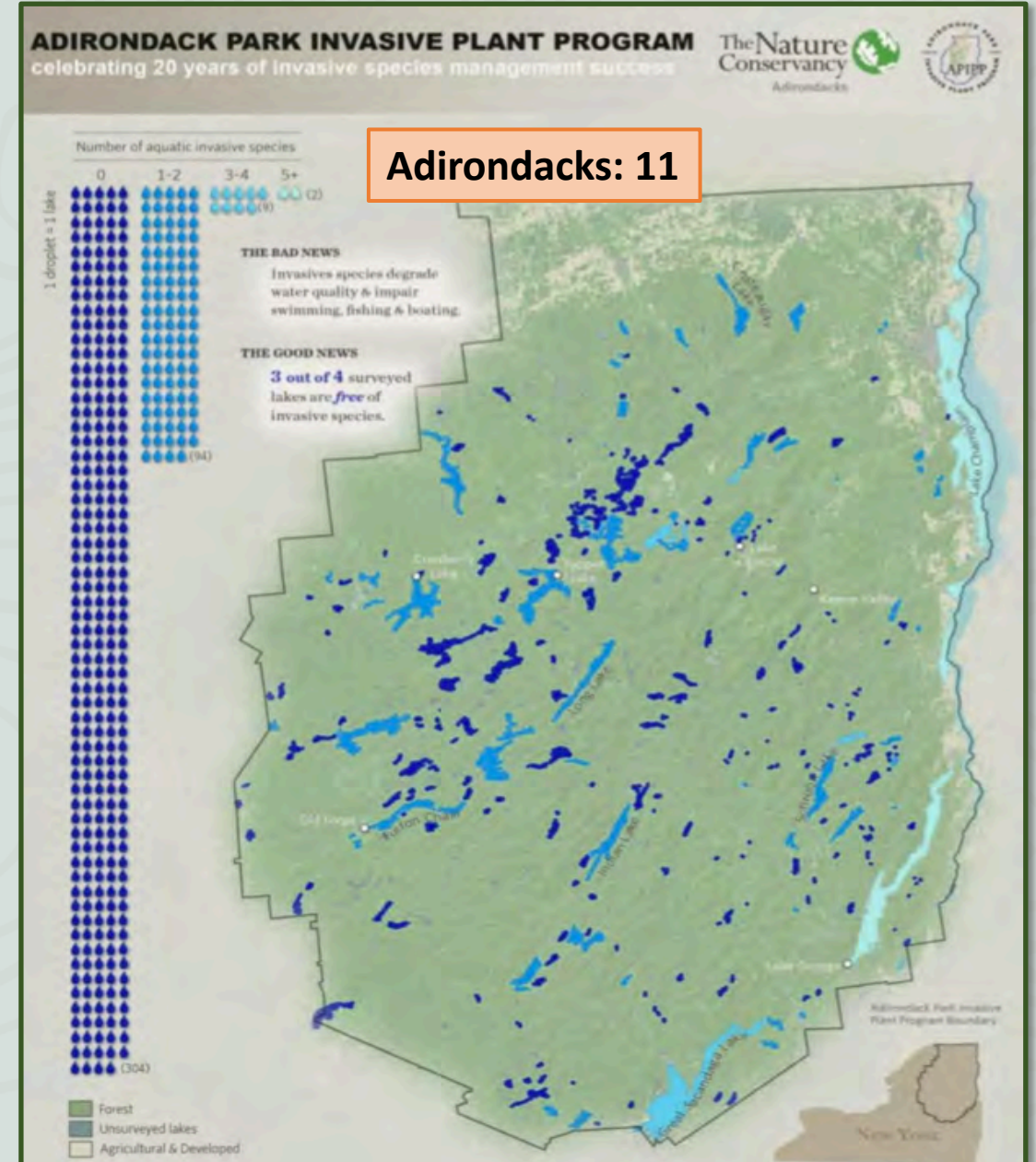
- 140,000 residents
- Size of entire state of Vermont – sparsely populated (2.4 m hectares)
- Largest wilderness area east of Mississippi (400,000 hectares of designated wilderness)
- 57% private land – regulated to protect forest and water
- 3,000 lakes and ponds



Adirondacks and Aquatic Invasive Species (AIS)

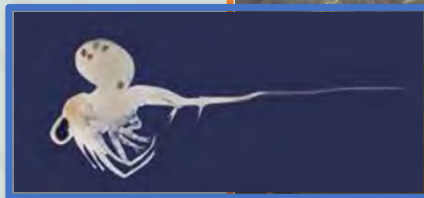


DATA SOURCE: UVM, LCBP, Lake Champlain Sea Grant, Great Lakes Environmental Research Laboratory, Lafontaine and Costan 2002, and Stroyer 2012. Lake Champlain data current as of 2014.



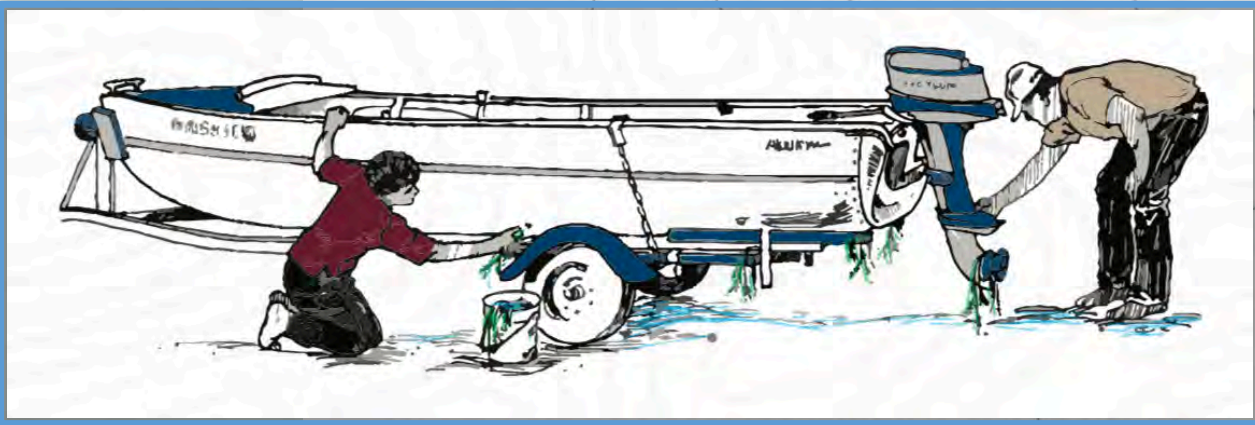
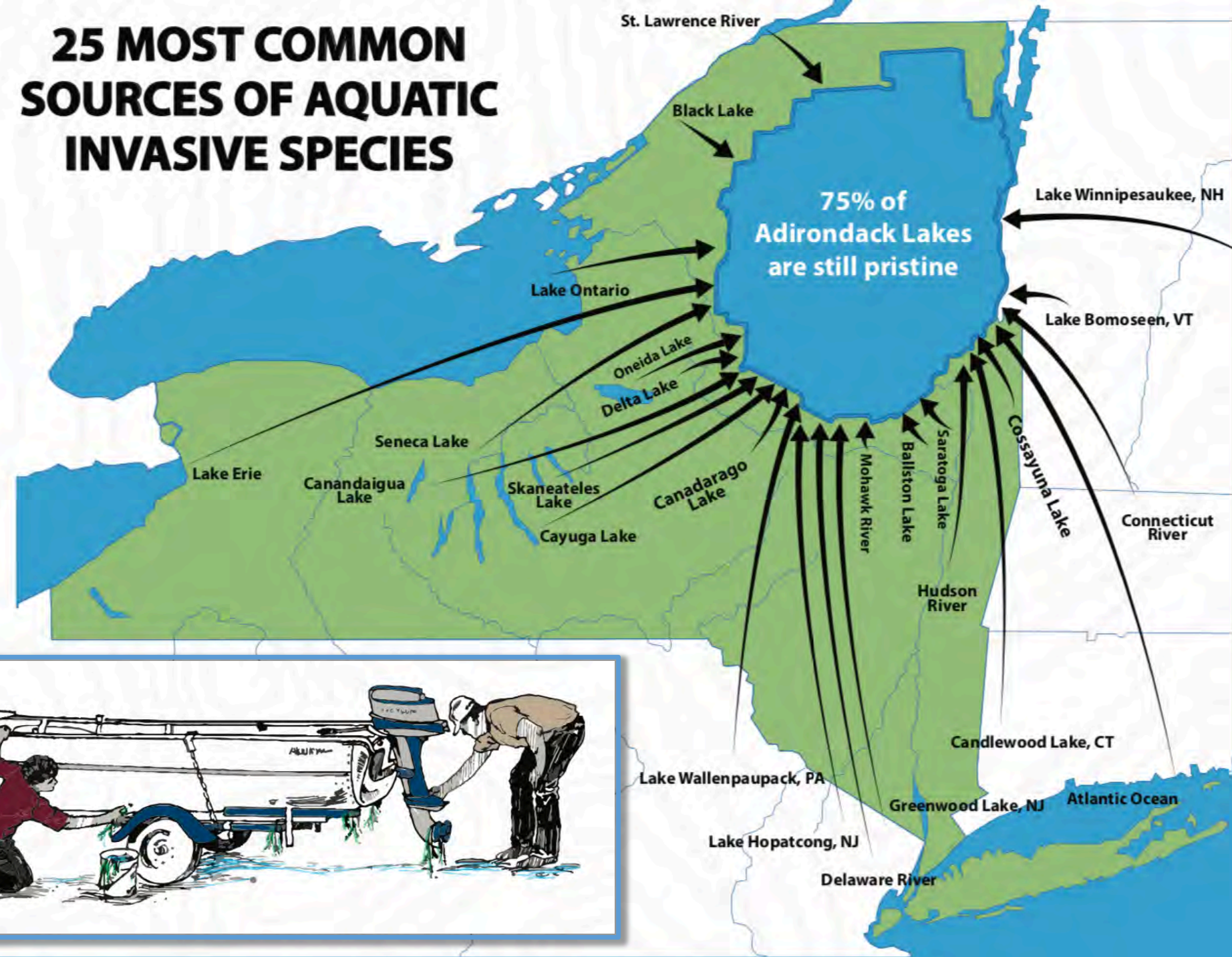
AIS and the Adirondacks

- Key species: Eurasian watermilfoil (*Myriophyllum spicatum*)
- Water chestnut (*Trapa natans*)
- Zebra Mussels (*Dreissena polymorpha*)
- Spiny waterflea (*Bythotrephes longimanus*)
- Property damage (\$)
- Recreation impact ☹️
- Loss of business (\$\$)



25 MOST COMMON SOURCES OF AQUATIC INVASIVE SPECIES

Coming to a lake near you this summer!



Building a program on a Data-Base

The data we collect makes the case



Friends? Sure! Then get the data!

- Build a relationship first, but it doesn't end there...
- AWI program started with one lake in 2000
- Key question: “Where did you last use this boat?”



Friends? Sure! Then get the data!

- The rest – observable data
- Boat type, results of inspection, state of origin, etc.
- Then, the program grew – other lakes wanted the same data



Value of multiple lakes in system

- Ever more important as we look at lakes as an interconnected system (2013) →
- Led to a white paper (2014) →



Value of multiple lakes in system

- Ever more important as we look at lakes as an interconnected system (2013) →
- Led to a white paper (2014) →
- Led to NYS transport law! (2016)



New York State AIS Transport Law

- Passed in 2016
- Applies to any boat launch accessing public waters in New York State
- No person shall launch without taking reasonable precautions to prevent the spread of AIS
- Precautions = Cleaning, Draining, Drying their boat or floating dock
- 4 penalties: warning, \$150 fine, \$250 fine, up to \$1000 fine
- Enforcement? Good question!



**STOP AQUATIC
HITCHHIKERS!™**

Be A Good Steward.
Clean. Drain. Dry.

StopAquaticHitchhikers.org

Stop the Transport of Invasive Species:

- **CLEAN** boots, gear, boat, trailer & vehicle of plants, fish, animals & mud.
- **DRAIN** bilge, ballast, wells & buckets before you leave the area.
- **DRY** equipment before launching watercraft into another body of water.

Data → Tools and Teeth

- Tools: boat stewards and Decon units
- Teeth: NYS AIS Transport law
- Data leads to tools, and documents need for teeth
- Link 'em
- Tell 'em to the state
- Makes the case for the program



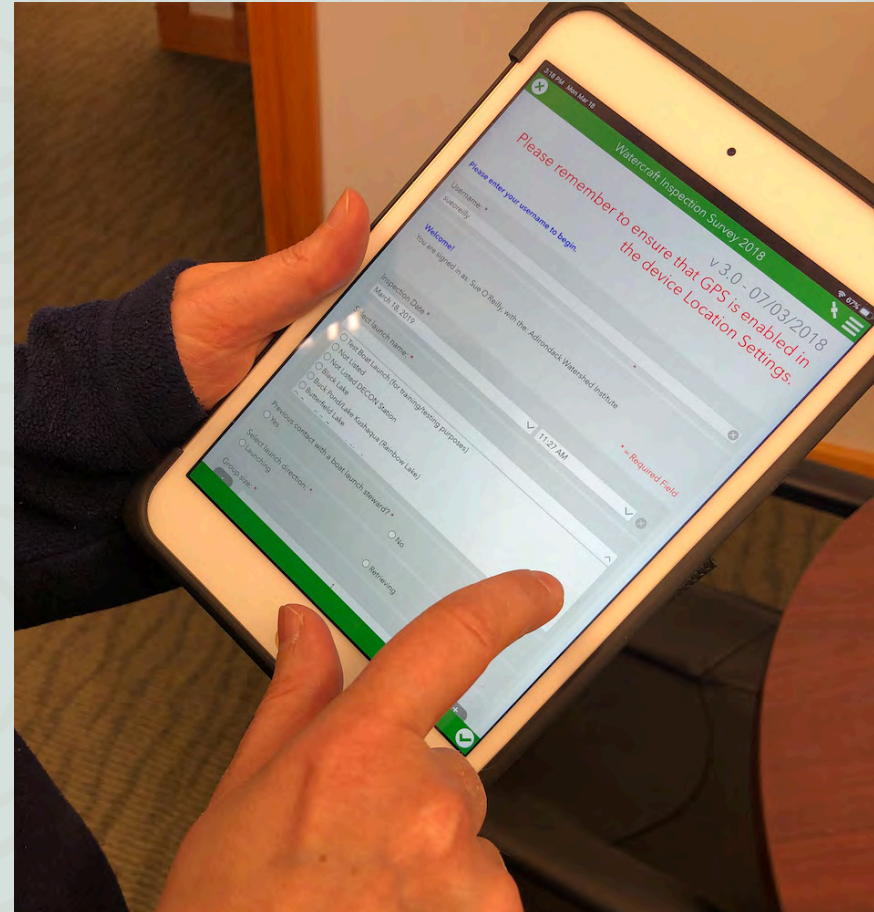
Data intake – Ensuring quality

The data we collect makes the case



WISPA me a secret...

- Tablet-based survey
- Or smart phone
- Wireless upload
- Daily download for QA
- NYS standard data collection protocol – adapted from AWISP protocol



iPad 11:55 AM 73%

Watercraft Inspection Survey 2018

Welcome!
You are signed in as: Sue O'Reilly, with the: Adirondack Watershed Institute

* = Required Field

Inspection Date *
September 3, 2018 11:54 AM

Select launch name: *
Paradox Lake

Previous contact with a boat launch steward? *
 Yes No

Select launch direction: *
 Launching Retrieving

Group size: *
1

Multiple watercraft in group: *
 Yes No

Select watercraft type: *
 Motorboat Kayak Canoe PWC Sailboat
 Rowboat SUP Windsurfer Barge

Total watercraft:
1

Primary activity: *
General Recreation and Recreational Fishing: privately owned watercraft not used for commercial purposes.
Commercial: fishing, tour, guide, etc.
Governmental: watercraft used by federal, state or local agency.

General Recreation
 Recreational Fishing
 Commercial
 Governmental

iPad 11:55 AM 73%

Watercraft Inspection Survey 2018

Boat registration state/province abbreviation code:
Note: Boat registration state/province abbreviation codes are not the same as state/province postal abbreviations. Please enter the two letters that appear on the watercraft.

Enter the LAST THREE DIGITS of boat registration number, if registered.
i.e. 3MK, 9GG, etc.

Were spread prevention measures taken? *
 Yes
 No
 No – because watercraft only goes in this waterbody
 First launch of the year (includes frozen boats)
 Boater does not know
 Boater would not answer
 Not Asked

Select prevention measures taken:
 Disposed Bait
 Drained Bait Bucket
 Drained Live Well
 Drained Bilge
 Dried Boat
 Inspected
 On-site Decontamination Station
 Washed Boat (water, soap, bleach, etc.)
 None
 Other

Is the boater aware of state [or provincial] regulations pertaining to AIS spread prevention? *
Note: This question refers to the regulations of the state or province where you are currently located.

Yes
 No
 Boater is uncertain
 Boater would not answer
 Not asked

Was the watercraft in water in the past 2 weeks? *

- Yes, In **Same** Waterbody As Connected To Boat Launch
- Yes, In **Different** Waterbody Than Connected To Boat Launch
- No
- Rented or Borrowed
- Unknown
- Not Asked

Did watercraft user agree to an inspection? *

- Yes
- No

Were any organisms detected? *

- Yes
- No

Select all species detected: *

- Asian clam
- Attached Debris (Mud, Grass, etc.)
- Bladderwort
- Brazilian elodea
- Brittle naiad
- Coontail
- Curly Leaf Pondweed
- Eel Grass
- Elodea
- Eurasian Watermilfoil
- Frog bit
- Hydrilla
- Native lily
- Native pondweed (Potamogeton spp)
- Not Listed
- Quagga Mussel
- Rusty crayfish
- Spiny/Fishhook Water flea
- Starry Stonewort
- Unknown
- Variable-leaf Milfoil
- Water Chestnut
- Zebra Mussel

Photo of invasive:



Photo of identifying parts of invasive:



Enter Sample ID#:

AWI-Specific Questions

Check to certify that you performed a complete inspection of all boat components present: hull, trailer, engine, anchor, equipment, bilge, and interior compartments. *

- Inspection completed
- Could not inspect

Did you refer the watercraft(s) for decontamination? *

- Yes
- No
- No, because the DECON station was closed

Decontamination Referral

What was the reason for decontamination referral?

- Standing Water/Damp Equipment
- Visible Attached AIS
- Suspected AIS (including non-verifiable water and unidentified organic material)
- Bait Treatment
- Courtesy Wash

Enter comments:



Saves! – The “rock stars” of data points

- Hero for the day!
- Count ‘em
- Track ‘em
- Link ‘em
- Tell ‘em to the papers
- Tell ‘em to the state
- Makes the case for the program



STEWARD NAME: JONATHAN FARAH

DATE: 5/26/2018

TIME: 1:55PM

LAUNCH NAME: LAKE PLACID VILLAGE

TYPE OF WATERCRAFT: MOTORBOAT

PREVIOUS WATERBODY:

BLACK LAKE (1 YEAR AGO)

LAUNCHING/RETRIEVING

SPECIES I.D. : CURLY LEAF PONDWEED,
EURASIAN MILFOIL, ZEBRA MUSSEL



Zebra Mussel



**Curly-leaf
Pondweed**



Eurasian Milfoil



ADIRONDACK
WATERSHED INSTITUTE
PAUL SMITH'S COLLEGE



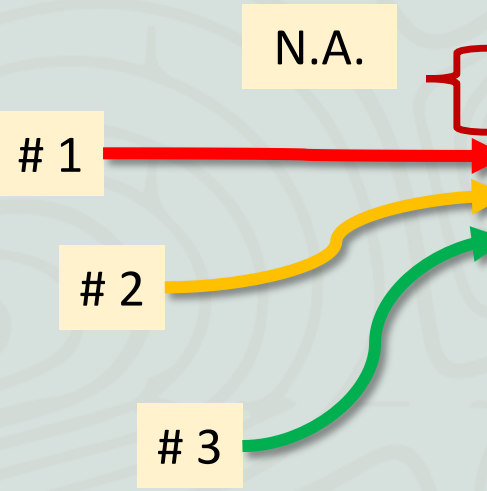
**Department of
Environmental
Conservation**

Drilling Down, Building Up



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Boats entering Lake Flower, 2018



Boat's last lake visit?
=
AIS Pathway

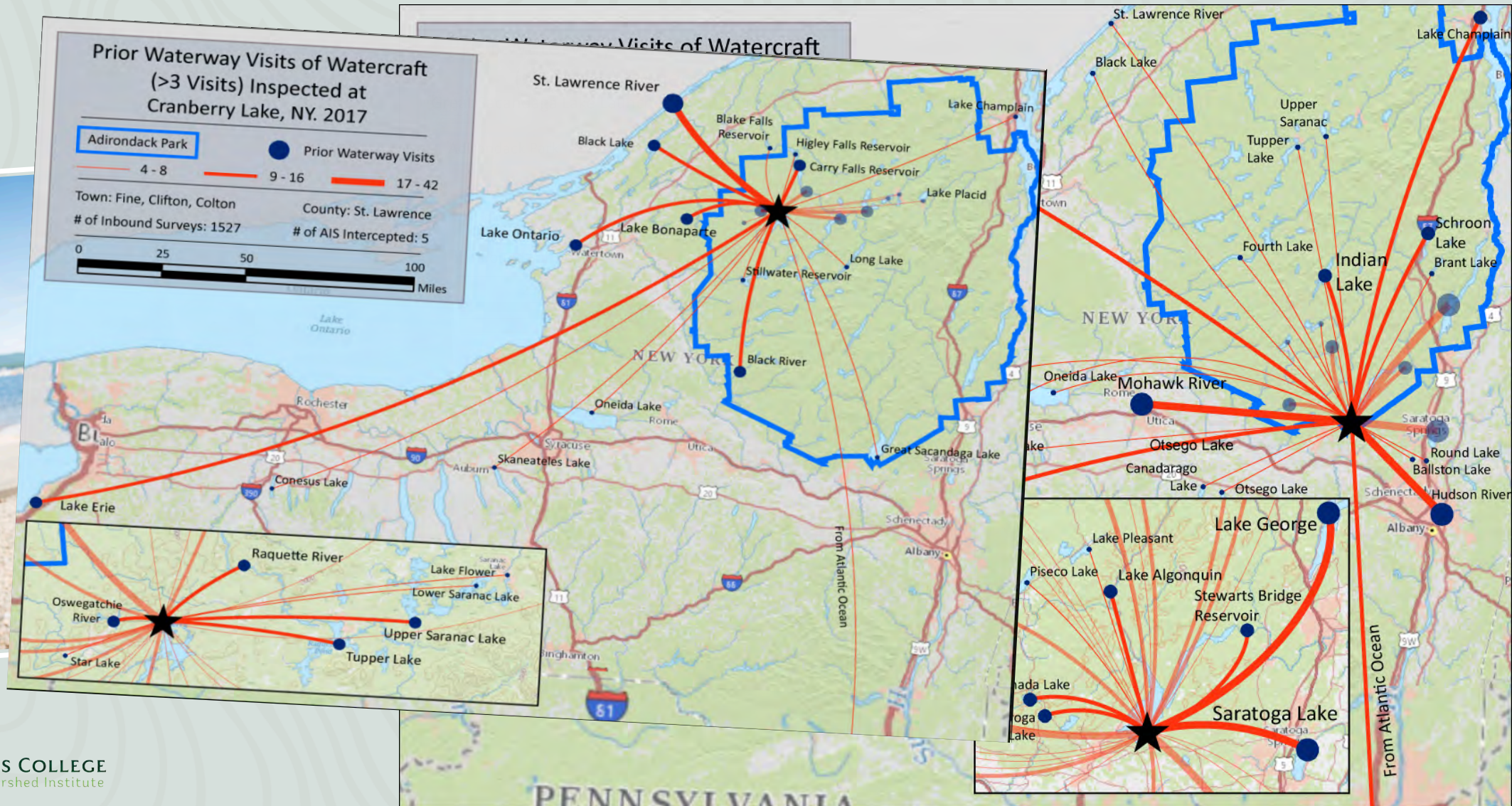
Previous Waterways for Launching Boats	# visits
Lake Flower	498
NONE	323
Upper Saranac Lake	70
Lake Placid	66
Lower Saranac Lake	49
Lake Champlain	38
Second Pond	33
DID NOT ASK	29
RENTAL	27
Lake Kushaqua (Rainbow/Buck)	16
UNKNOWN (boater doesn't know)	15
Tupper Lake	13
Hudson River	10
Chateaugay Lake	9
Osgood Pond	8
Lake Colby	7
Atlantic Ocean	6
Kiwassa Lake	6
St. Lawrence River	6
Upper St Regis Lake	6
Black Lake	5
Fish Creek Ponds	5
Great Sacandaga Lake	5
Saranac River	5
Lake George	4
Long Lake	4
Meacham Lake	4
Middle Saranac Lake	4
Mirror Lake	4
Mohawk River	4

Previous Waterways for Launching Boats	# visits
Saratoga Lake	4
Cayuga Lake	3
Cranberry Lake	3
Oneida Lake	3
Schroon Lake	3
St. Regis River	3
Carry Falls Reservoir	2
Chazy Lake	2
Connecticut River	2
Lake Clear	2
Lake Dunmore, Salisbury, VT	2
Lake Erie	2
Lake Ontario	2
Lower St Regis Lake	2
Polliwog Ponds	2
Raquette River	2
Seneca Lake	2
Ausable River	1
Ballston Lake	1
Bantam Lake, Morris, CT	1
Brant Lake	1
Burden Lake, Rensselaer County, NY	1
Canada Lake	1
Canandaigua Lake	1
Caroga Lake	1
Cazenovia Lake	1
Church Pond, Brighton, NY	1
Conesus Lake	1
Crystal Lake, Henderson, NY	1
Delaware River	1

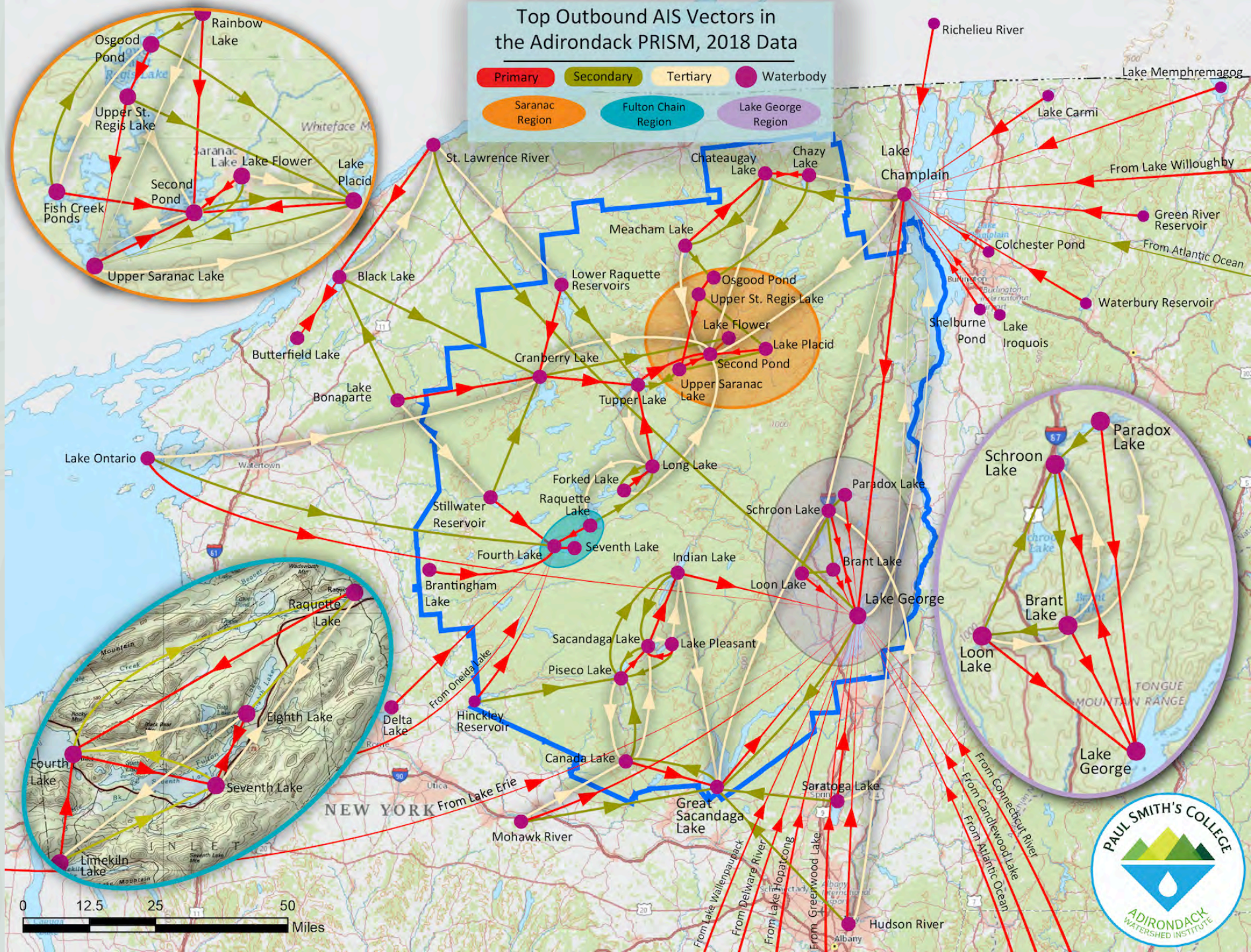
Previous Waterways for Launching Boats	# visits
Erie Canal	1
Fern Lake, Black Brook, NY	1
Franklin Falls Flow	1
Goodyear Lake, Milford, NY	1
Grant Lake, Benson, NY	1
Higley Falls Reservoir (Higley Flow)	1
Indian Lake	1
Jones Pond, Brighton, NY	1
Lake Nipissing, ON	1
Lamoille River, VT	1
Little Clear Pond	1
Loon Lake, Franklin, NY	1
Moose River	1
Mountain View Lake	1
Otsego Lake	1
Paradox Lake	1
Raquette Lake	1
Salmon River	1
Schuylkill River, PA	1
Silver Lake, Madison, NH	1
somewhere in Canada	1
somewhere in Maine	1
Spruce Run Reservoir, NJ	1
Star Lake	1
Stillwater Reservoir	1
Susquehanna River	1
Swinging Bridge Reservoir	1
Trent River, ON	1
Warner Lake, Berne, NY	1
Winooski River, VT	1

Total groups 1363

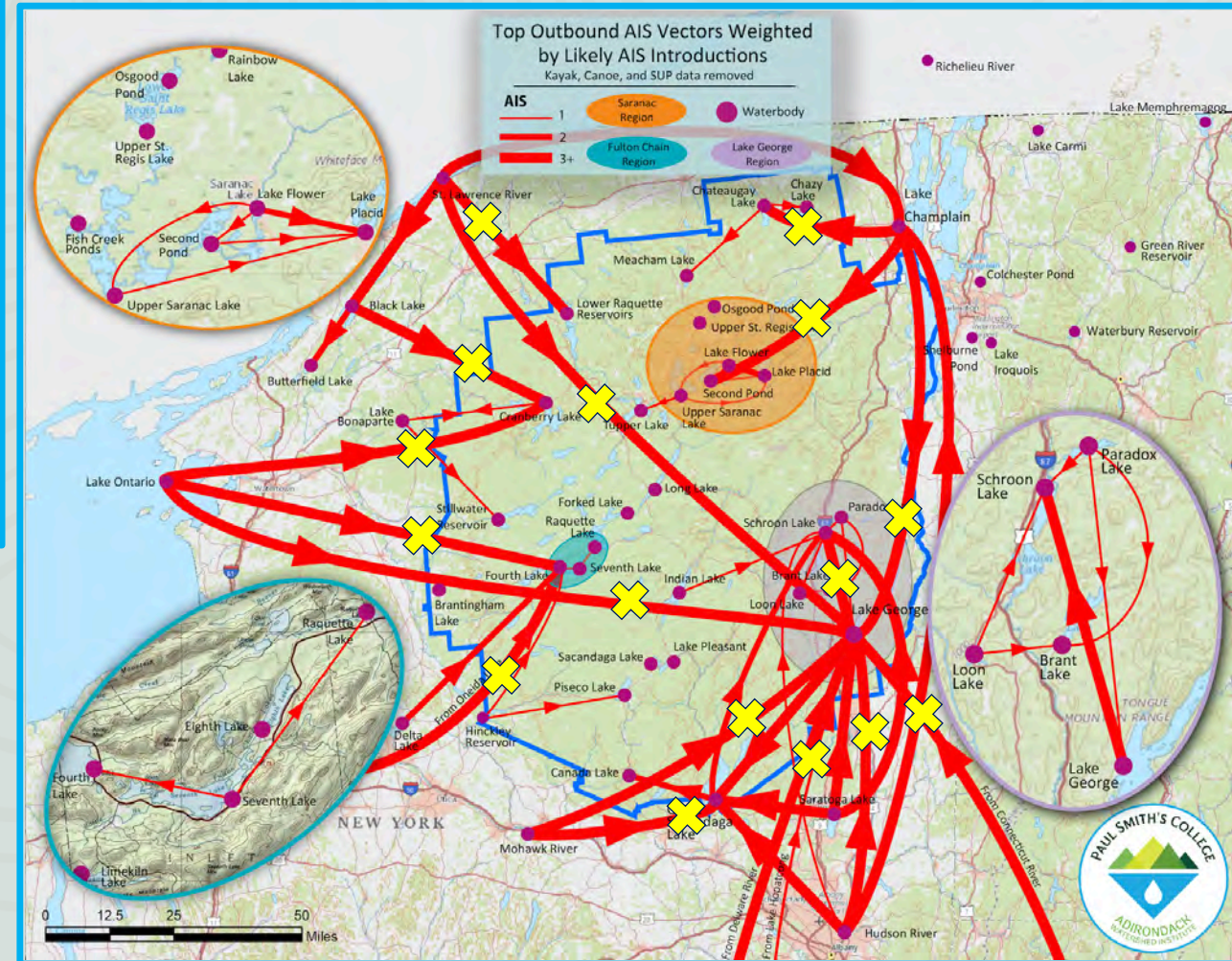
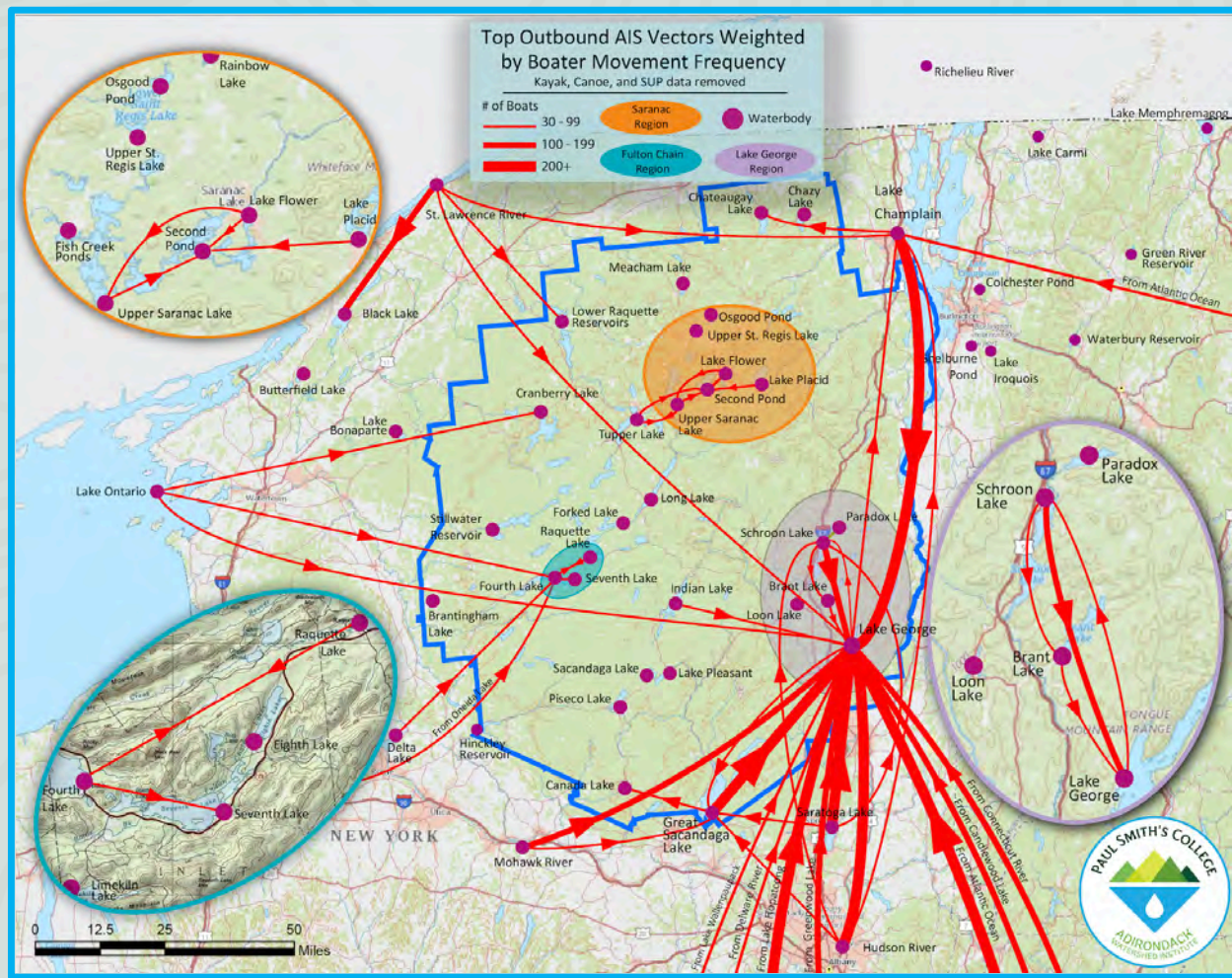
Single-Lake AIS Vector Map



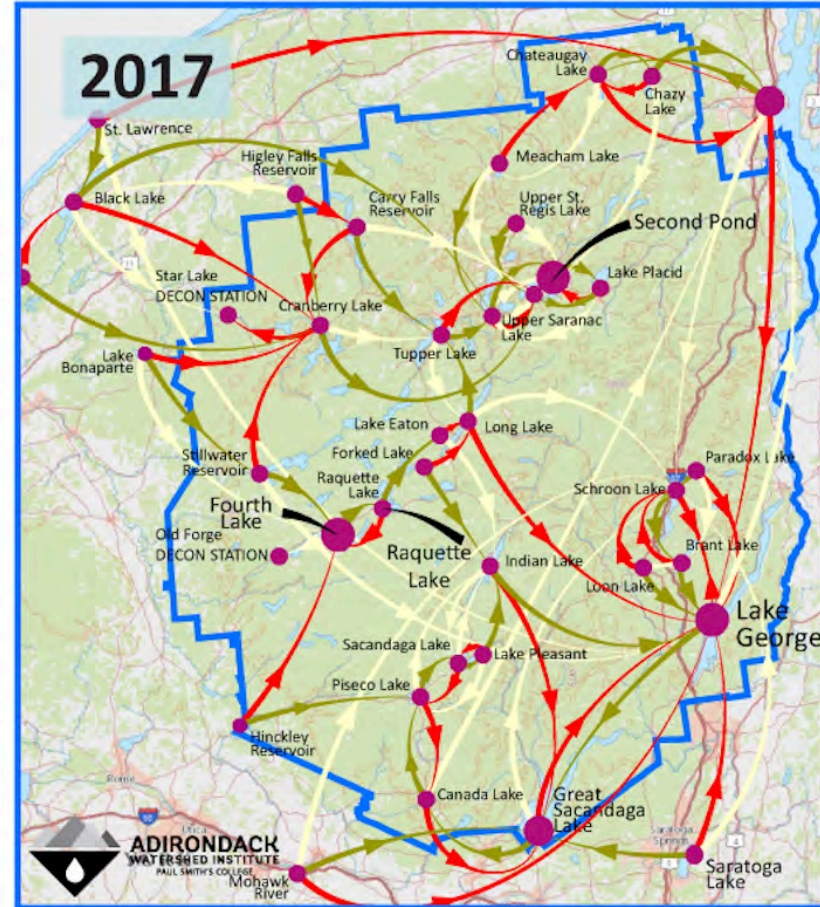
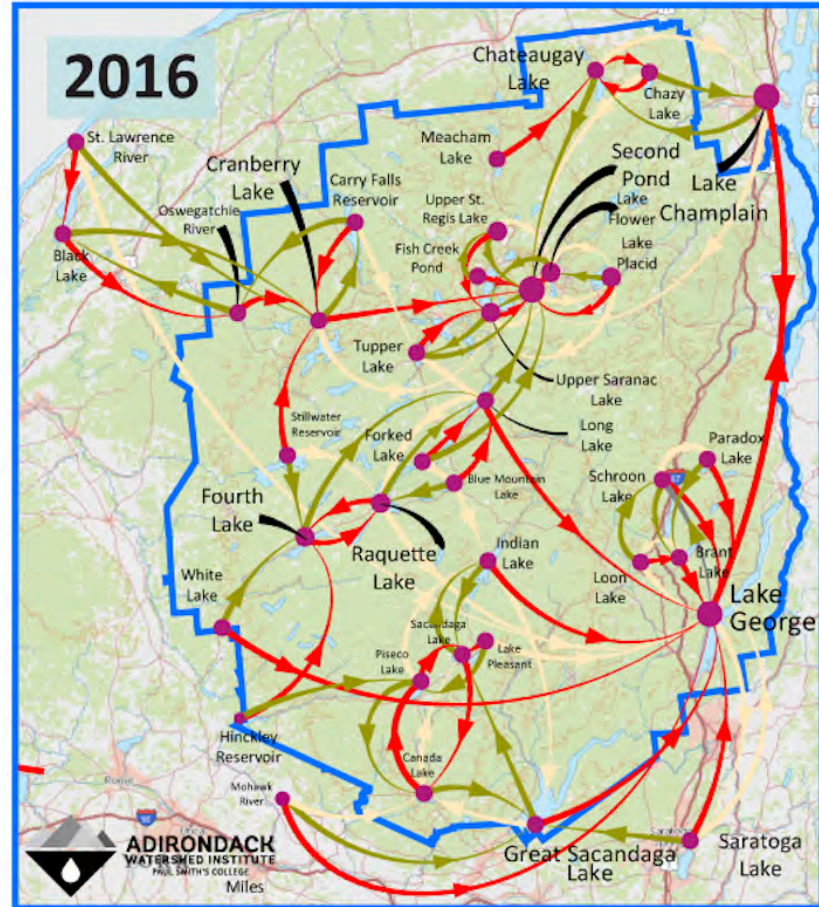
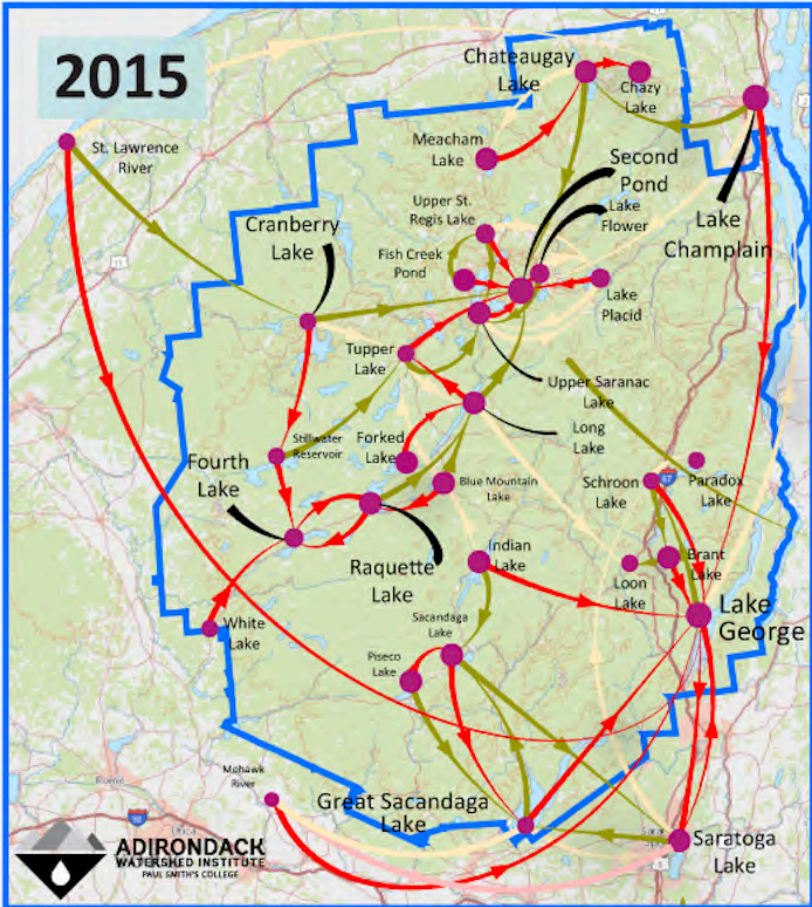
Adirondack "spider map"



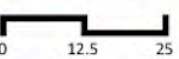
Risk Assessment



Landscape-Scale Vector System Maps



● Waterbody
 Primary
Secondary
Tertiary



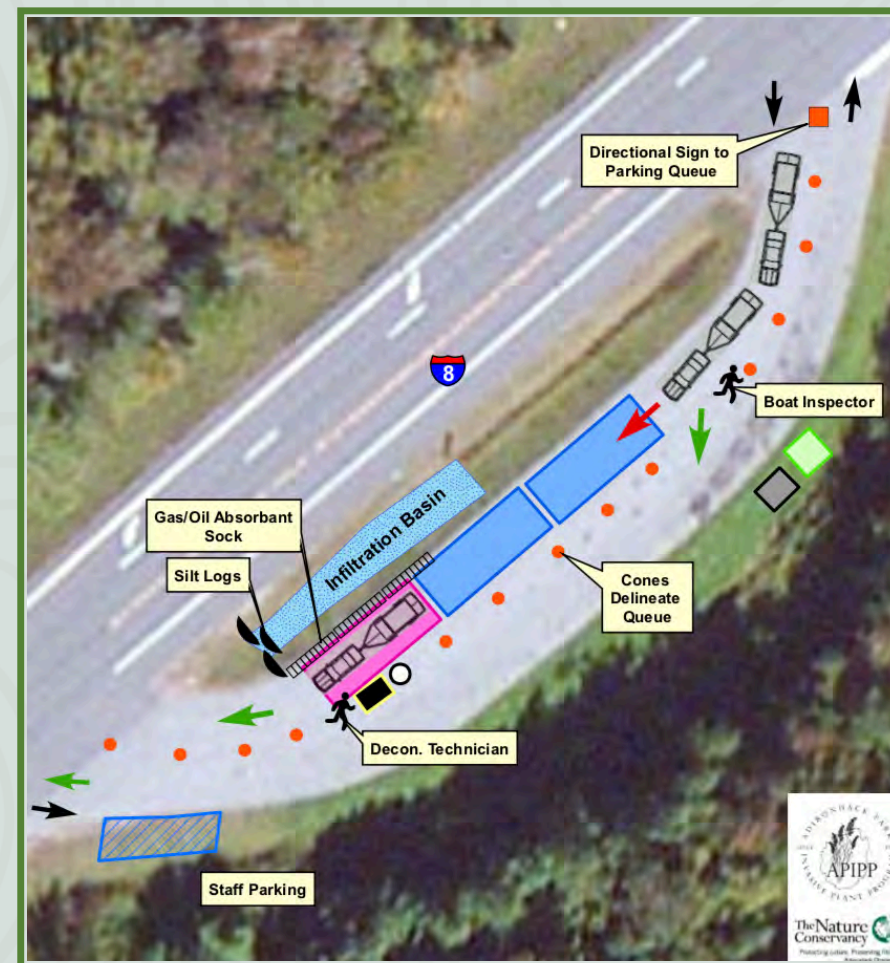
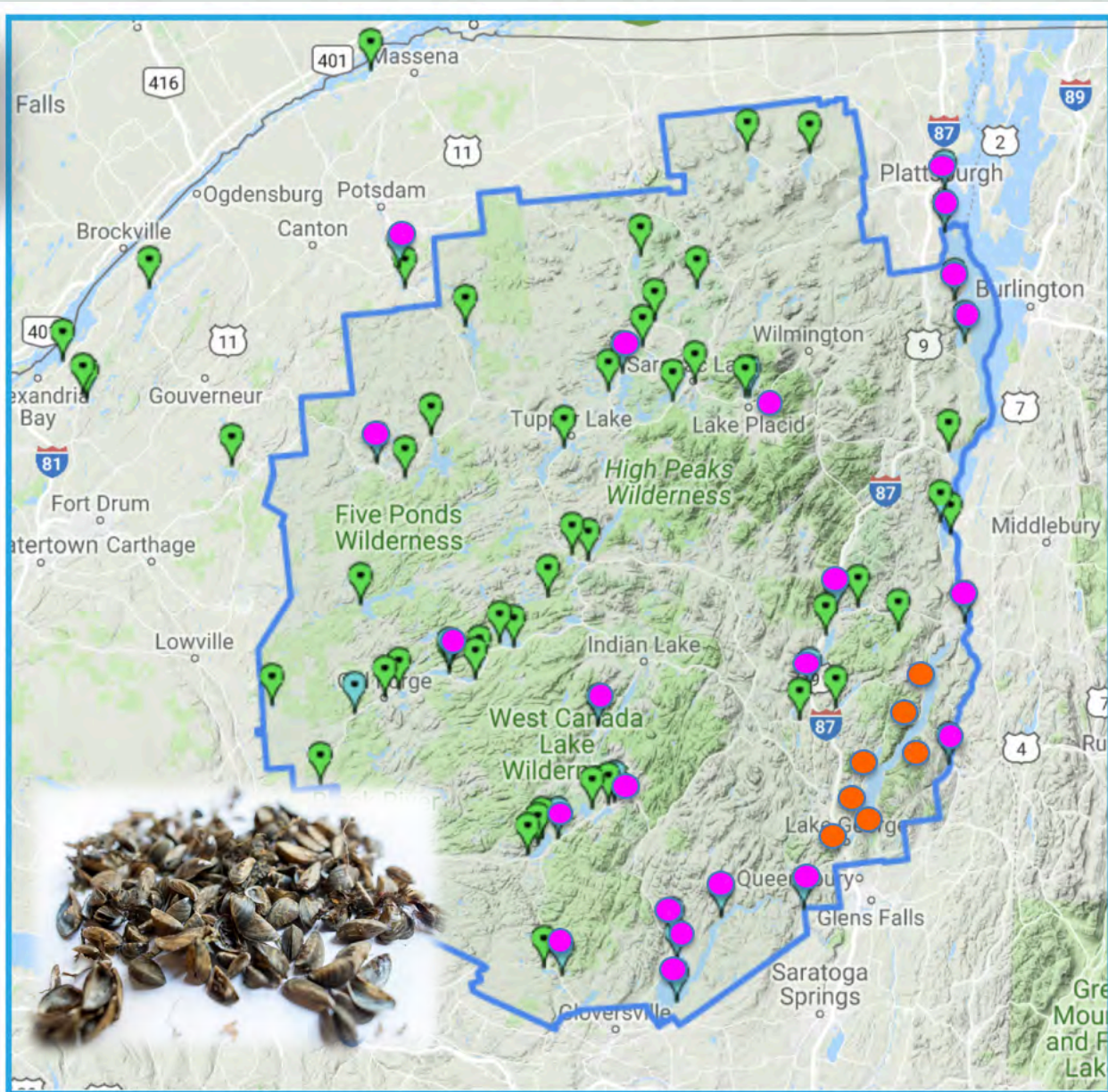
Top Outbound AIS Vectors in the Adirondack PRISM

Current Program Size and Scope



PAUL SMITH'S COLLEGE
Adirondack Watershed Institute

90 boat inspection and decon. stations



- 130 seasonal staff
- \$2 M annual budget
- New York State and US EPA-funded



Boat Steward Program

- Education and Boat Inspection



Public Interaction and Survey Data



High Pressure/ Hot Water Boat Decontamination



Hot water flushing of interior compartments



What we sometimes find!



Tracking, confirming, and tabulating samples



Steward Name: Liam Davies
Date: MAY 27 2018
Time: 12pm
Launch Name: FOURTH LAKE
Type of Watercraft: MOTOR BOAT
Previous Waterbody: CANANDAIGUA LAKE
Circle One: Launching Retrieving
Species ID: ZEBRA MUSSEL
Registration # (last three): 7MN

Steward Name: Liam Davies
Date: MAY 27 2018
Time: 12pm
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Type of Watercraft: MOTOR BOAT
Previous Waterbody: CANANDAIGUA LAKE
Circle One: Launching Retrieving
Species ID: ZEBRA MUSSEL
Registration # (last three): 7MN

High level outcomes - 2018

- 191,493 people educated
- 98,216 boat inspections
- 3,455 boat decontaminations
- 4,617 confirmed AIS removed from boats
- AIS transport rate of 3.7%
- 410 different previous water bodies visited
- 113 seasonal staff
- 8 full time, year-round staff exclusively for this program
- Budget of \$2M



Environmental Education, Marketing, Business Outreach



WE NEED YOUR HELP!
Are you a business or organization in the Adirondacks?

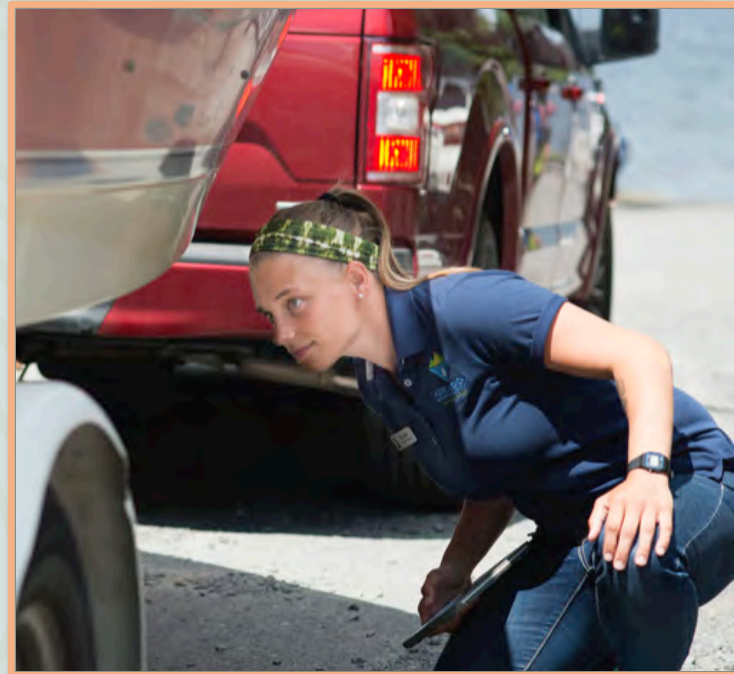


Help spread the word about preventing aquatic invasive species.

ADKWATERSHED.ORG/HOW-YOU-CAN-HELP



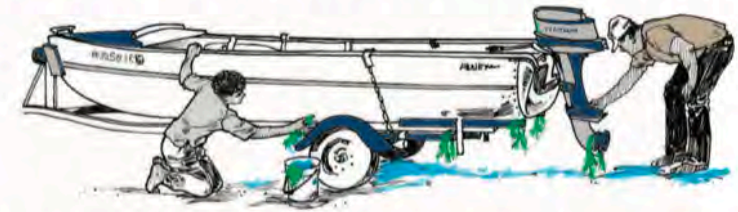
2018 highlights



PAUL SMITH'S COLLEGE
Adirondack Watershed Institute

2018 Adk AIS Prevention Program

191,493 - People Greeted and Educated



98,216 - Boat Inspections

4,617 - AIS intercepted

3,455 - Boat Decontaminations

3.7% - Boats Carrying AIS

9.4% - Boats Carrying Any Organism

417 - Unique Previous Waterbodies

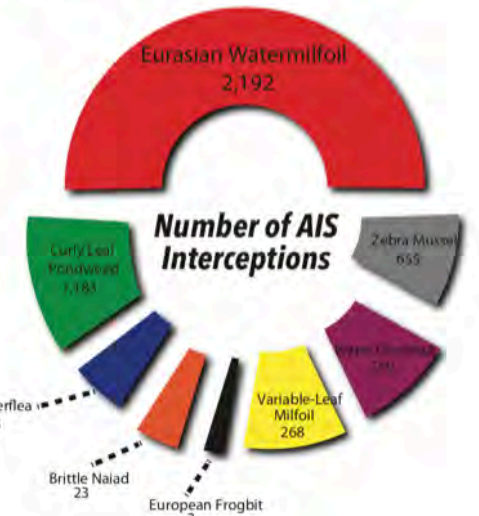
152 - Watershed & Decontamination Stewards

27 - Decontamination Stations

72 - Boat Launches

83.3% - Boat Registrations from NY

53 - States and Provinces as Origin Points



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Adirondack Watershed Institute

Adirondack program – Many partners!

Combining resources, creativity -- some confusion, overall strength



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7



1



2



1



1



15

110

55

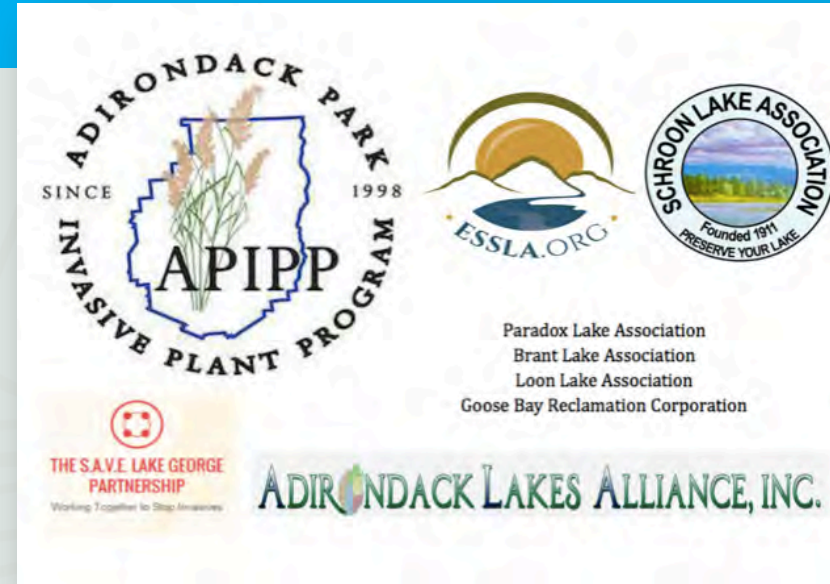


Take homes

- *Good Data = program growth*
- *Data reveals pathways*
- *Pathways drive strategy*
- *Tools AND Teeth*
- *Multi program approach*



Acknowledgements



New York State Environmental Protection Fund

Any questions?

