

LAKE ASSESSMENT AND WATERSHED ACTION PLANNING FOR NEW YORK LAKES



PAUL SMITH'S COLLEGE
Adirondack Watershed Institute

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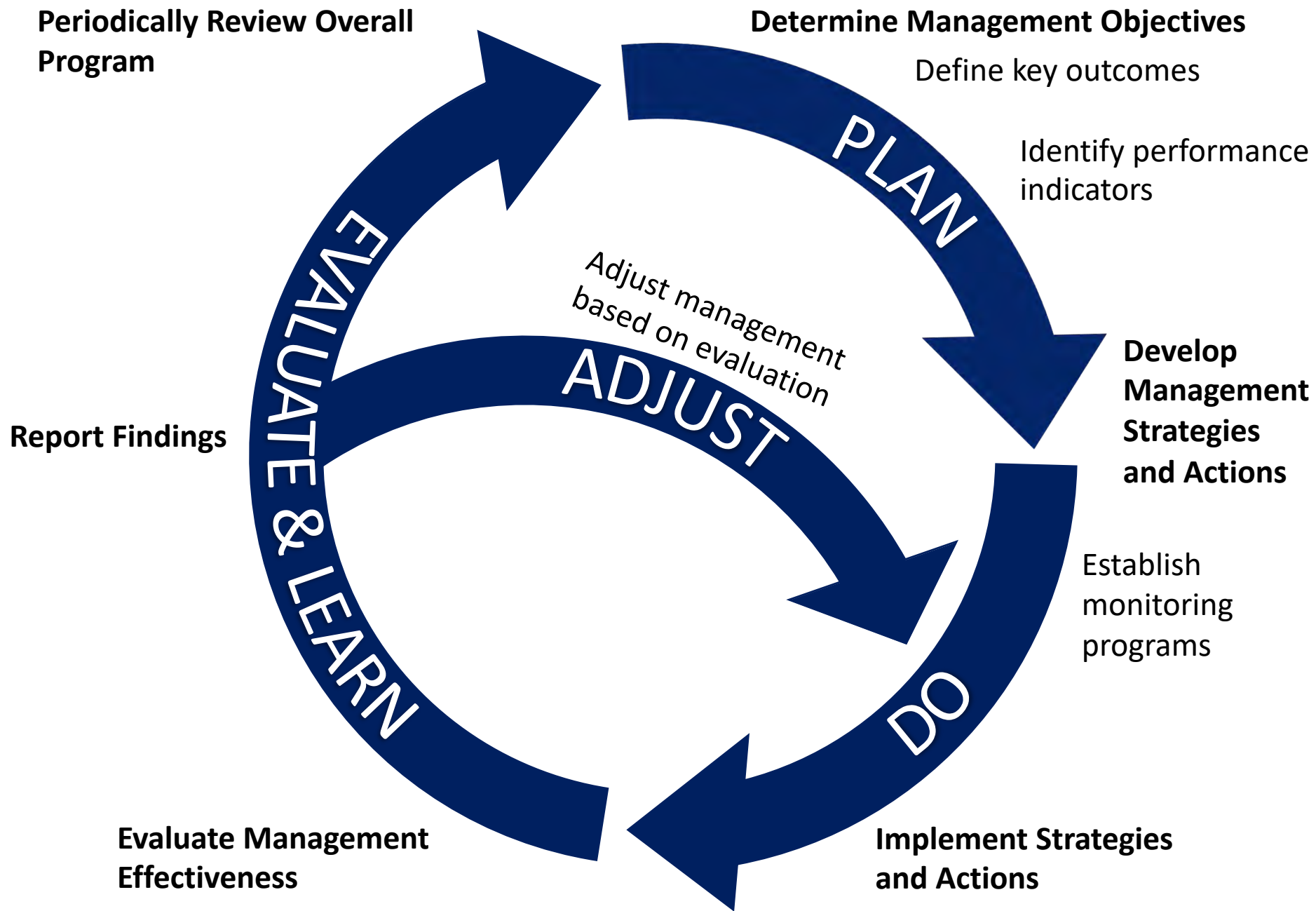


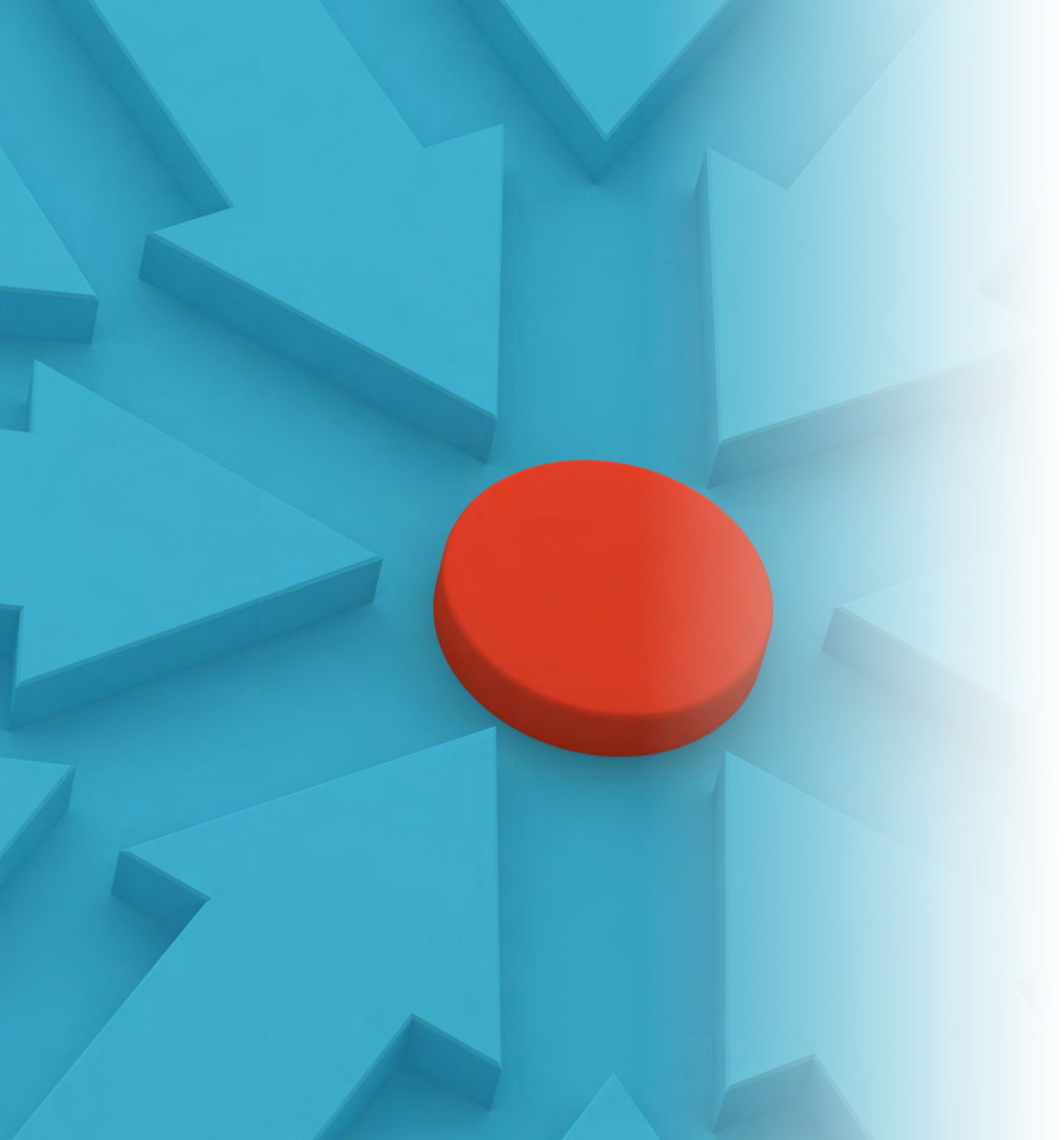
LAKE PLACID MANAGEMENT PLAN



UPPER SARANAC LAKE MANAGEMENT PLAN



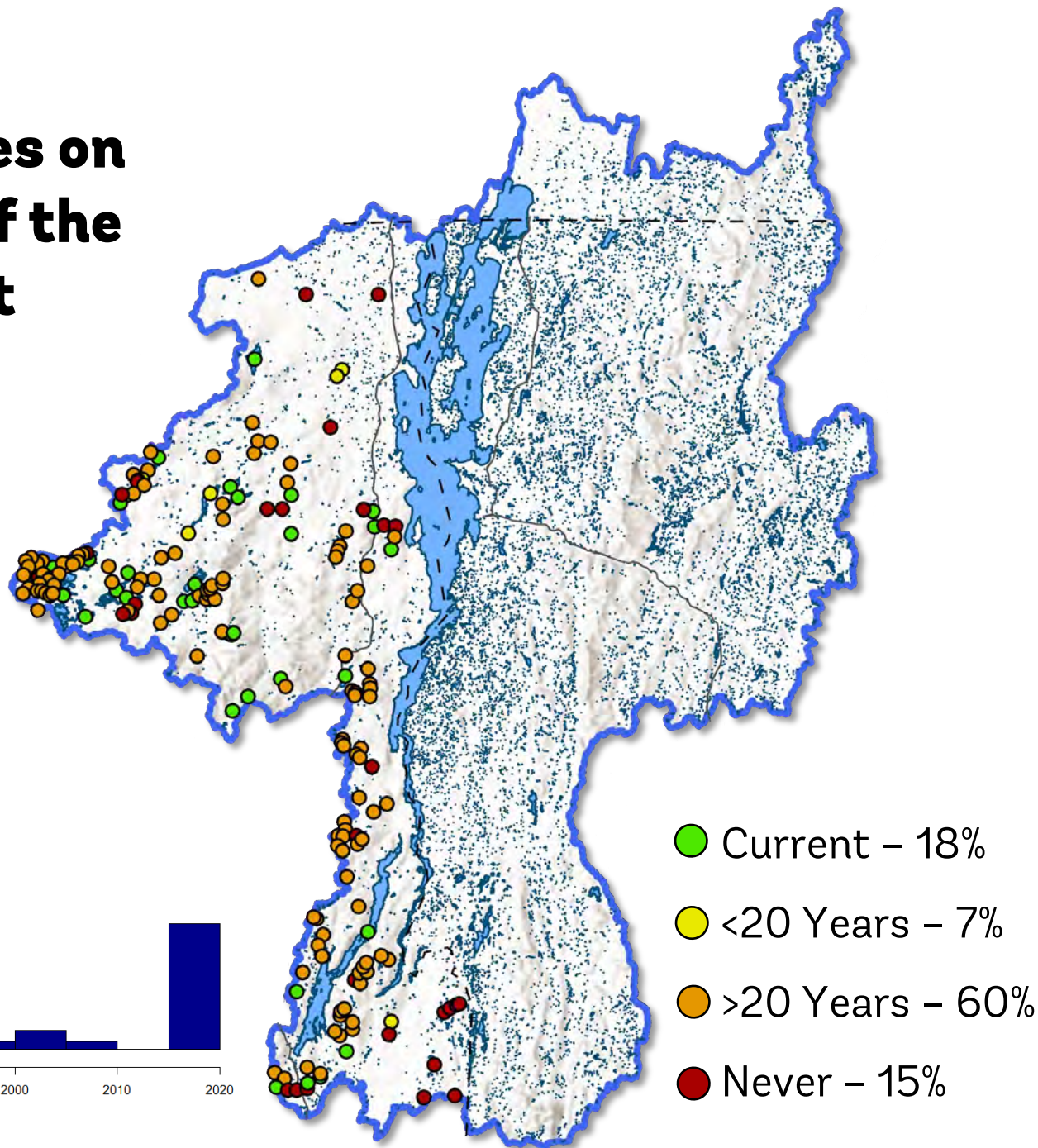
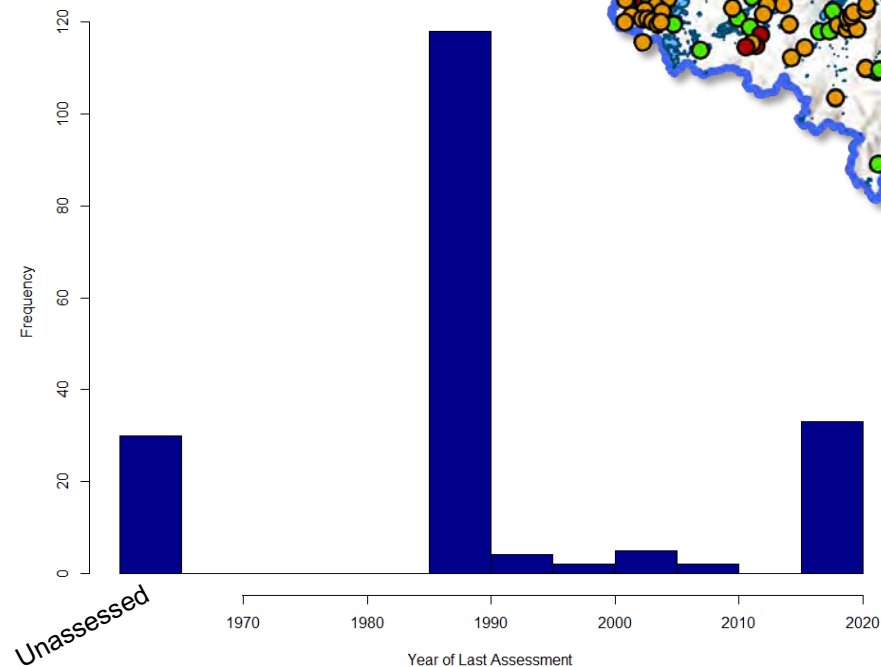




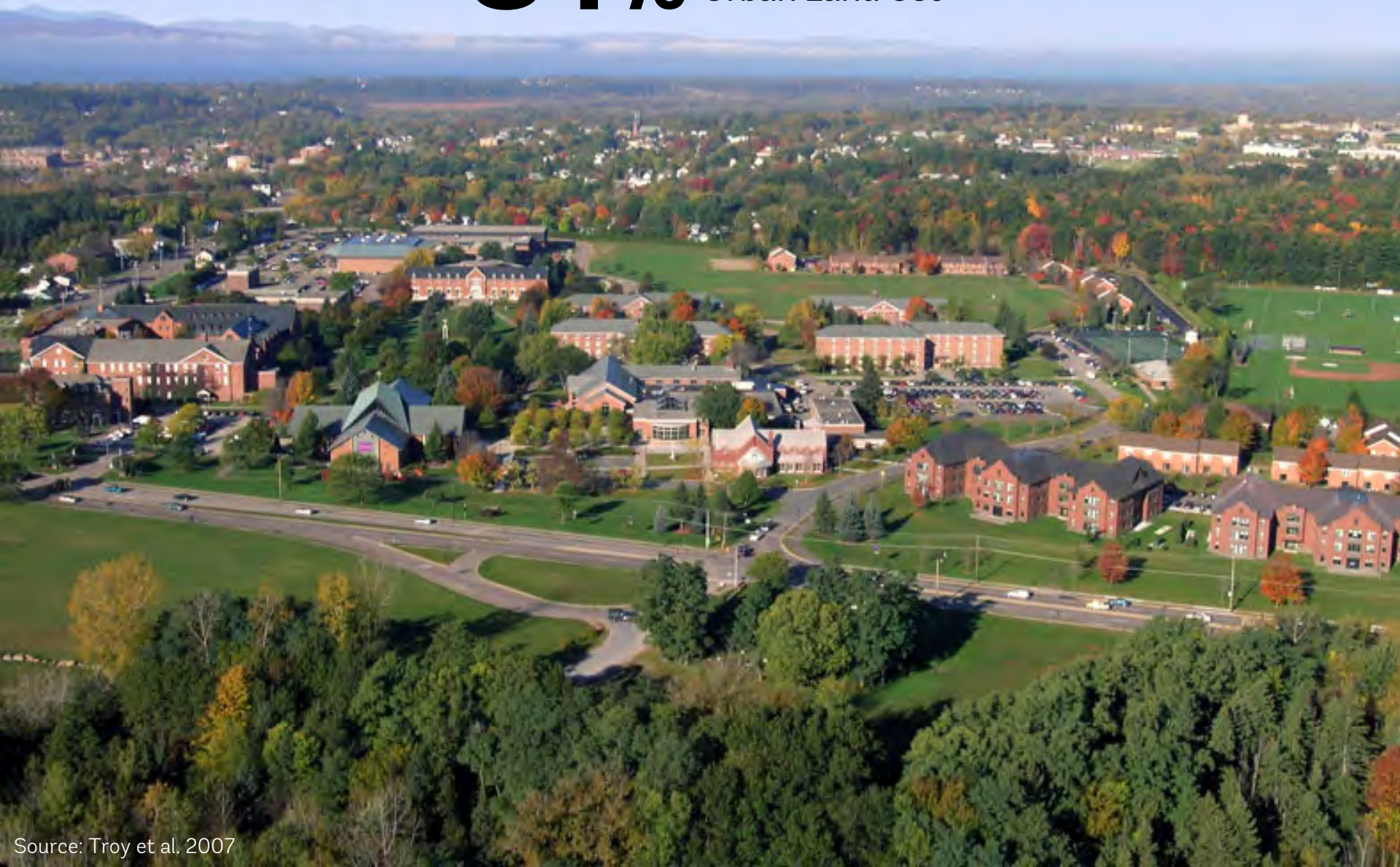
Actions Plans

- Focused
- Concise
- Action Oriented
- Prioritized Implementation

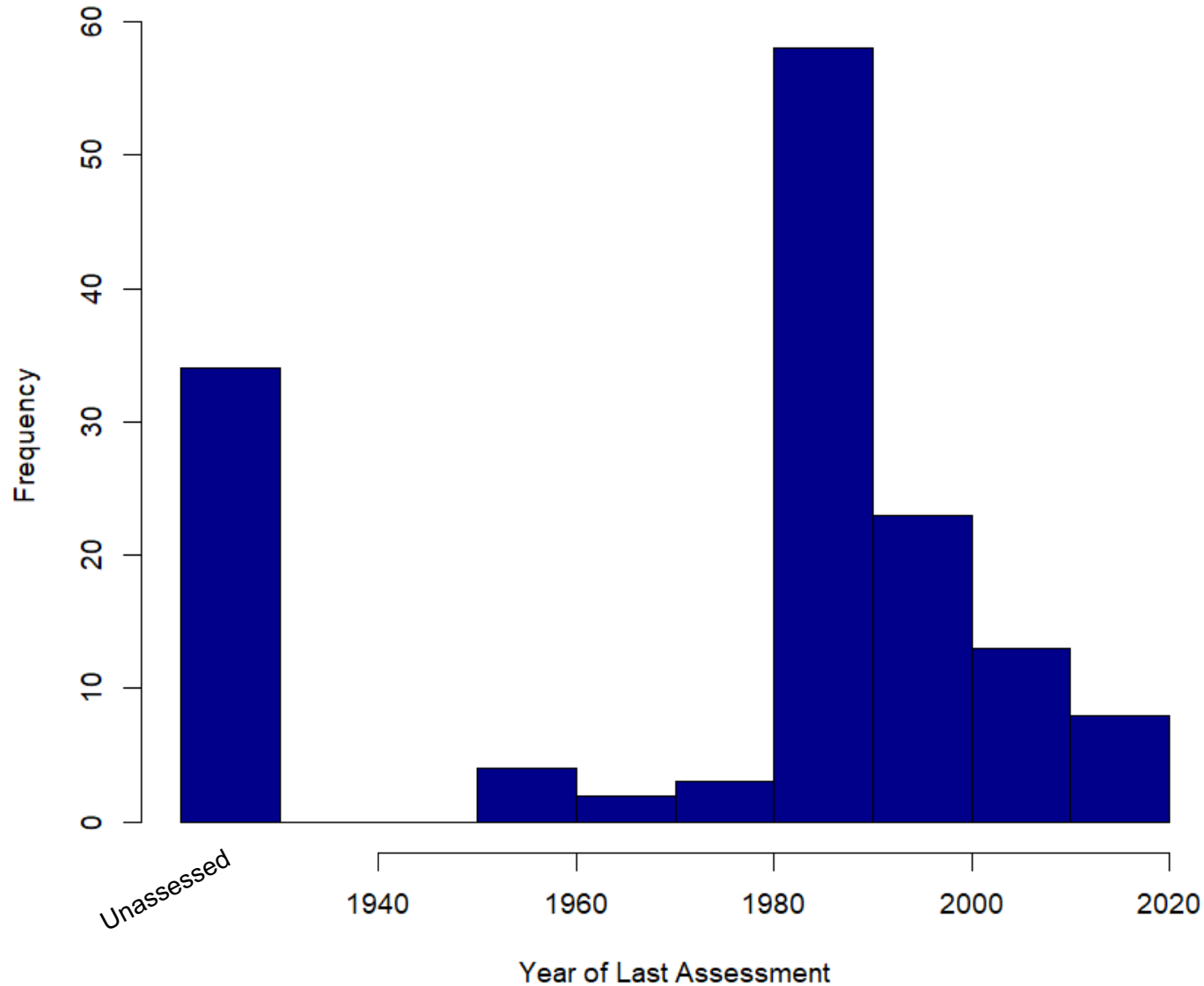
Most waterbodies on the NY portion of the basin lack recent assessments.



1992 to 2001
31% Growth In
Urban Land Use



Saranac Lakes Wild Forest Unit Management Plan

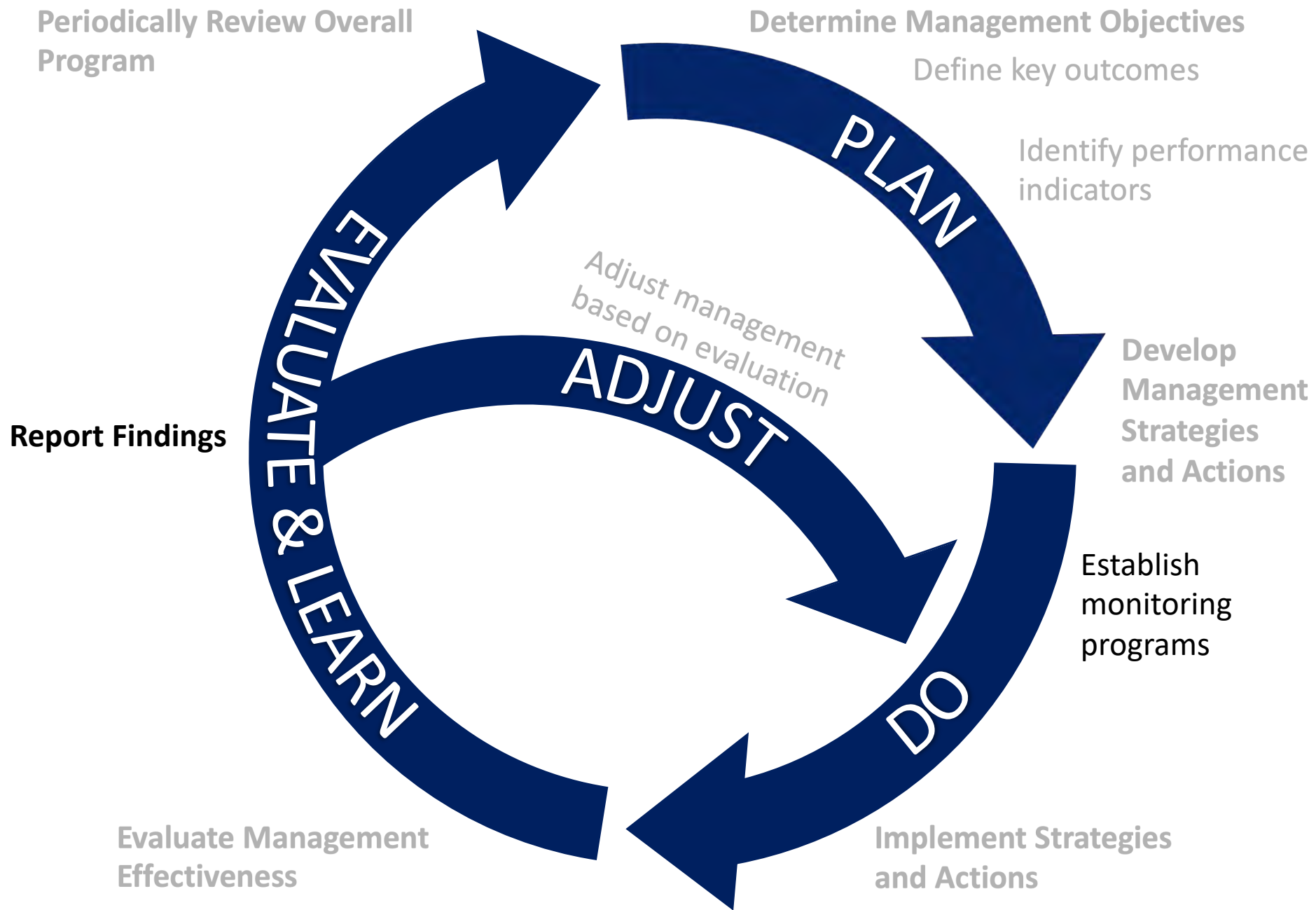


**Adirondack Lake
Assessment Program
(ALAP) – 18 Lakes**

**Adirondack Long-Term
Monitoring Program
(ALTM) – 9 Lakes**

**Citizen Statewide Lake
Assessment Program
(CSLAP) – 6 Lakes**





LAKE SCORING AND SELECTION



- Watershed Development
- Agriculture
- Last known pH
- Road density
- Waterbody Inventory Data

- Volunteer Interest
- Field Logistics



METHODS

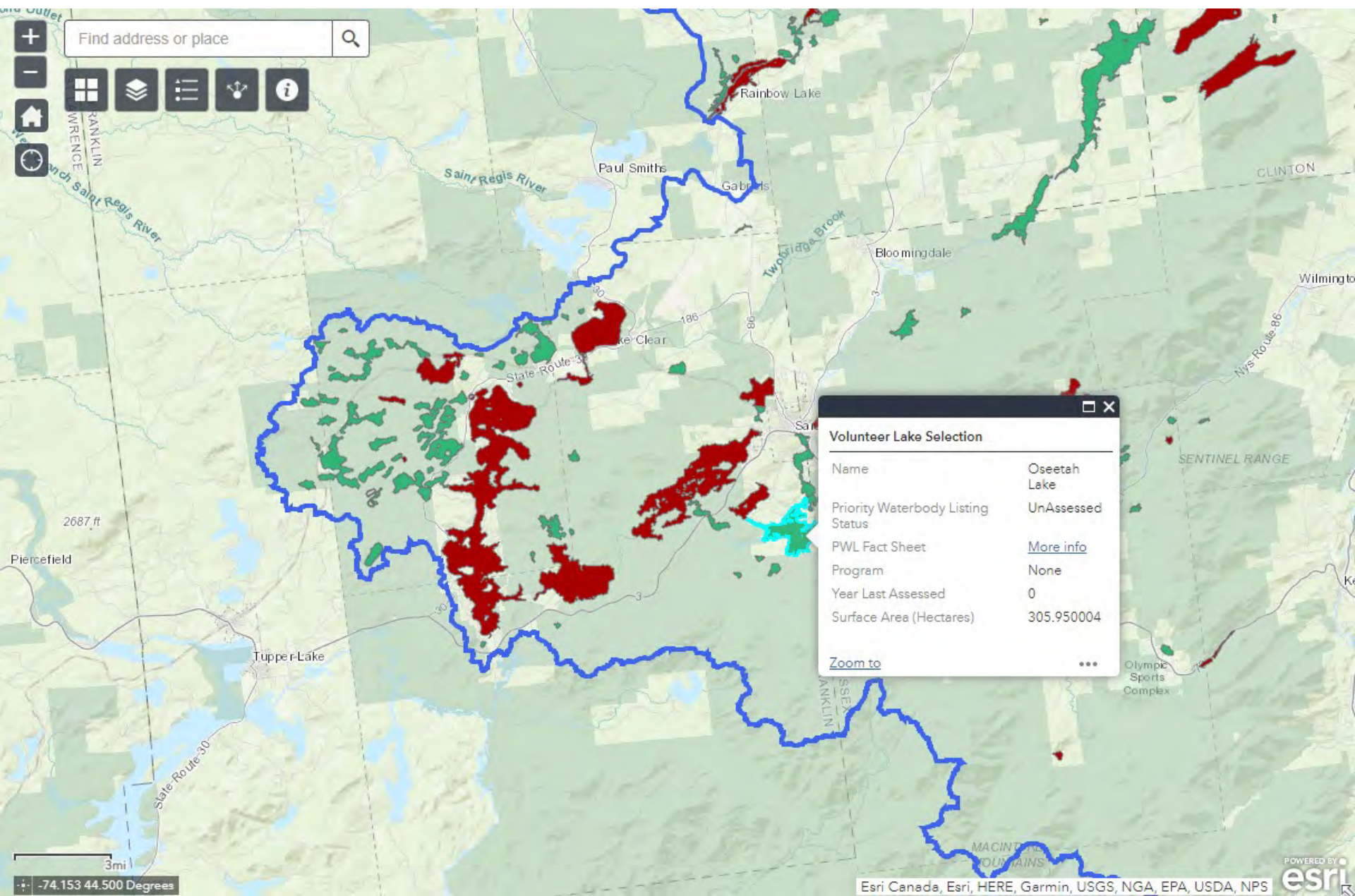
- Monthly sampling from June to September
- 2-meter integrated tube sampler
- 250mL filtered for chlorophyll
- Staff sampled lakes profiled for temperature, dissolved oxygen, conductivity, and pH
- Minimum of one hour effort during July or August to survey for AIS at priority locations

ADIRONDACK LAKE ASSESSMENT PROGRAM

+20 Lakes



VOLUNTEER RECRUITMENT









ADIRONDACK WATERSHED INSTITUTE STAFF

+30 Lakes

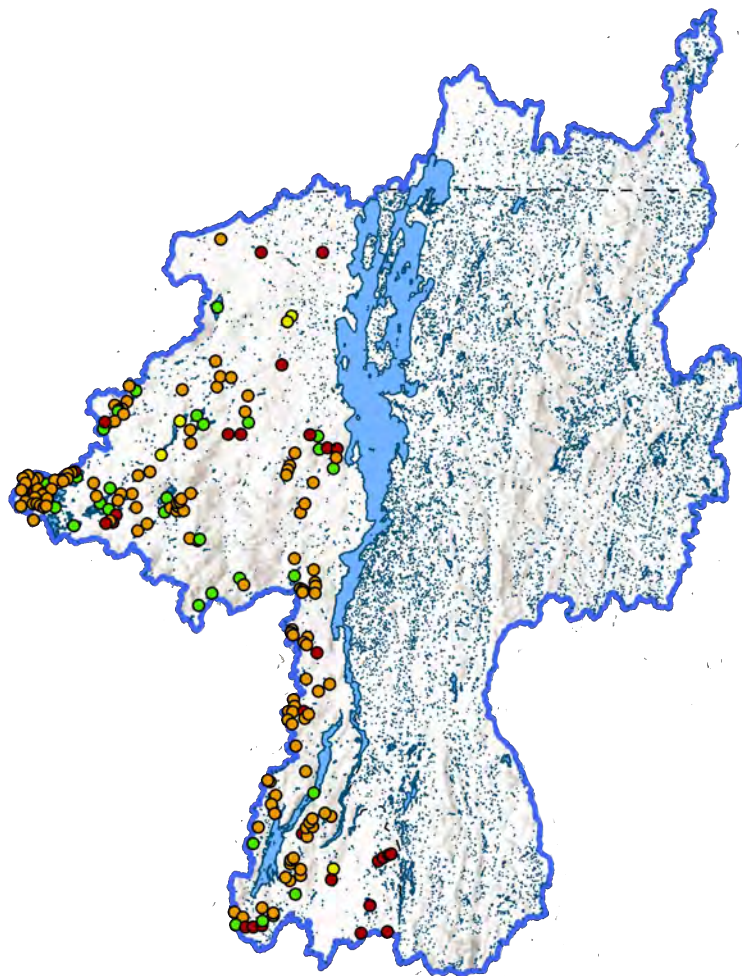










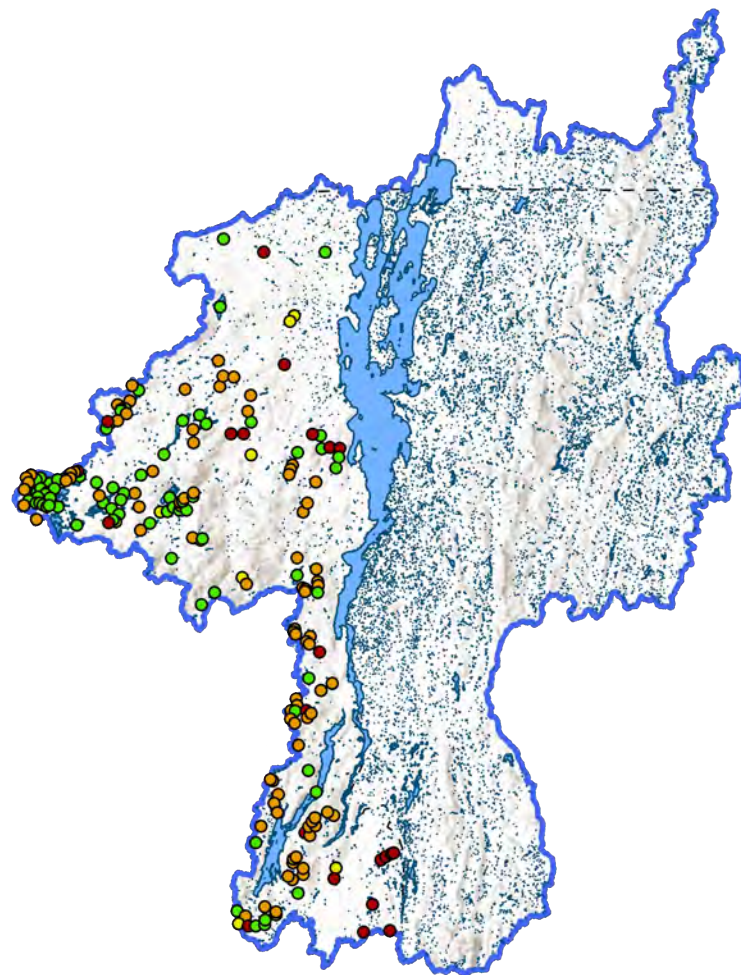


● Current – 18%

● <20 Years – 7%

● >20 Years – 60%

● Never – 15%



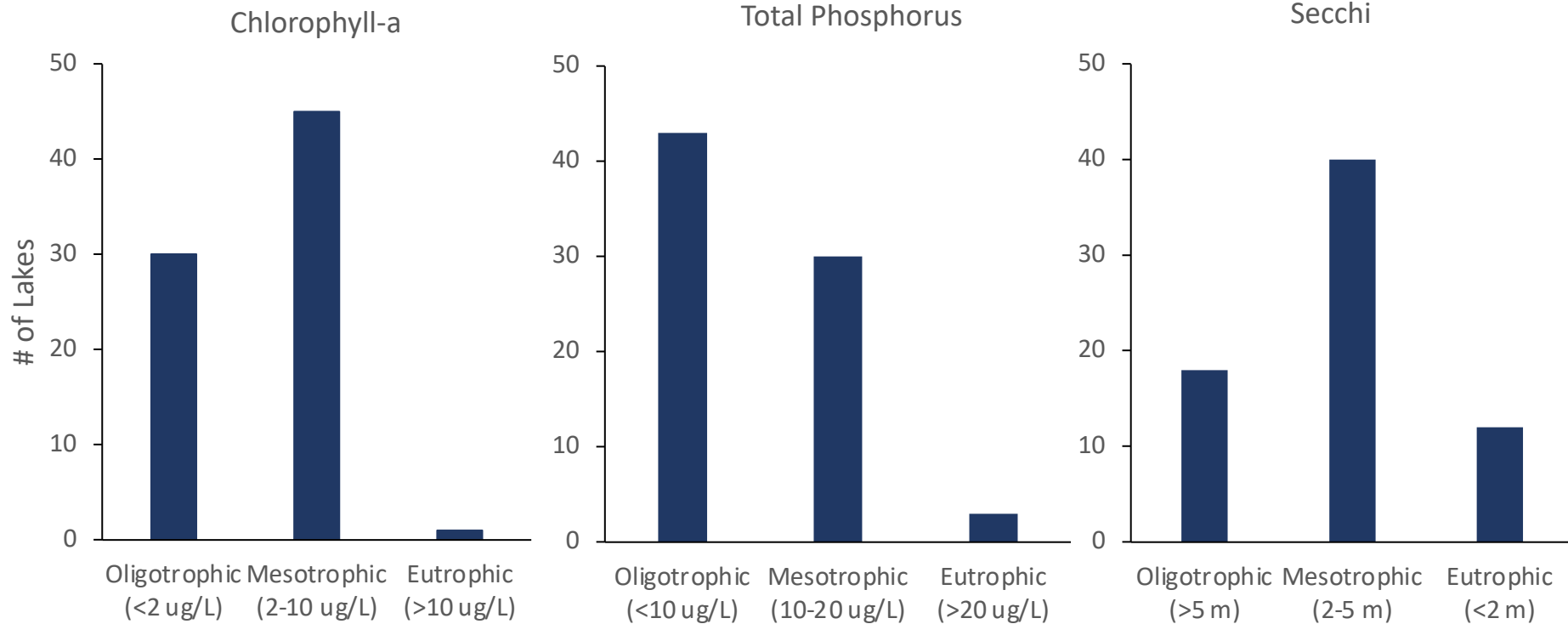
● Current – 42%

● <20 Years – 2%

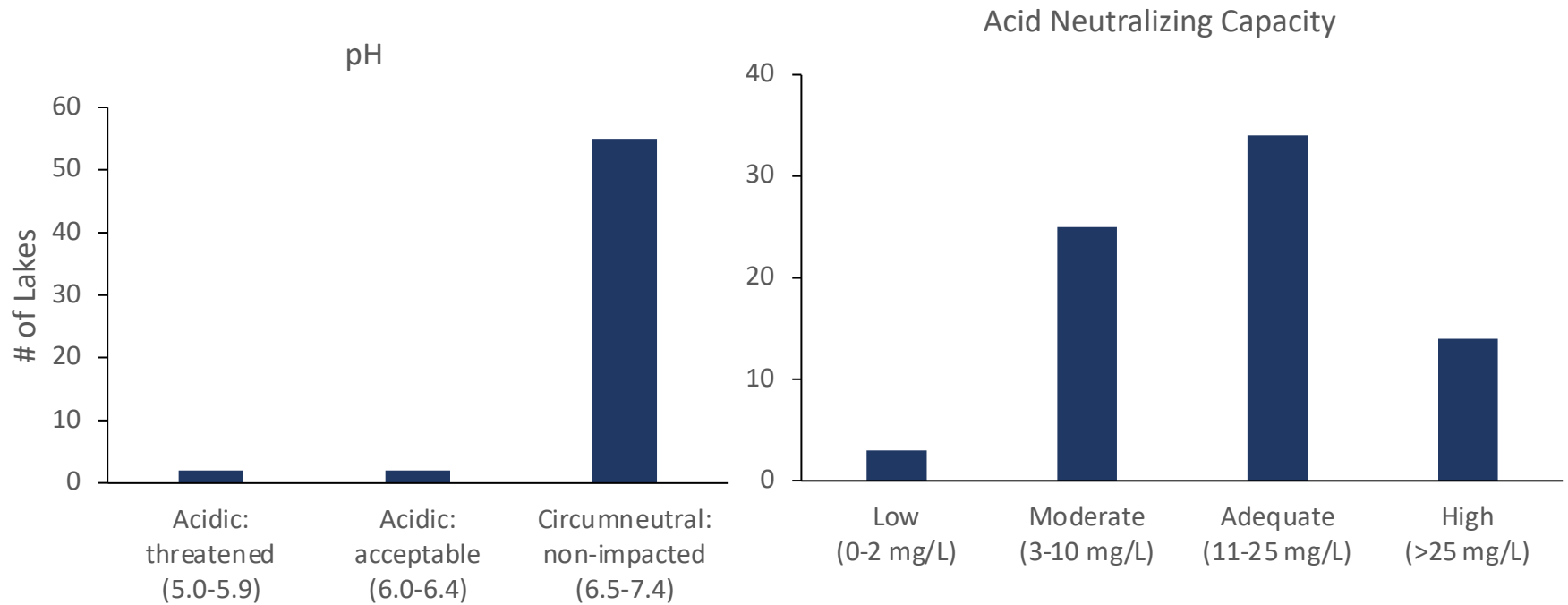
● >20 Years – 45%

● Never – 11%

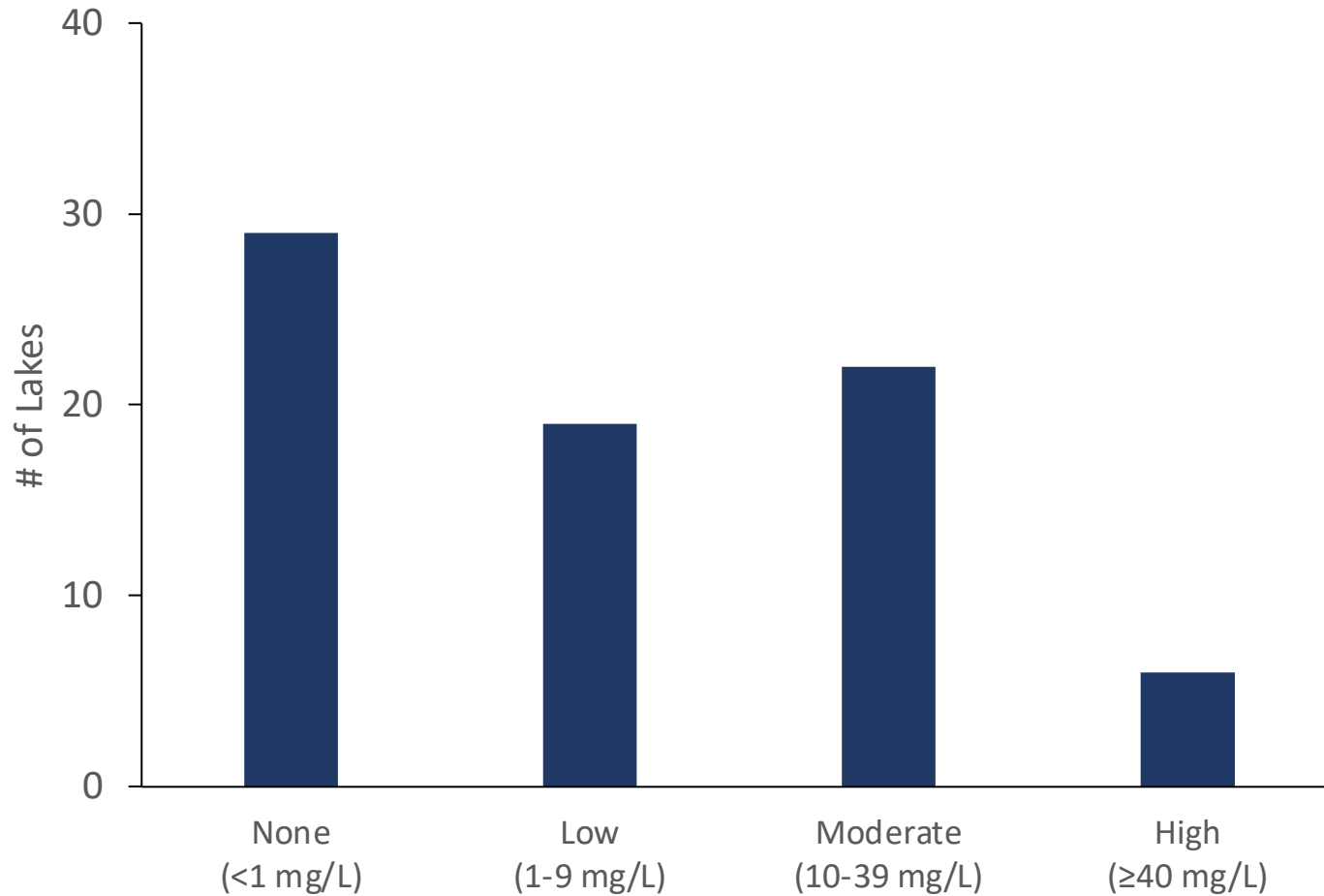
LAKE TROPHIC STATE



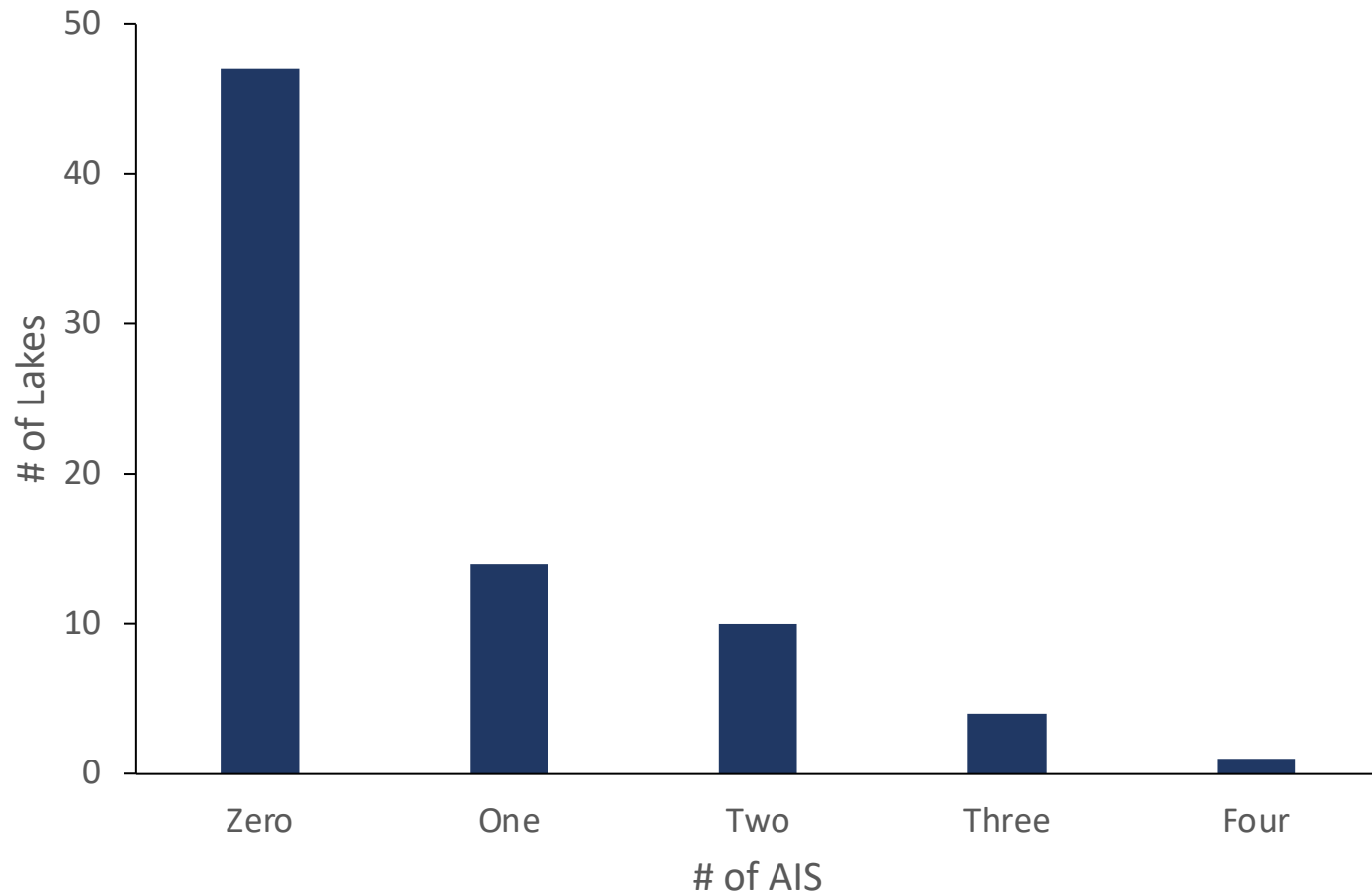
ACIDITY



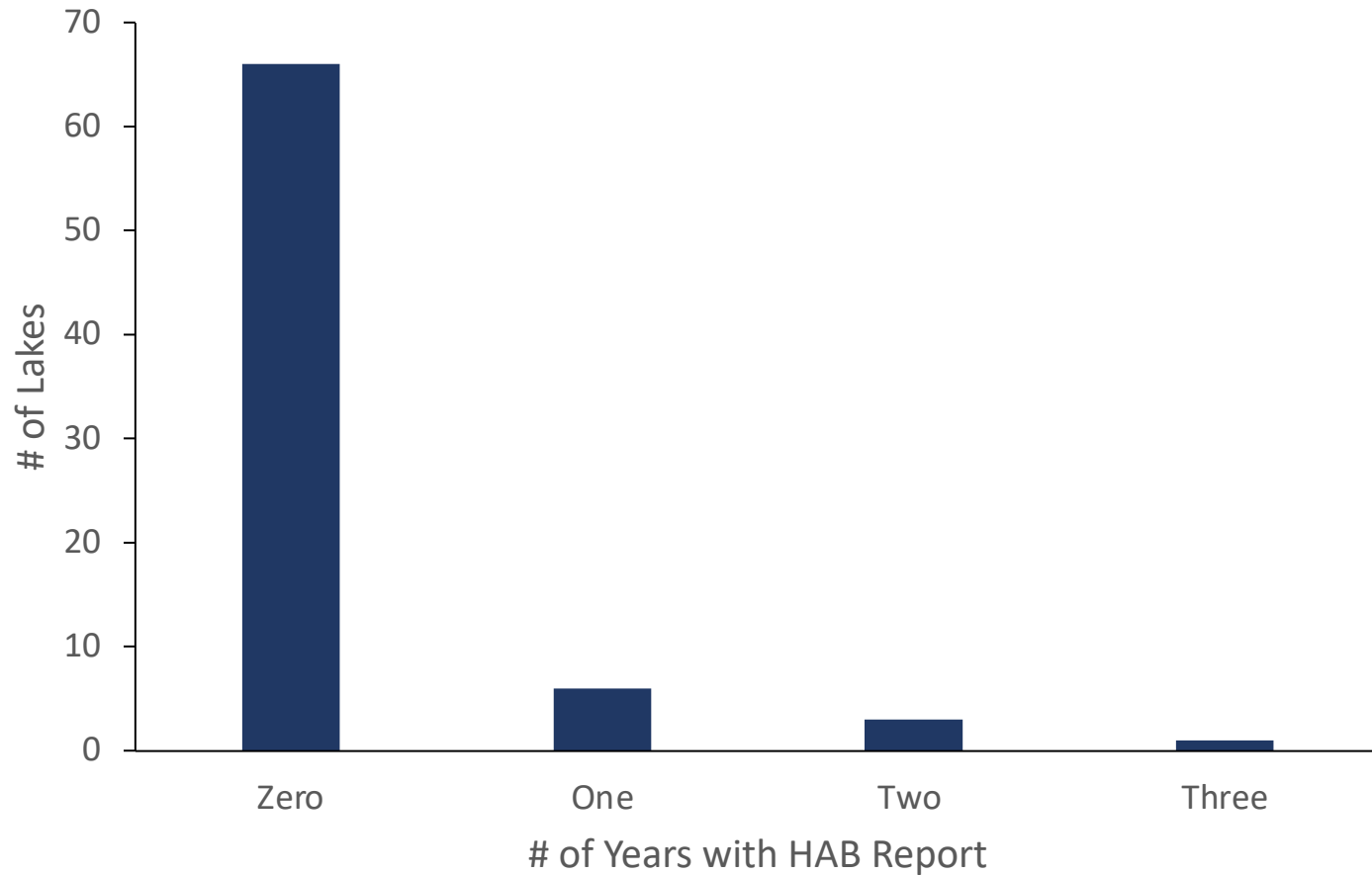
ROAD SALT INFLUENCE



AQUATIC INVASIVE SPECIES



HARMFUL ALGAL BLOOMS



LAKE KUSHAQUA



Summary

Trophic Status (Chl-a):	Mesotrophic
Trophic Status (TP):	Oligotrophic
Trophic Status (Secchi):	Mesotrophic
Acidity:	Circumneutral: non-impacted
Acid Neutralizing Capacity:	Adequate
Road Salt Influence:	None

Notes: Profile data indicate that Lake Kushaqua is thermally stratified during the summer with the epilimnion having dissolved oxygen concentrations >7 mg/L. The hypolimnion is anoxic (<2 mg/L) for the later part of the summer.

Location

Latitude:	44.5208
Longitude:	-74.1123
County:	Franklin
Town:	Franklin
Watershed:	North Branch Saranac River

Lake Characteristics

Surface Area (ha):	153.9
Shoreline Length (km):	13.7
Max Depth (m):	27.4
Mean Depth (m):	13.4
Volume (m ³):	NA
Flushing Rate (times/year):	NA

Watershed Characteristics

Watershed Area (ha):	7,406.4
Open Water (%):	7.54
Developed, Open Space (%):	2.59
Developed, Low Intensity (%):	0.35
Developed, Medium Intensity (%):	0.08
Developed, High Intensity (%):	0.00
Barren Land (%):	0.00
Deciduous Forest (%):	45.75
Evergreen Forest (%):	26.18
Mixed Forest (%):	4.47
Dwarf Shrub (%):	1.95
Grassland/Herbaceous (%):	0.45
Pasture/Hay (%):	0.03
Cultivated Crops (%):	0.00
Woody Wetlands (%):	10.1
Emergent Herbaceous Wetlands (%):	0.51

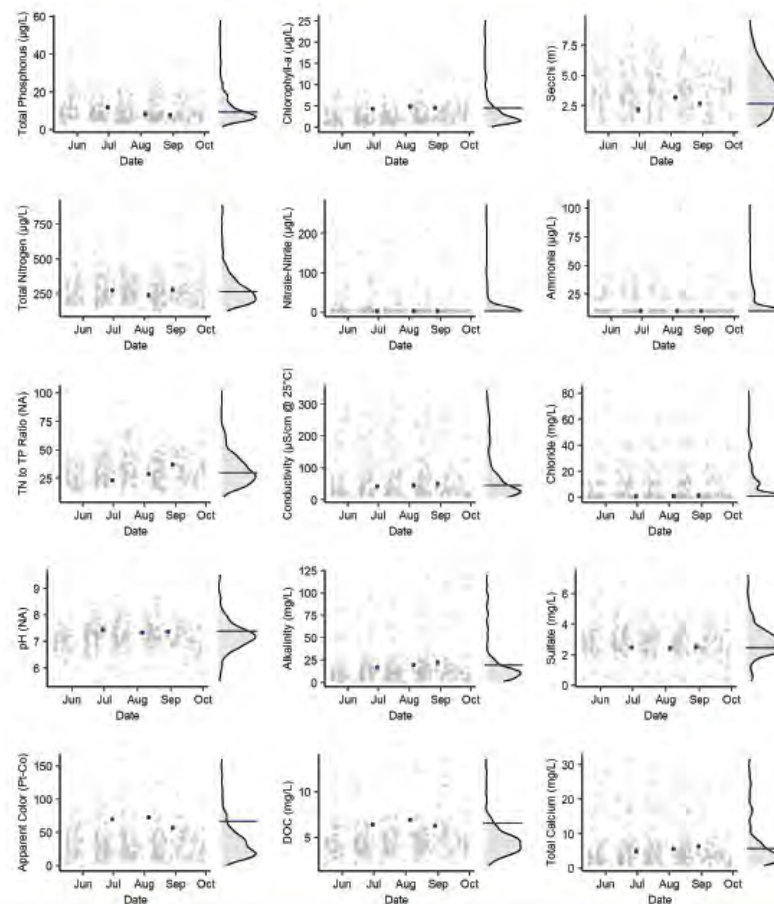
Aquatic Invasive Species Detections

None

Harmful Algal Bloom Reports

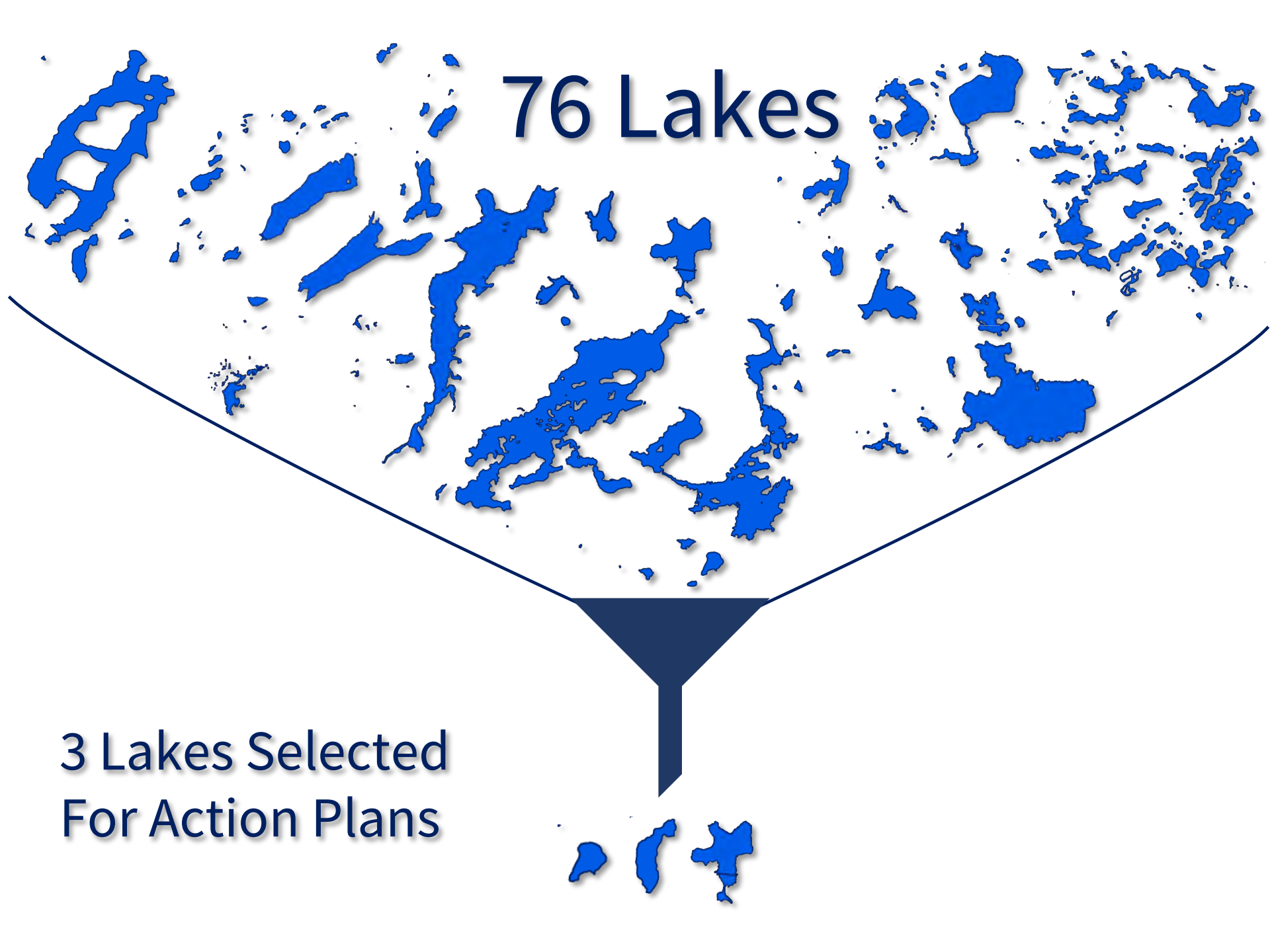
None

Gray dots represent all data in the report, blue dots are the samples for the represented lake. The right sub-plot shows the density distribution for all data in gray and the mean for the represented lake as a blue line.



76 Lakes

3 Lakes Selected
For Action Plans



LAKES SELECTED FOR ACTION PLAN DEVELOPMENT

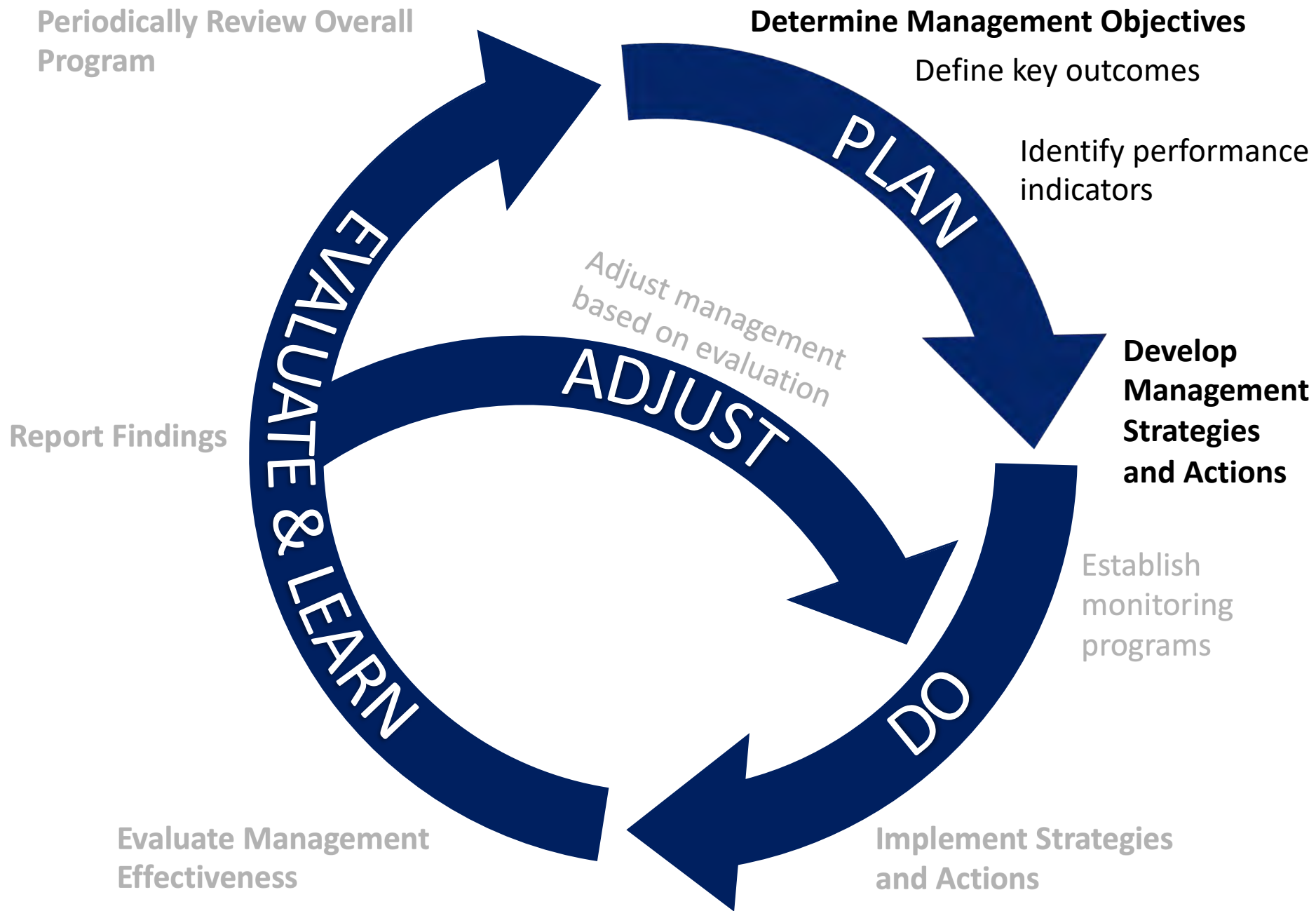
- Lake Roxanne
 - Meso- to Eutrophic, elevated phosphorus and nitrogen, 19% of watershed is agriculture, new AIS detections in 2022.

LAKEs SELECTED FOR ACTION PLAN DEVELOPMENT

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- Lake Colby
 - Mesotrophic, 15% of watershed is developed, AIS present, first HAB report in 2022, DEC summer camp, public beach, popular for recreational use.

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- Lake Colby
 - Mesotrophic, 15% of watershed is developed, AIS present, first HAB report in 2022, DEC summer camp, public beach, popular for recreational use.
- Mirror Lake
 - Oligotrophic, 31% of watershed is developed, unique road salt impacts, no AIS, HABs reported in 2020 & 2022, highly engaged community, opportunity to leverage other LCBP funds.



PLANS FOR 2023

- Monthly sampling from May to September, including grab samples and flow at three tributary sites
- Vertical profiles of temperature, dissolved oxygen, conductivity, and pH
- Full aquatic plant survey
- Stakeholder meetings to identify concerns and receive input on priority projects



QUESTIONS?



PAUL SMITH'S COLLEGE
Adirondack Watershed Institute



PAUL SMITH'S
COLLEGE



- Adirondack Lake Survey Corporation (ALSC). 1986. *1986, 1985, 1984 Annual Reports*. New York Department of Environmental Conservation, Ray Brook, New York.
- Areseneau K.M., Driscoll C.T., Cummings C.M., Pope G., & Cumming, B.F. 2016. Adirondack (N.Y., USA) reference lakes show a pronounced shift in chrysophyte species composition since ca. 1900. *Journal of Paleolimnology*, 56:349-364.
- Citizen Statewide Lake Assessment Program (CSLAP). 2019. *Individual Lake Reports*. <https://nysfola.org/cslap-report-search/>
- Laxson C., Yerger E., Favreau H., Regalado S., & Kelting D. 2019. *Adirondack Lake Assessment Program: 2018 Report*. Paul Smith's College Adirondack Watershed Institute.
- New York State Department of Environmental Conservation (NYS DEC). 1999. *High Peaks Wilderness Complex Unit Management Plan: Wilderness Management for the Hig Peaks of the Adirondack Park*. New York Department of Environmental Conservation, Ray Brook, New York.
- New York State Department of Environmental Conservation (NYS DEC). 2004. *Unit Management Plan Giant Mountain Wilderness Area, Bouquet River Primitive Area*. New York Department of Environmental Conservation, Ray Brook, New York.
- New York State Department of Environmental Conservation (NYS DEC). 2016. *Waterbody Inventory/Priority Waterbody List*. <https://gisservices.dec.ny.gov/gis/dil/>
- New York State Department of Environmental Conservation (NYS DEC). 2018. *High Peaks Wilderness Complex Amendment to the 1999 High Peaks Wilderness Complex Unit Management Plan*. New York Department of Environmental Conservation, Ray Brook, New York.
- New York State Department of Environmental Conservation (NYS DEC). 2019. *Saranac Lakes Wild Forest Unit Management Plan*. New York Department of Environmental Conservation, Ray Brook, New York.
- New York State Department of Environmental Conservation (NYS DEC). 2020. *Sentinel Range Wilderness Area and Bartlett Primitive Area Unit Management Plan*. New York Department of Environmental Conservation, Ray Brook, New York.
- Troy A., Wang D., & Capen D. 2017. *Updating the Lake Champlain Basin Land Use Data to Improve Prediction of Phosphorus Loading*. Lake Champlain Basin Program Technical Report No. 54.
- Waller K., Driscoll C., Lynch J., Newcomb D., & Roy K. 2012. Long-term recovery of lakes in the Adirondack region of New York to decreases in acidic deposition. *Atmospheric Environment*, 46:56-64.
- Wen U. & Almomani A. 2019. Incentives and barriers for participation in community-based environmental monitoring and information systems: A critical analysis and integration of the literature. *Environmental Science & Policy*, 101: 341-357.