



How is my lake doing?

An Interactive Scorecard for Maine Lakes

*A Collaborative Project among DEP,
Lake Stewards of Maine, and Maine Lakes*

Maine Lake Conference
June 2024

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Aquatic Ecologist, ME DEP

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

Protecting Maine's Air, Land, and Water

How is my lake doing?

The Unknown

(missing data)

Shoreland Condition?
Shallow water habitat?

What are the threats?

Watershed Inputs

Invasive Plants?

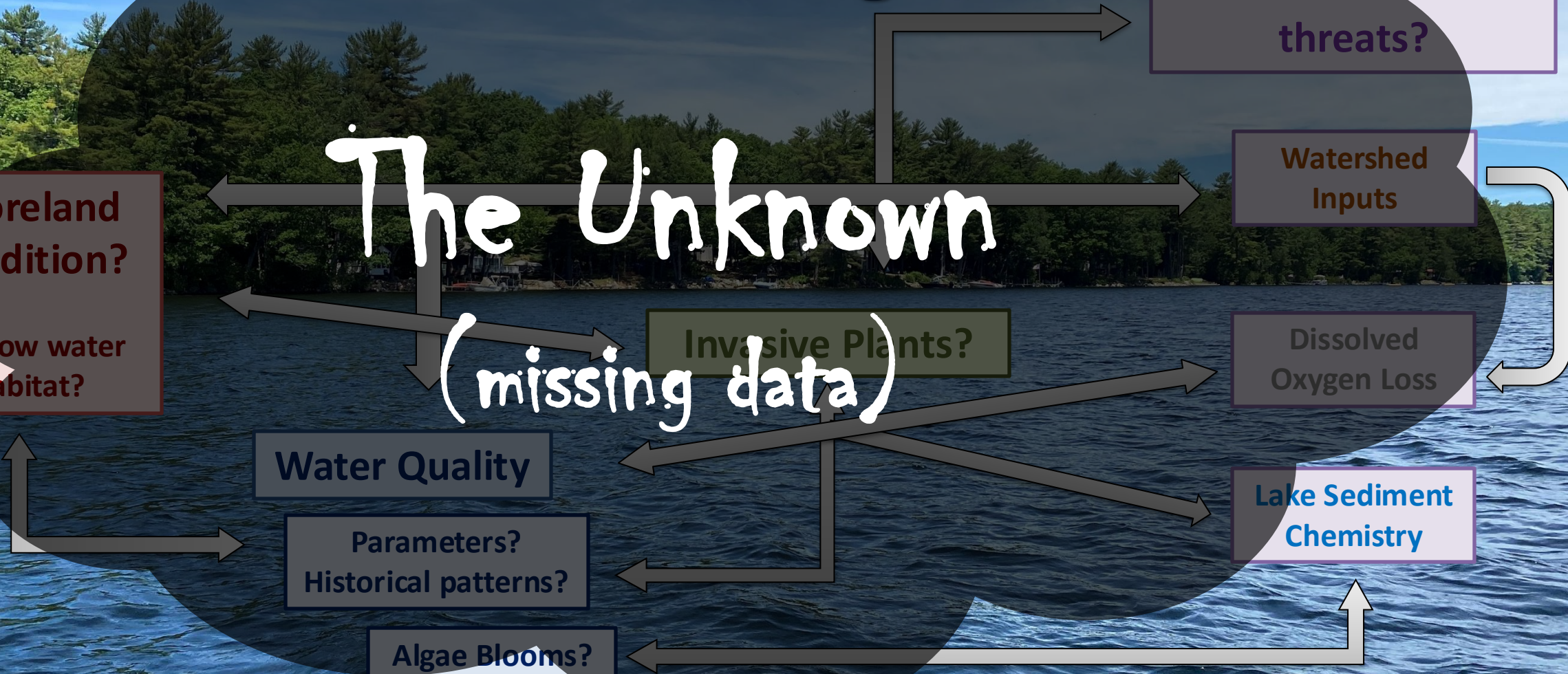
Dissolved Oxygen Loss

Water Quality

Parameters?
Historical patterns?

Lake Sediment Chemistry

Algae Blooms?



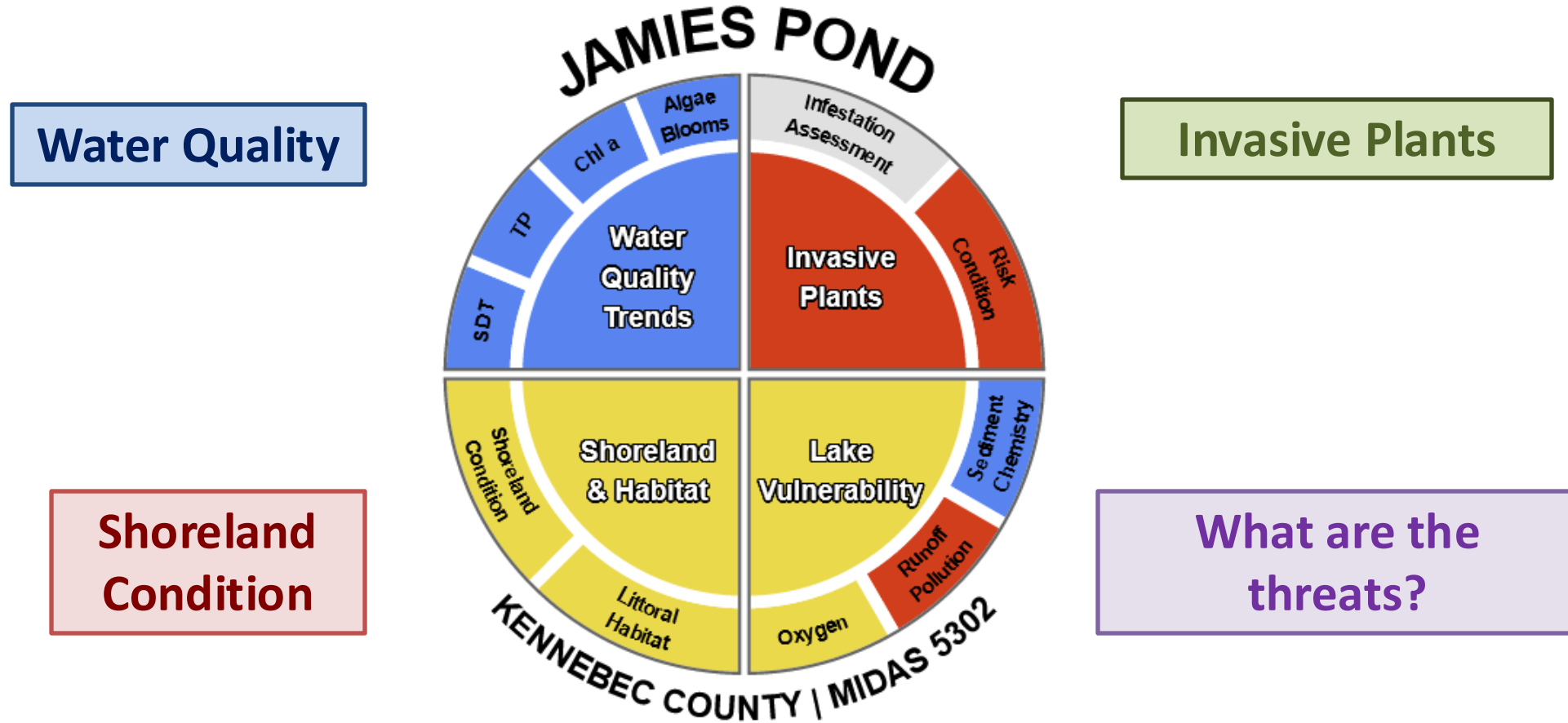
**How is my
lake doing?**

“Looks pretty good!”

**How is my
lake doing?**



A Scorecard For Maine Lakes



Condition Assessments: Good Fair Poor Unknown



But First... An Acknowledgement

“If I have seen a little
further it is by standing
on the shoulders of
Giants”

- Sir Issac Newton

“They had a really good
idea so I copied it”

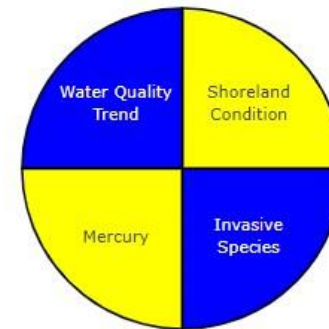


Dr. Leslie Matthews, VT DEC



Vermont Lake Score Card

Scores	Water Quality Data	Lake Information
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Watershed: **Minimally Disturbed**

WQ Standards: **Meets Standards**

Color Scoring System

- Good Conditions
- Fair Conditions
- Poor Conditions
- Insufficient Data

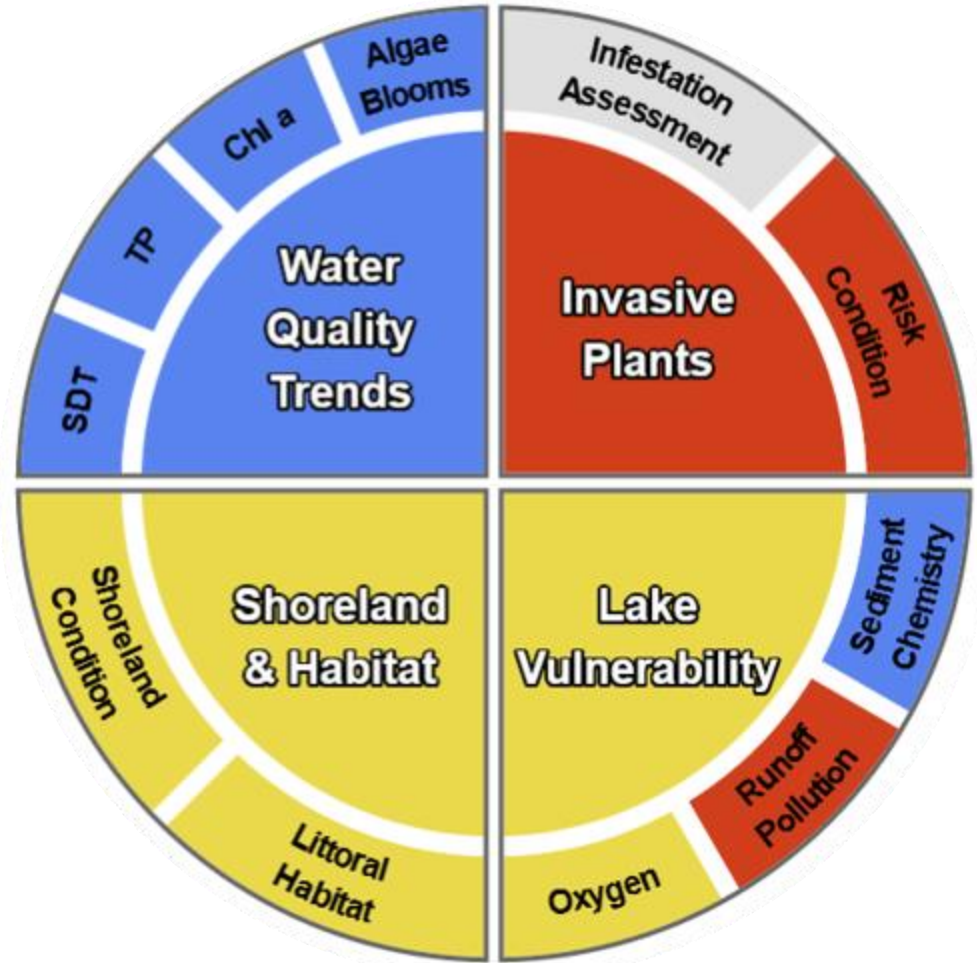
[Learn How Lakes Are Scored](#)

<https://dec.vermont.gov/watershed/lakes-ponds/data-maps/scorecard>



Community Scientist Data

- All Water Quality Measures
- Invasive Plant Assessments
- Vulnerability Data

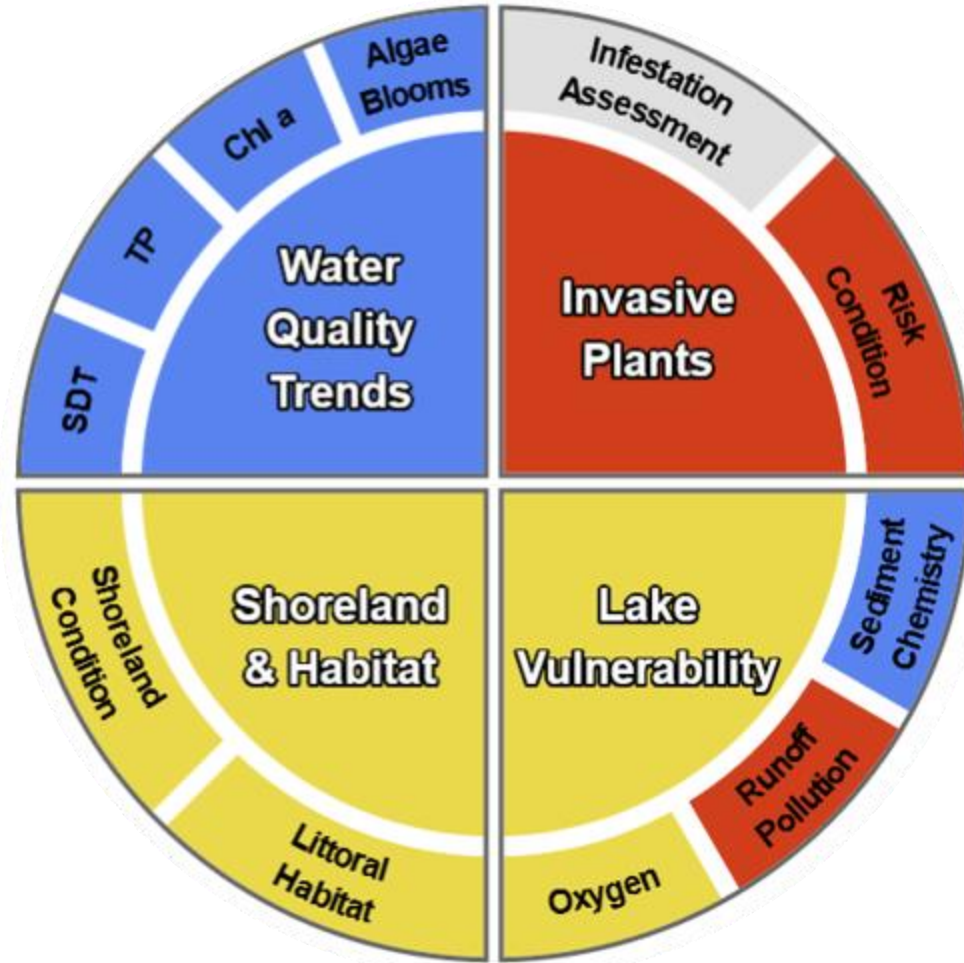


Condition Assessments: ■ Good ■ Fair ■ Poor ■ Unknown



Community Scientist Data

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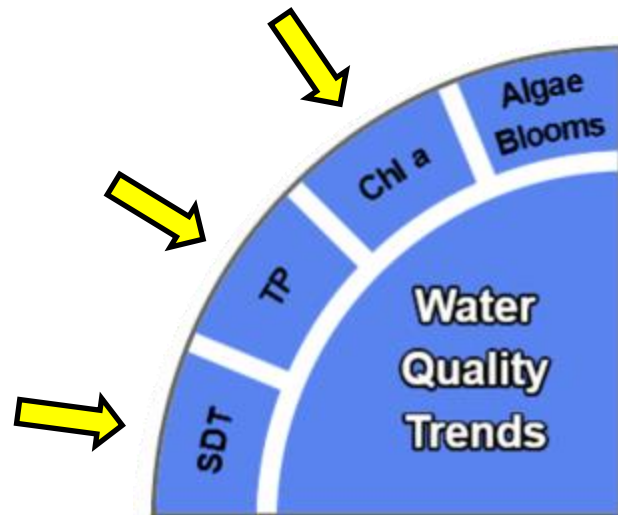
Presentation

Outline

- Overview of scorecard categories
- Live Demo
- Call to Action – we need your help!



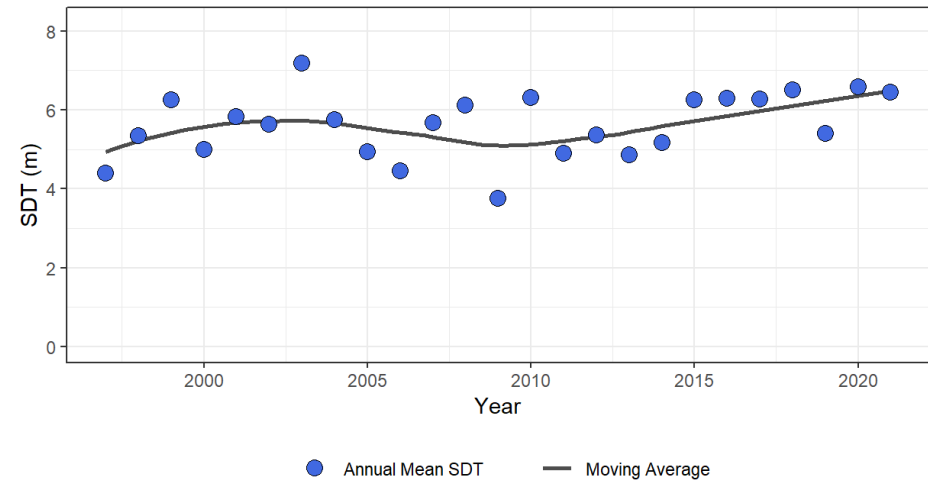
Water Quality



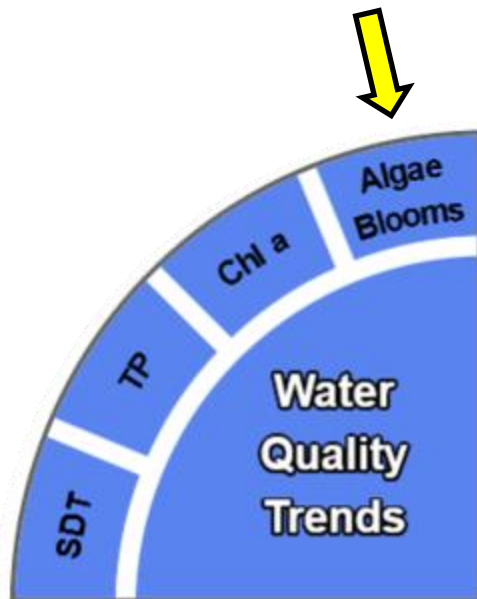
• Trophic Parameter Trends:

- Secchi Disk Transparency (SDT)
- Total Phosphorus (TP)
- Chlorophyll-*a* (Chl a)

- Stable or Improving = **Good**
- Declining Condition = **Fair**
- Strongly Declining Condition = **Poor**
- Not enough data = **Unknown**



Water Quality



- Algae Blooms (Frequency)

- None = Good
- Occasional = Fair
- Frequent = Poor
- Not enough data = Unknown



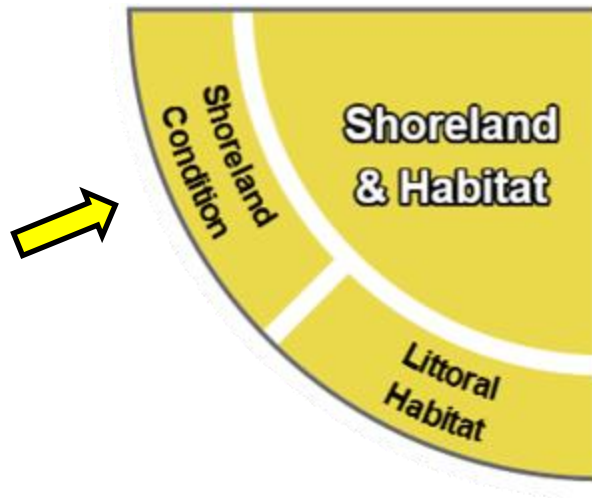
Shoreland Condition



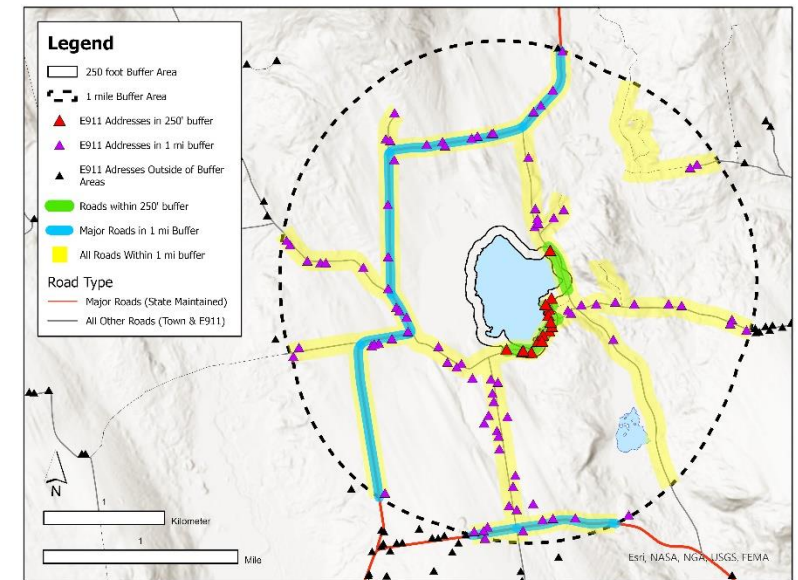
- Littoral Habitat
 - Comparison of shallow-water habitat to natural conditions
 - Natural = Good
 - Intermediate = Fair
 - Diminished = Poor
 - Not yet surveyed = Unknown



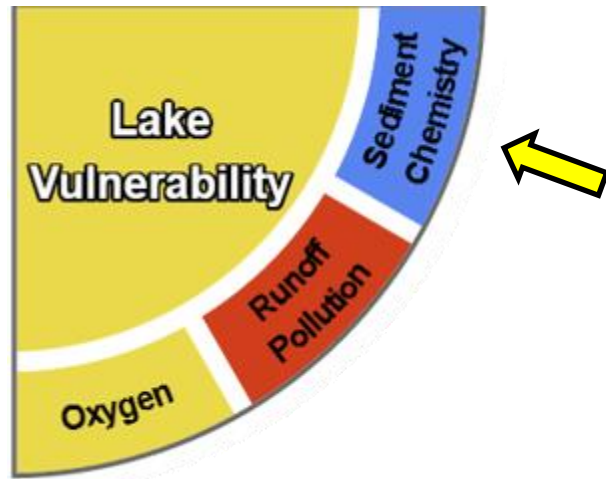
Shoreland Condition



- Shoreland Condition
 - Model Based on Field Surveys and GIS Data
 - Disturbance likely Minimal = **Good**
 - Disturbance likely Intermediate = **Fair**
 - Disturbance likely High = **Poor**
 - Not Enough Data = **Unknown**



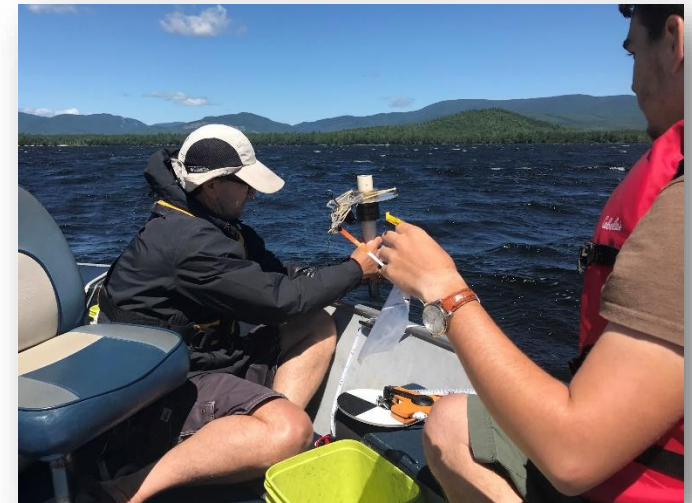
What are the threats?



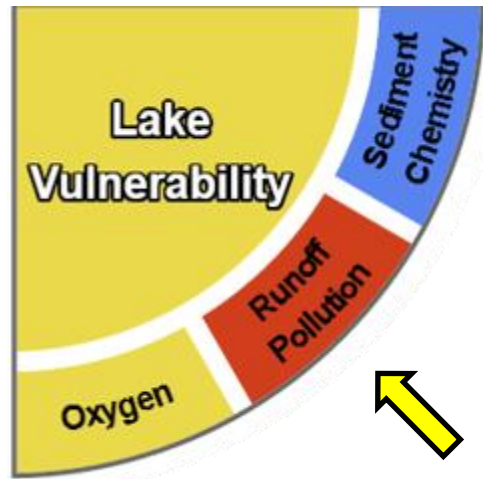
- Sediment Chemistry

- Will lake sediment release P if anoxic?
 - Based on Al:P and Al:Fe ratios of sediment

- Not Likely = Good
- Possibly = Fair
- Highly Likely = Poor
- Sediment not yet sampled = Unknown



What are the threats?



• Runoff Pollution

- Has lake been identified as especially susceptible to runoff pollution?

- public water supplies
- fish hatcheries
- outstanding water quality
- especially threatened by agricultural development
- have been recently listed as 'impaired' or near impairment

- No = **Good**
- Yes, for one reason = **Fair**
- Yes, for multiple reasons = **Poor**

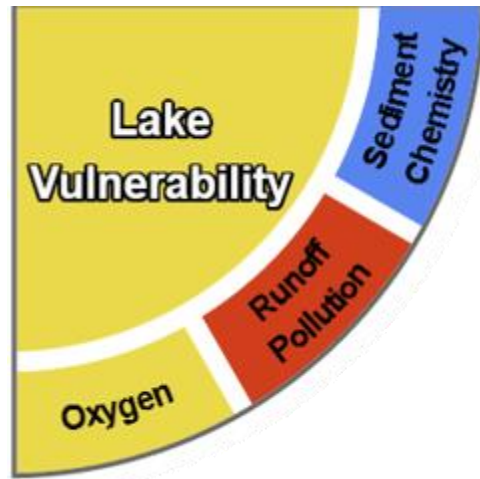


What are the threats?

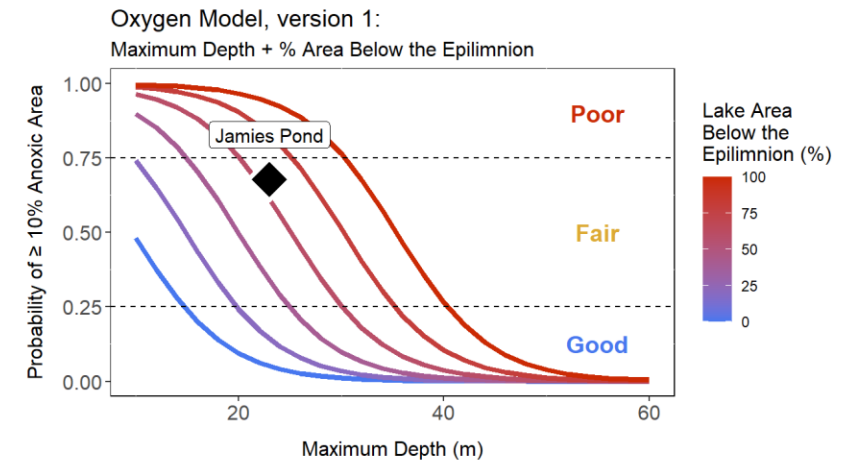
- Oxygen

- Is lake especially susceptible to natural loss of dissolved oxygen?

- Implications for habitat loss and internal release of P



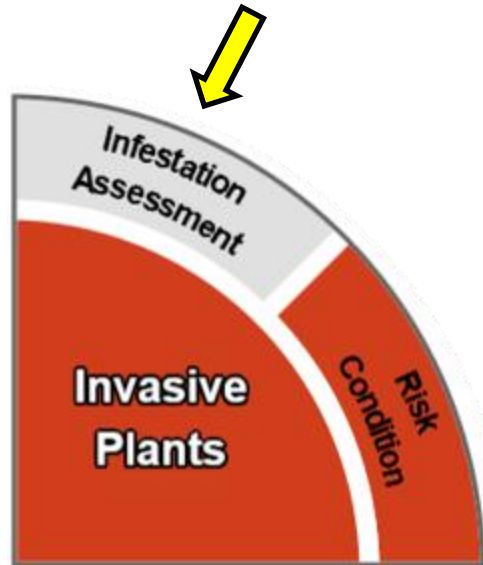
- Unlikely = **Good**
- Possibly = **Fair**
- Likely = **Poor**
- Not Enough Data = **Unknown**



From Deeds et al., 2021



Invasive Plants?



- Infestation Assessments

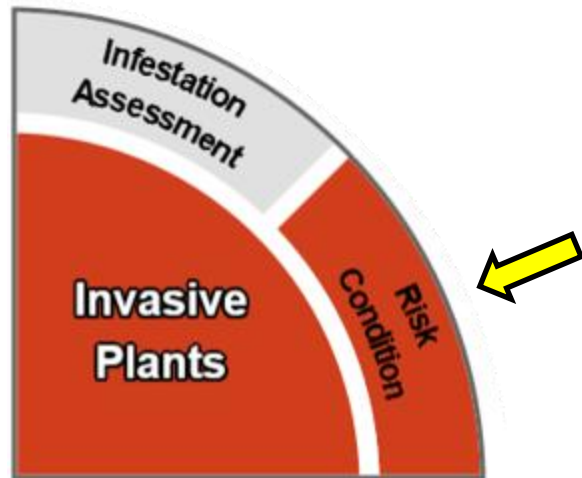
- Based on recency of survey efforts

- IPP, DEP, etc.

- No AIS w/in 3 yrs = **Good**
- No AIS w/in 3-6 yrs = **Fair**
- Current Known Infestation = **Poor**
- Historic or no known survey = **Unknown**

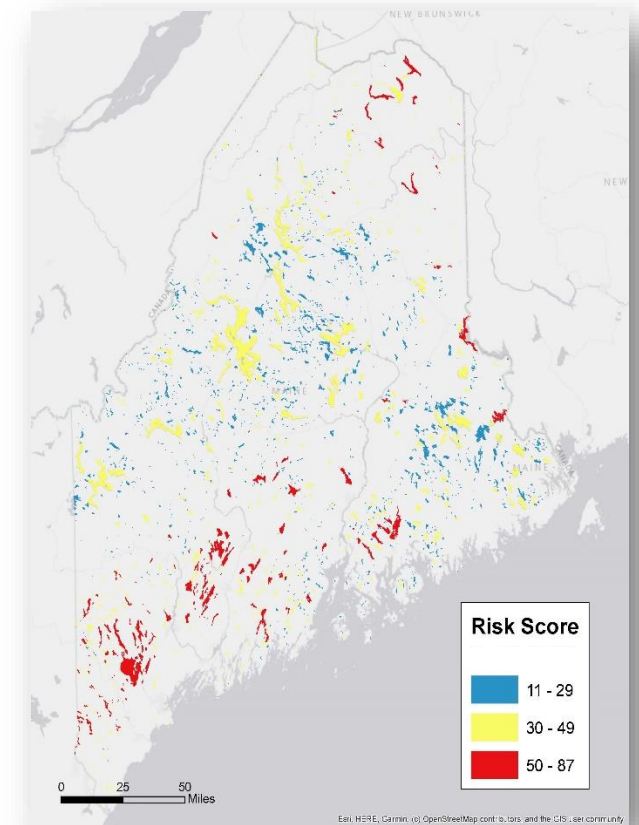


Invasive Plants?



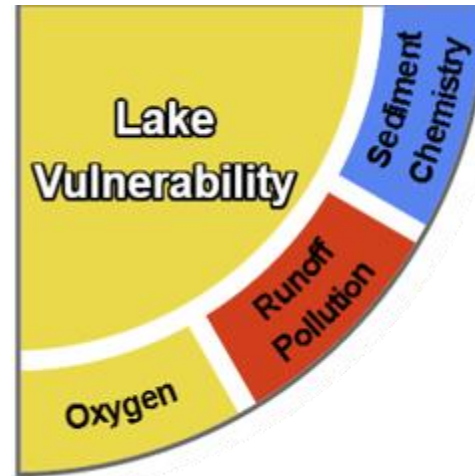
- Risk Condition
 - DEP AIS Vulnerability Model

- *Good Category not used*
- Moderate Risk = Fair
- High Risk = Poor
- Not Enough Data = Unknown



Calculating the Quadrant Score

Overall Category Assessment	Average Score of sub-categories, rounded up
Good	1
Fair	2
Poor	3
Unknown	Not enough data



Parameter	Score
Sediment Chemistry	1
Runoff Pollution	3
Oxygen	2
<hr/>	
Average Lake Vulnerability Score (rounded up)	2



Live Demo

File Edit View History Bookmarks Tools Help

Maine Lake Scorecard

file:///C:/R/LakeReports/ScoreCard/Files/SC_5302_1.html#Jamies_Pond_Scorecard

WQ DB GIS R A lake management fr... Valuing water quality i... Temp lit Stats Reference Papers READ THIS Maine Stream Habitat ...

Menu

- Jamies Pond Scorecard**
- Water Quality
- Shoreland & Habitat
- Lake Vulnerability
- Invasive Plants
- Get Involved!

Maine Lake Scorecard

Jamies Pond

MIDAS 5302 - Sampling station: 1

Jamies Pond Scorecard

JAMIES POND

Water Quality Trends (Good) | Invasive Plants (Poor) | Shoreland & Habitat (Fair) | Lake Vulnerability (Fair)

Algae Blooms | Infestation Assessment | Risk Condition | Sediment Chemistry | Runoff/Pollution | Oxygen | Littoral Habitat | Shoreland Condition

SDT | TP | Chl a

KENNEBEC COUNTY | MIDAS 5302

Condition Assessments: Good (Blue), Fair (Yellow), Poor (Red), Unknown (Grey)



Here's where YOU come in

- Forming Stakeholder Group Now
- Review Scorecard Format, Lake Specific Information, Useability, etc.
- Hoping to fully launch Scorecards online in Fall 2024
- Sign up today!





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www.maine.gov/dep

