

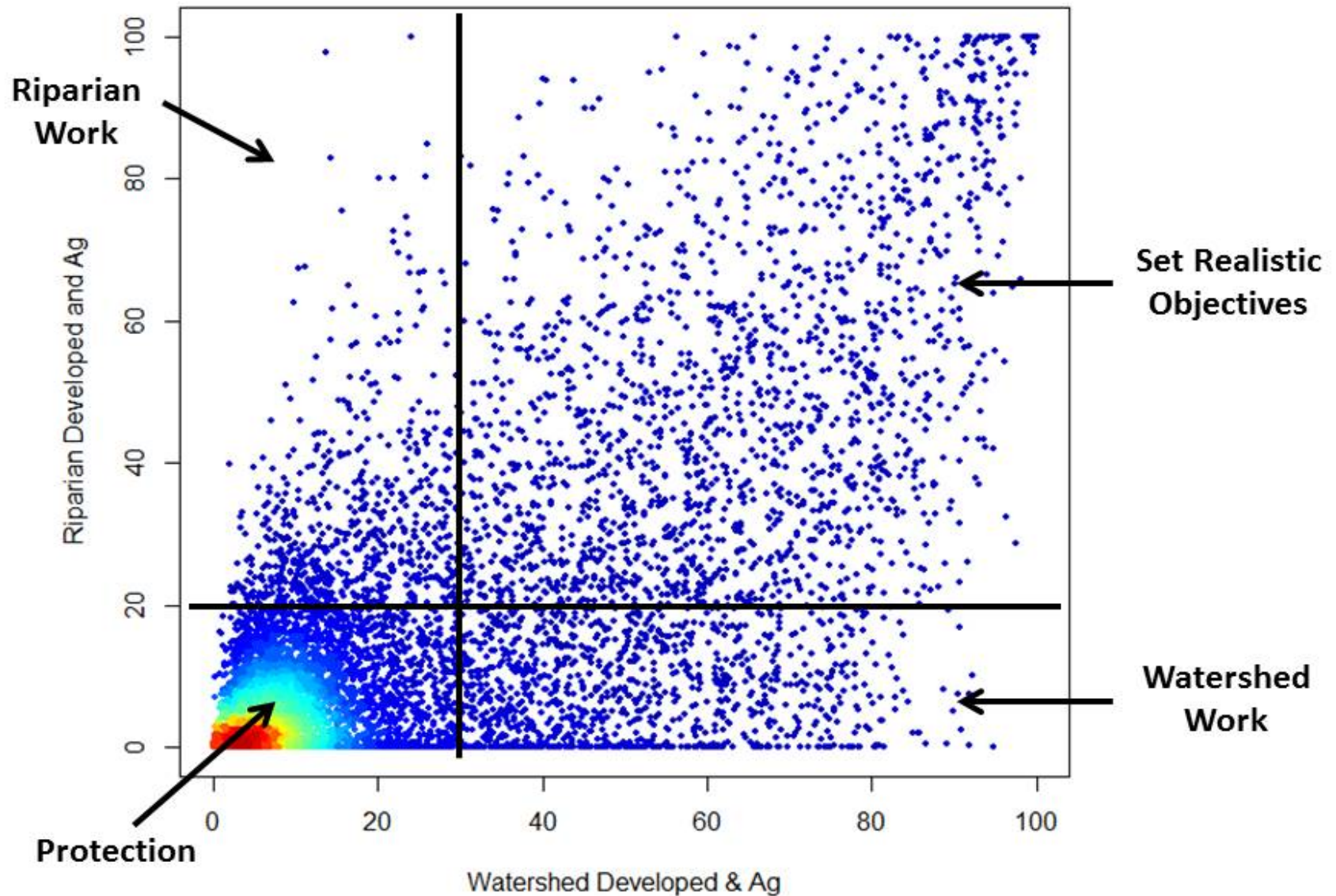
Watershed & Lake Assessment in Wisconsin

Katie Hein &
Matt Diebel



“All happy families are alike; each unhappy family is unhappy in its own way.”
— Leo Tolstoy, Anna Karenina

2006 Land Cover in Wisconsin Lake Watersheds



Tools for Determining Lake Health

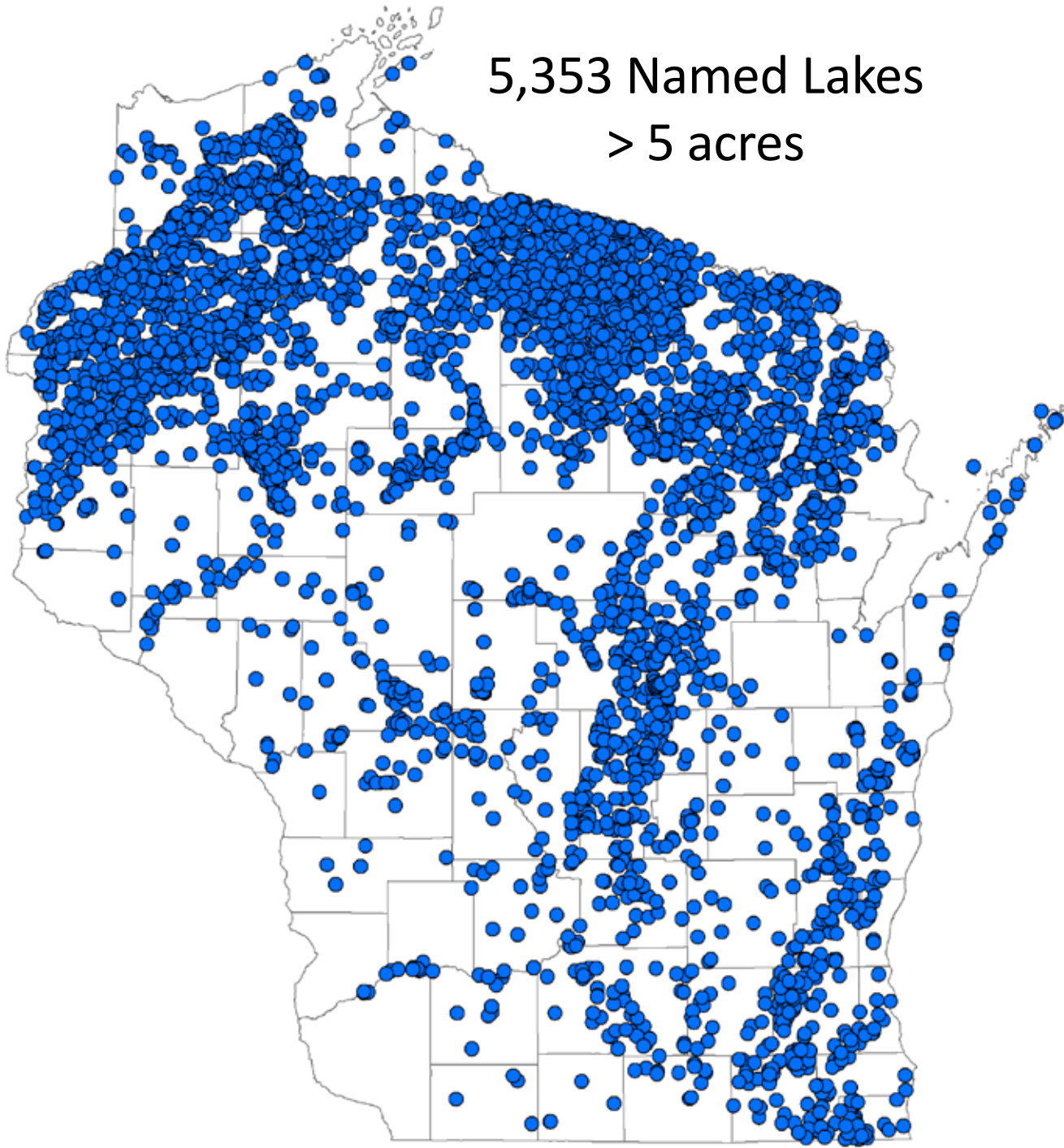
Watershed Assessment

- Size
- Land cover
- Water residence time
- Estimated phosphorus load

Lake Assessment

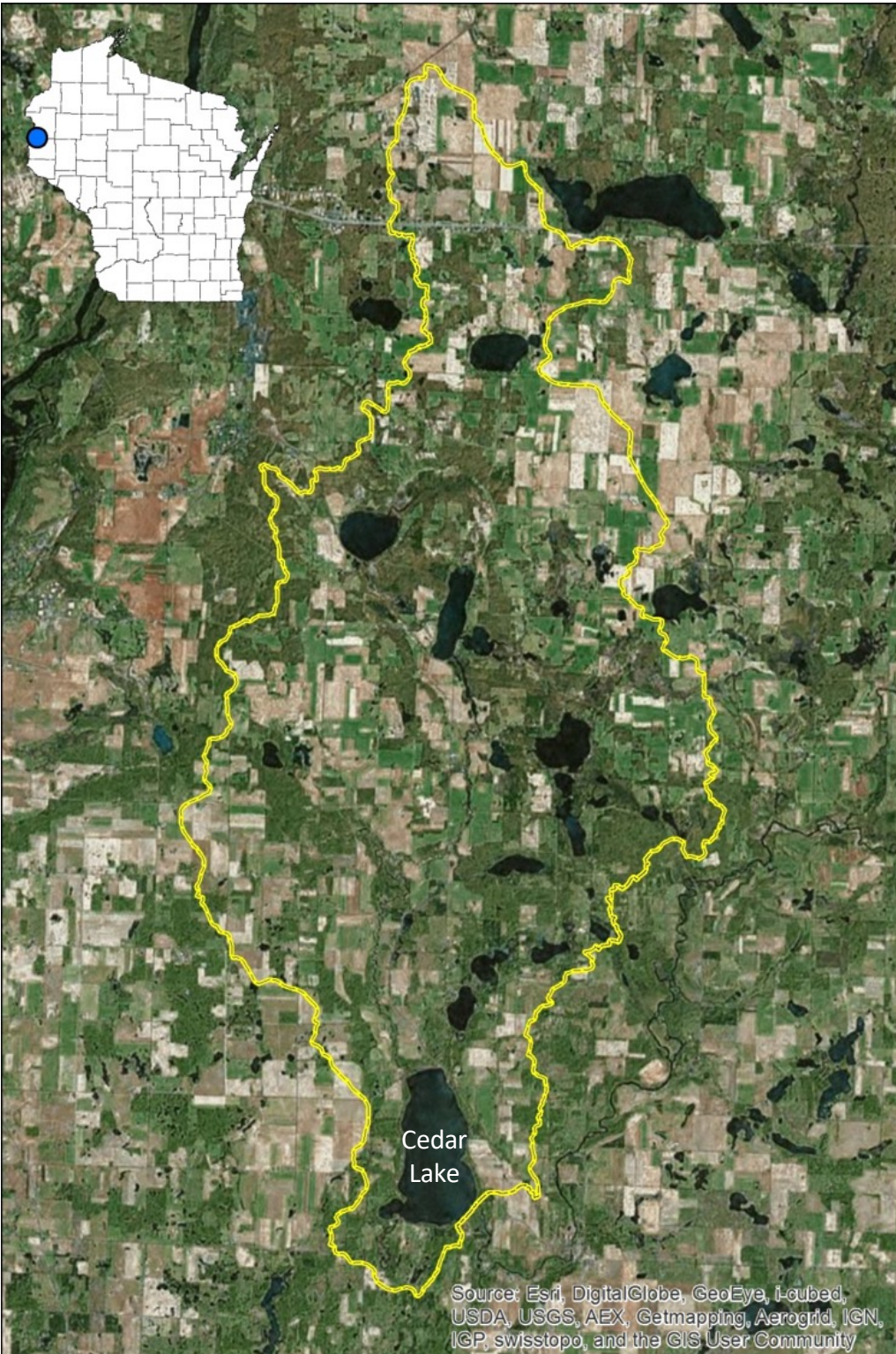
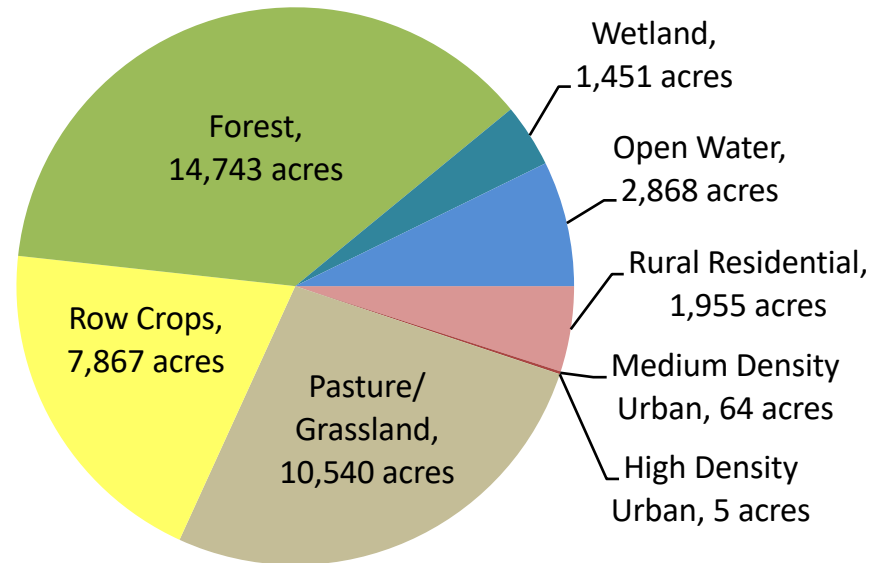
- Nutrients – phosphorus
- Algae – chlorophyll *a*
- Aquatic Plants
- Lakeshore Habitat

5,353 Named Lakes
> 5 acres



Cedar Lake

Polk County	
WBIC	2615100
Surface area	1,120 acres
Max depth	32 ft
Mean outflow	33.7 cfs
Summer water residence time	280 days
Drainage area	39,495 acres
Phosphorus load (most likely)	13,600 lb/yr
Phosphorus load (range)	6,300 - 35,000 lb/yr

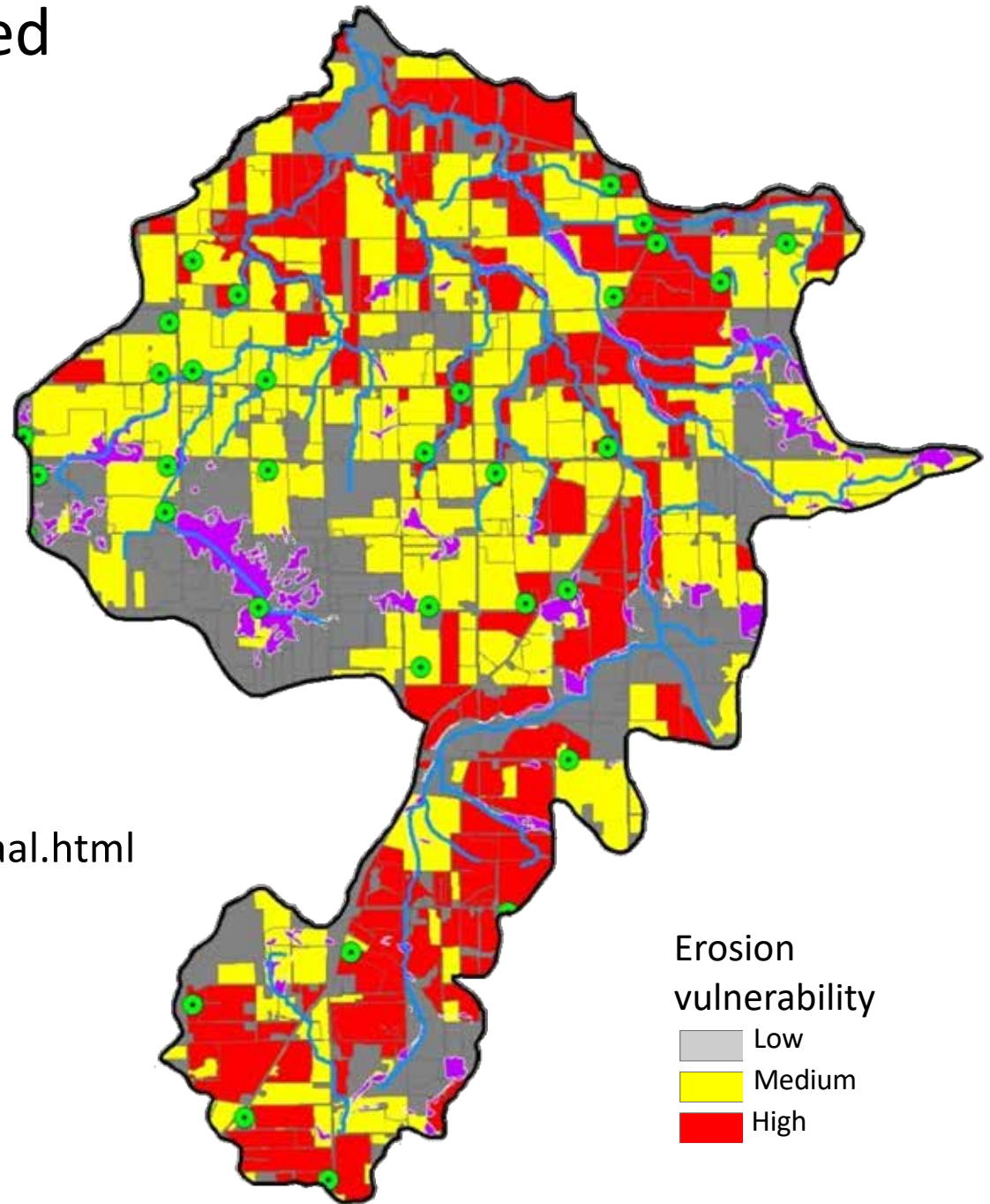


Kankapot Creek Watershed

- 23 square miles
- 187 farms
- 1,129 fields



<http://dnr.wi.gov/topic/nonpoint/evaal.html>



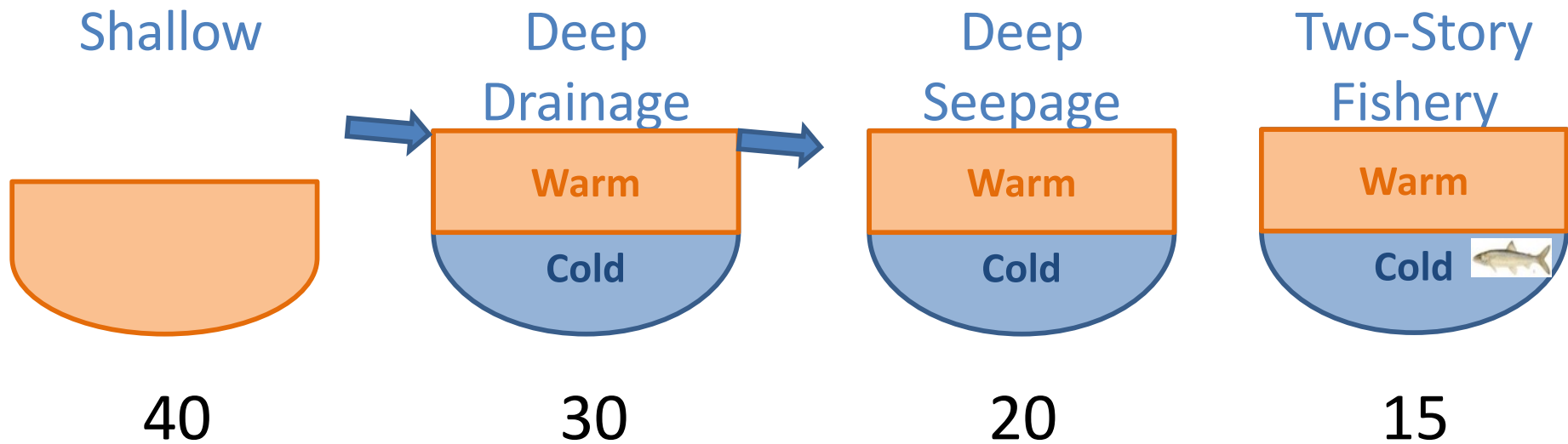
Data Access

- Spreadsheet: <http://dnr.wi.gov/topic/surfacewater/models.html>
- Surface Water Data Viewer: <http://dnrmaps.wi.gov/sl/?Viewer=SWDV>
Water Resources -> WI Hydro Data-Plus Catchments
- Water Condition Viewer: <http://dnr.wi.gov/topic/surfacewater/wcv/>
- Watershed Restoration Viewer:
<http://dnr.wi.gov/topic/surfacewater/restorationviewer/>
- Geodatabase: ftp://dnrftp01.wi.gov/geodata/hydro_va_24k/
Spatial data and many other attributes (requires GIS software)

Questions: matthew.diebel@wisconsin.gov

Lake Assessment: Nutrients

Total Phosphorus Criteria (ug/L)

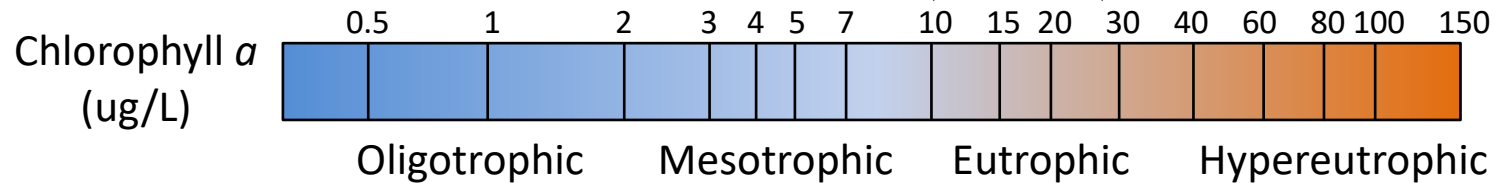


Lake Assessment: Algae

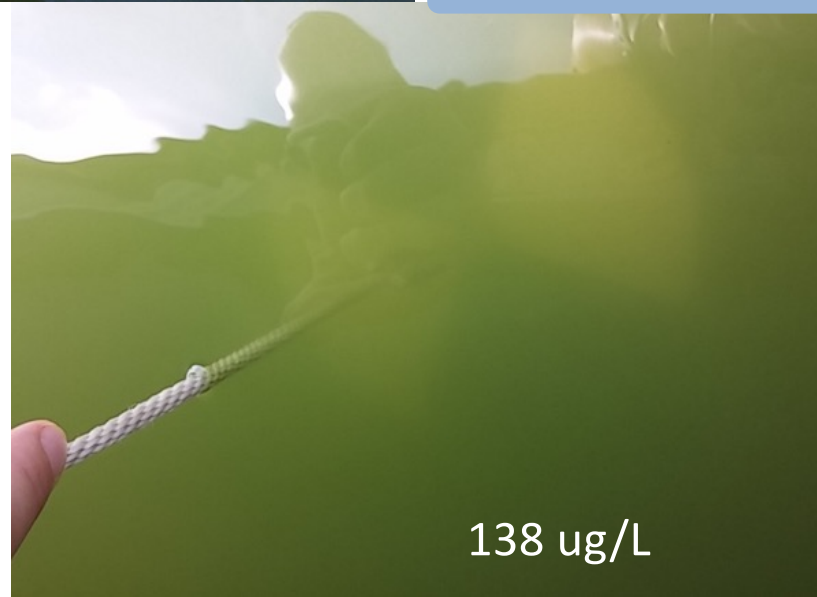
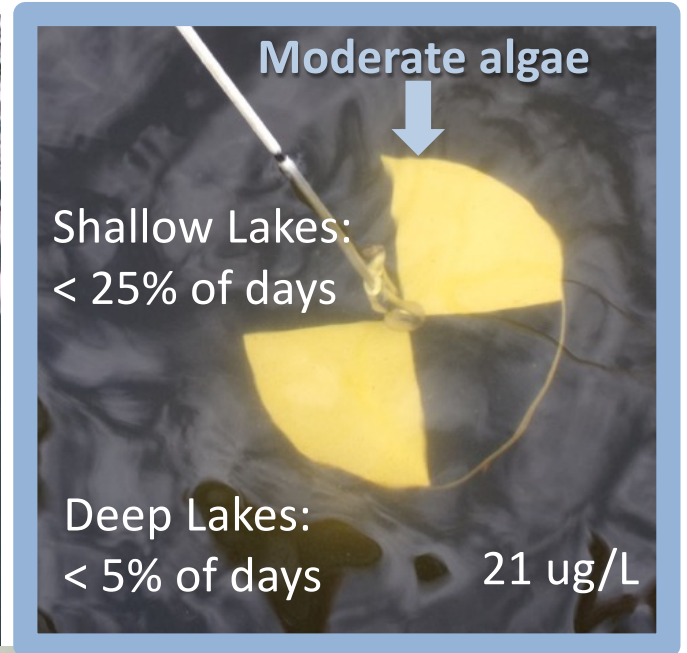
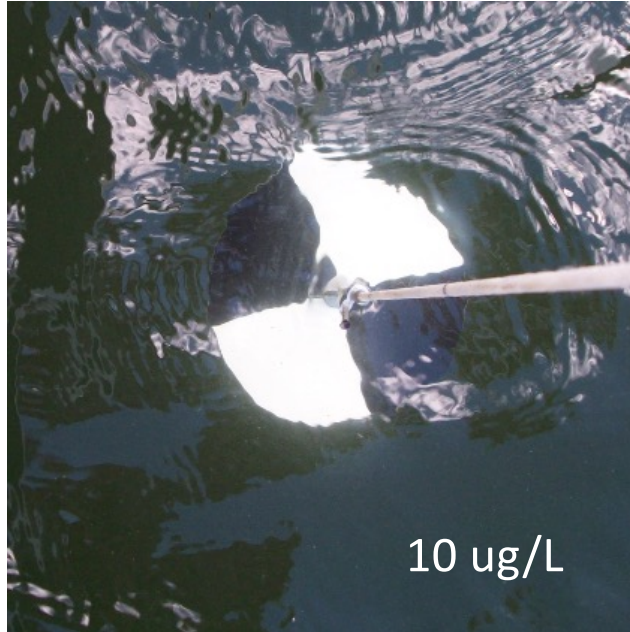
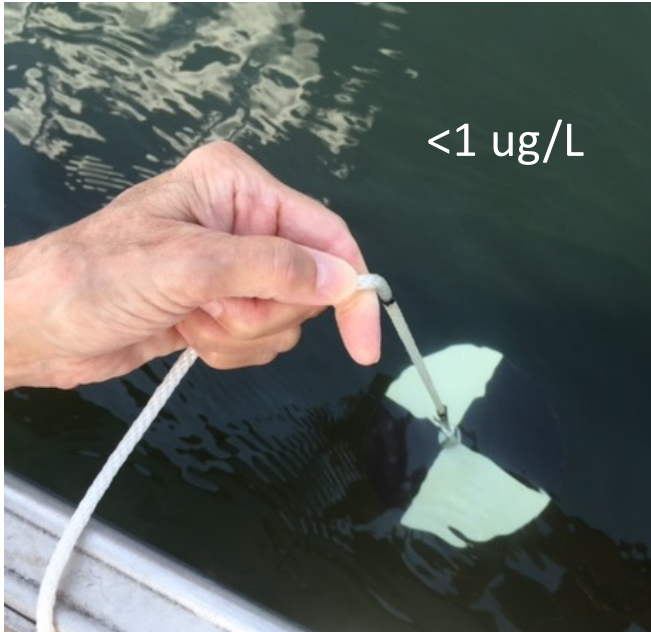


Aquatic Life
Two Story Fishery
10 ↓

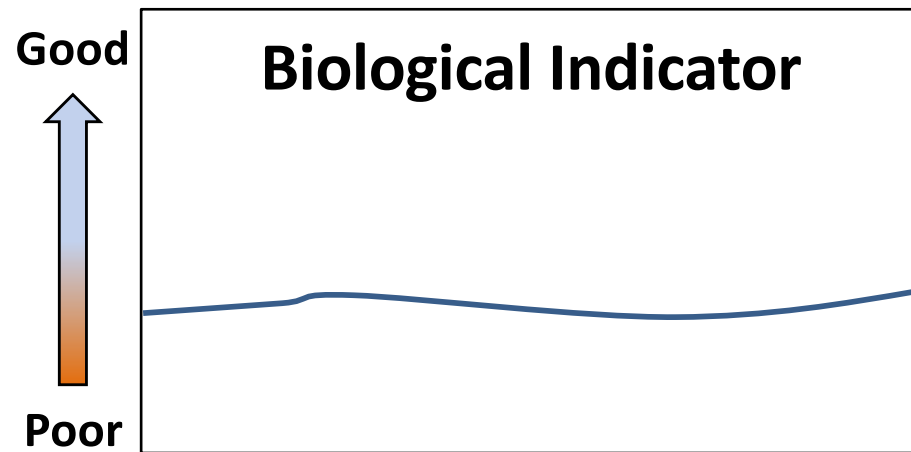
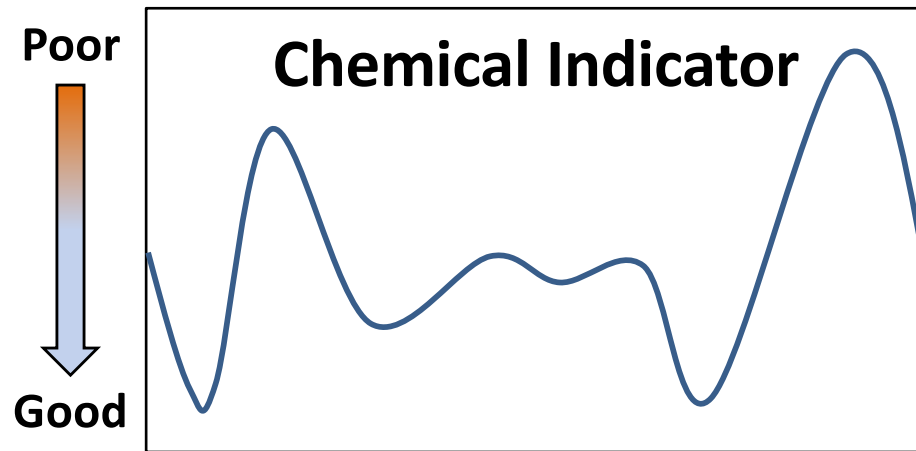
Aquatic Life
Deep & Shallow
27 ↓



Recreation Use: Chlorophyll *a*



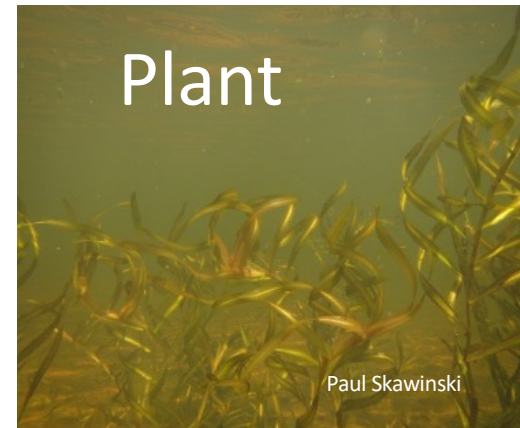
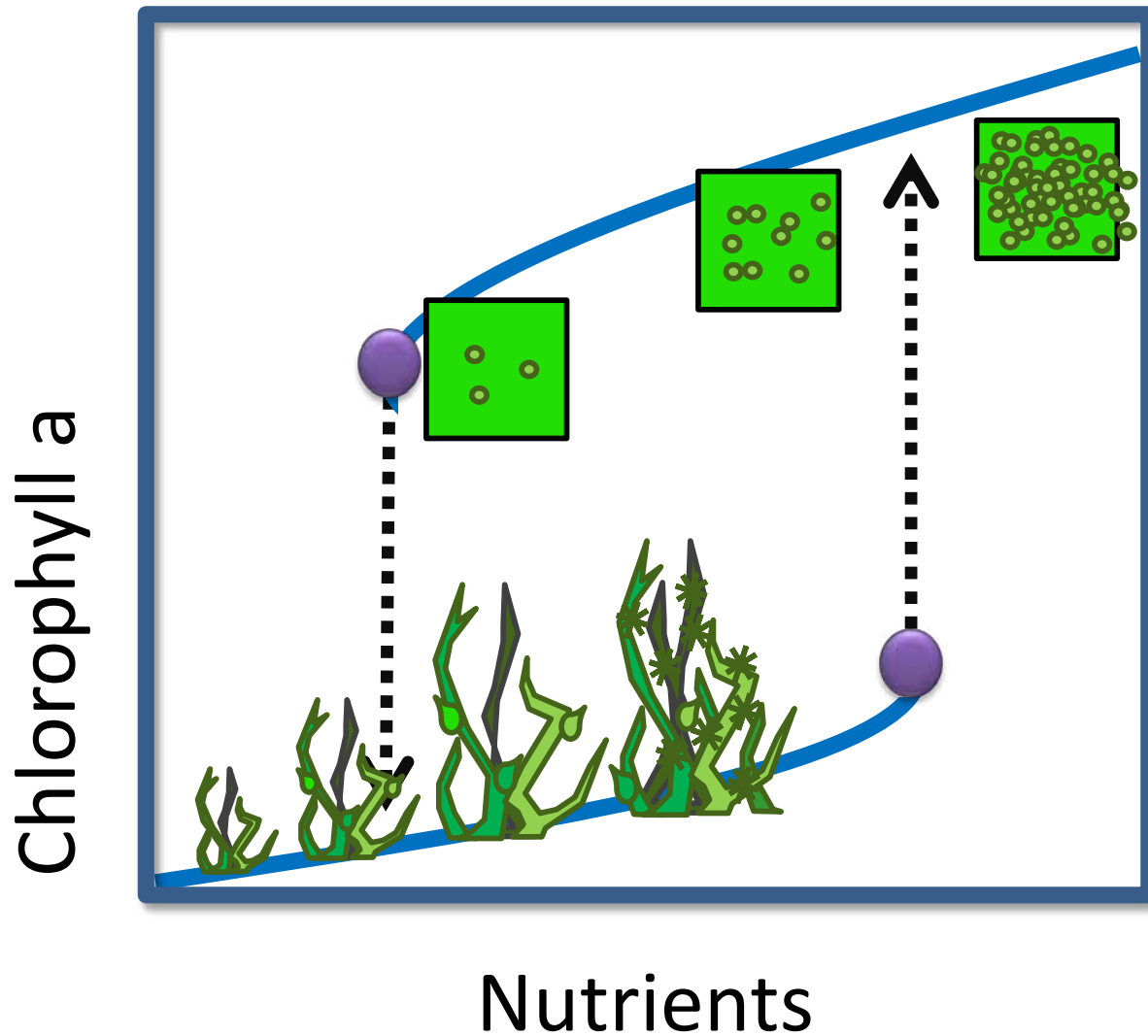
Chemical vs. Biological Indicators



Time



Lake Assessment: Aquatic Plants



Species Tolerance Guilds



Sensitive

Many rosettes

Moderate

Many pondweeds

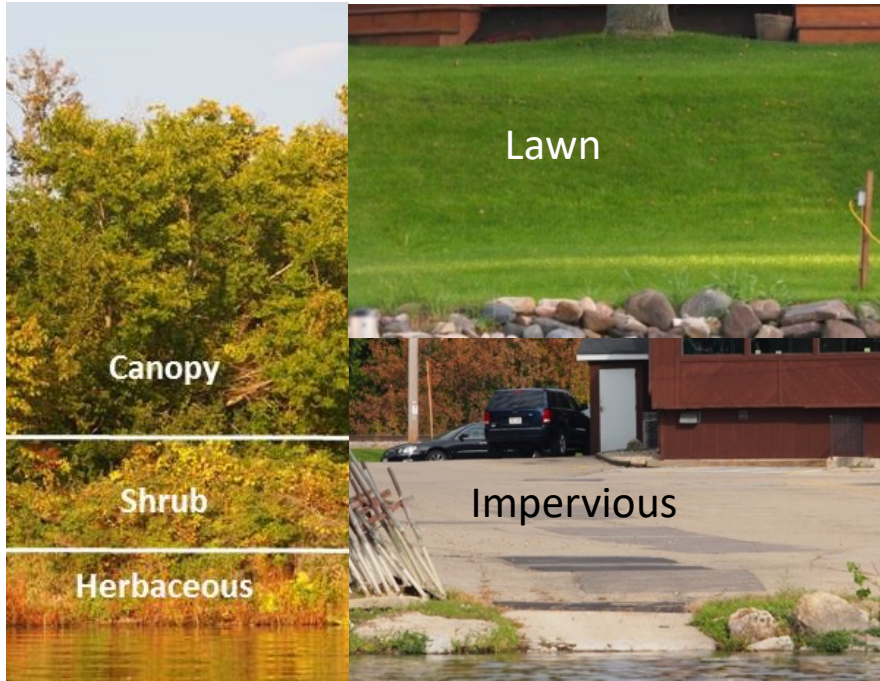
Floating-leaf spp.

Tolerant

Free-floating,
cosmopolitan

Lake Assessment: Lakeshore Habitat

Riparian Percent Cover



Human Structures



Aquatic Plants Woody Habitat



Erosion Concerns



Bank Modifications



Parcel A



Parcel B



Lakeshore Habitat Maps

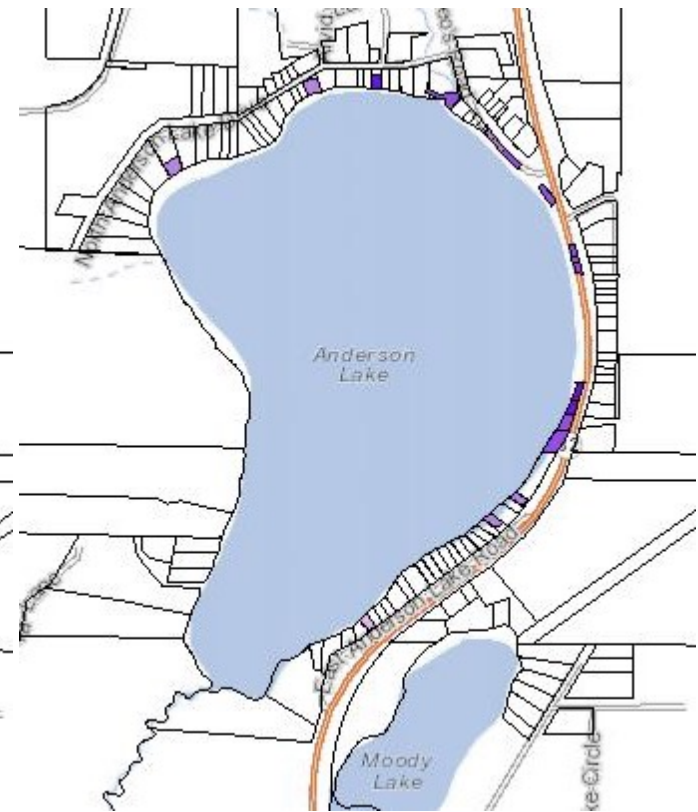
Shrubs & Herbaceous Plants



Lawn



Impervious Surface



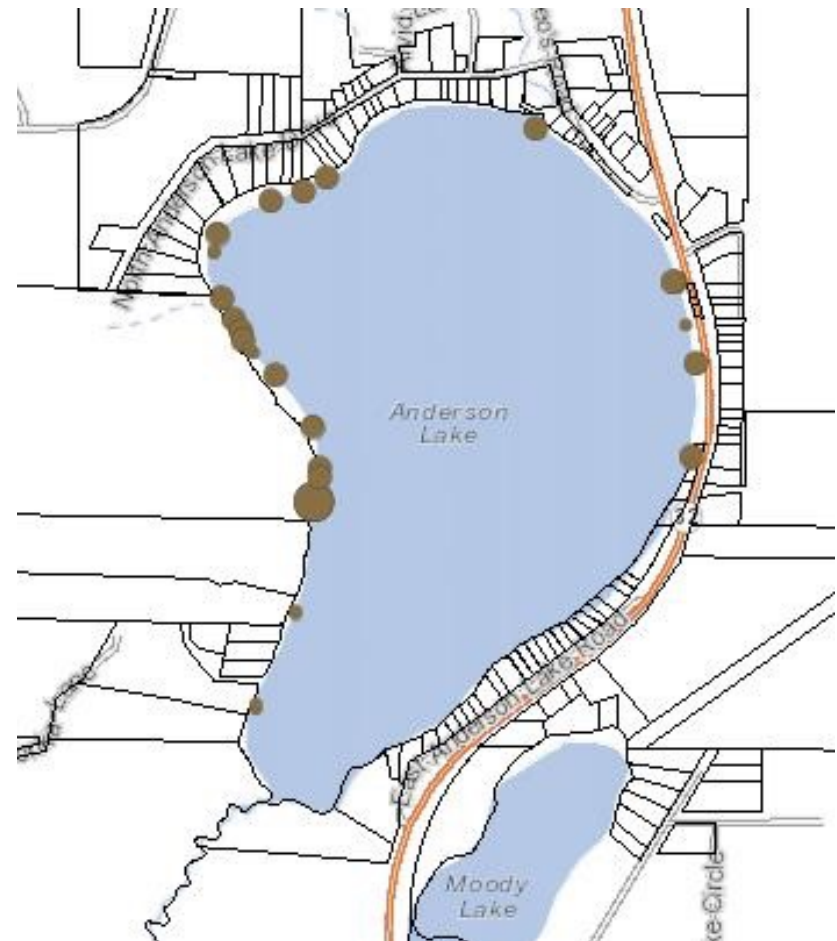
<https://dnr.wi.gov/lakes/viewer/>

Lakeshore Habitat Maps

Floating & Emergent Plants



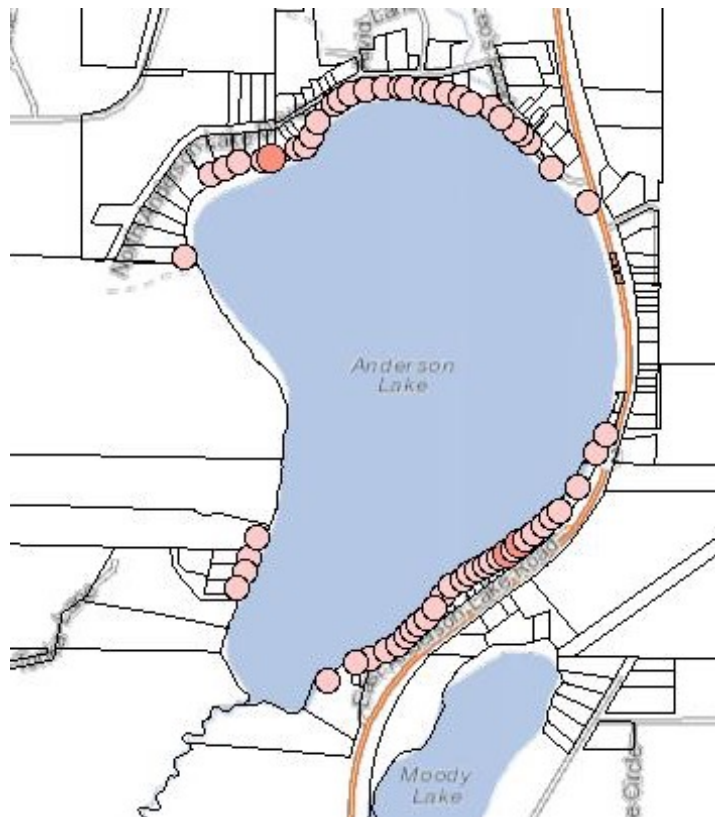
Woody Habitat



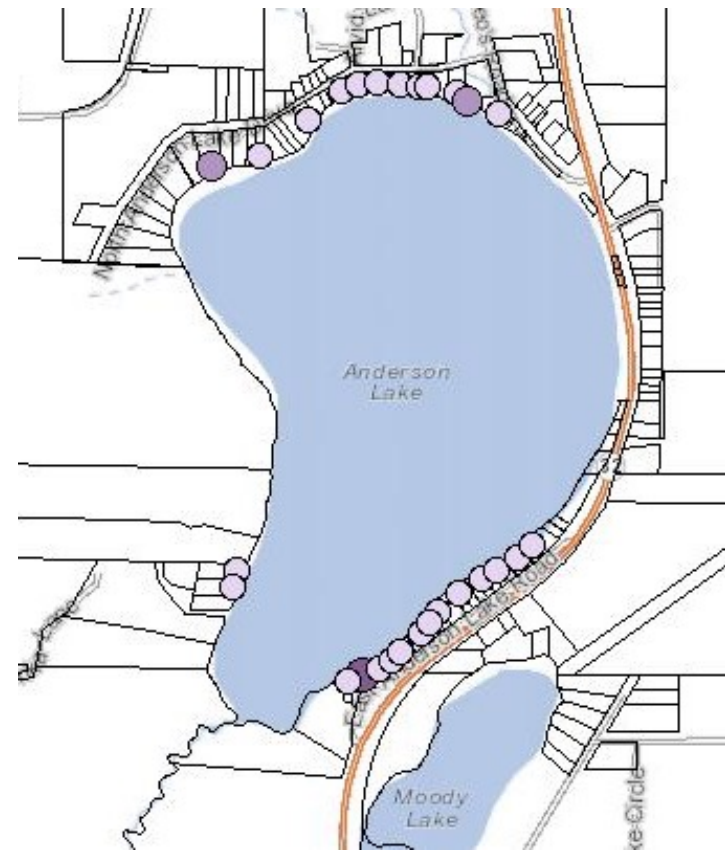
<https://dnr.wi.gov/lakes/viewer/>

Lakeshore Habitat Maps

Piers



Boat Lifts



<https://dnr.wi.gov/lakes/viewer/>

Summary

- There are many tools available for assessing watershed and lake health
- A lot of information is already available for most lakes in Wisconsin
- More monitoring or modeling may be needed
- Use this information to prioritize protection and restoration activities on your lake