Great Lakes Coastal Wetland Monitoring Program

Why?

- Coastal wetlands are important to our Great Lakes
- Many have been converted to other land uses or degraded
- No basin-wide routine monitoring program in place
- Started Great Lakes Coastal Wetland Monitoring ‘Project’ in 2010 to assess status and trends of Great Lakes coastal wetlands

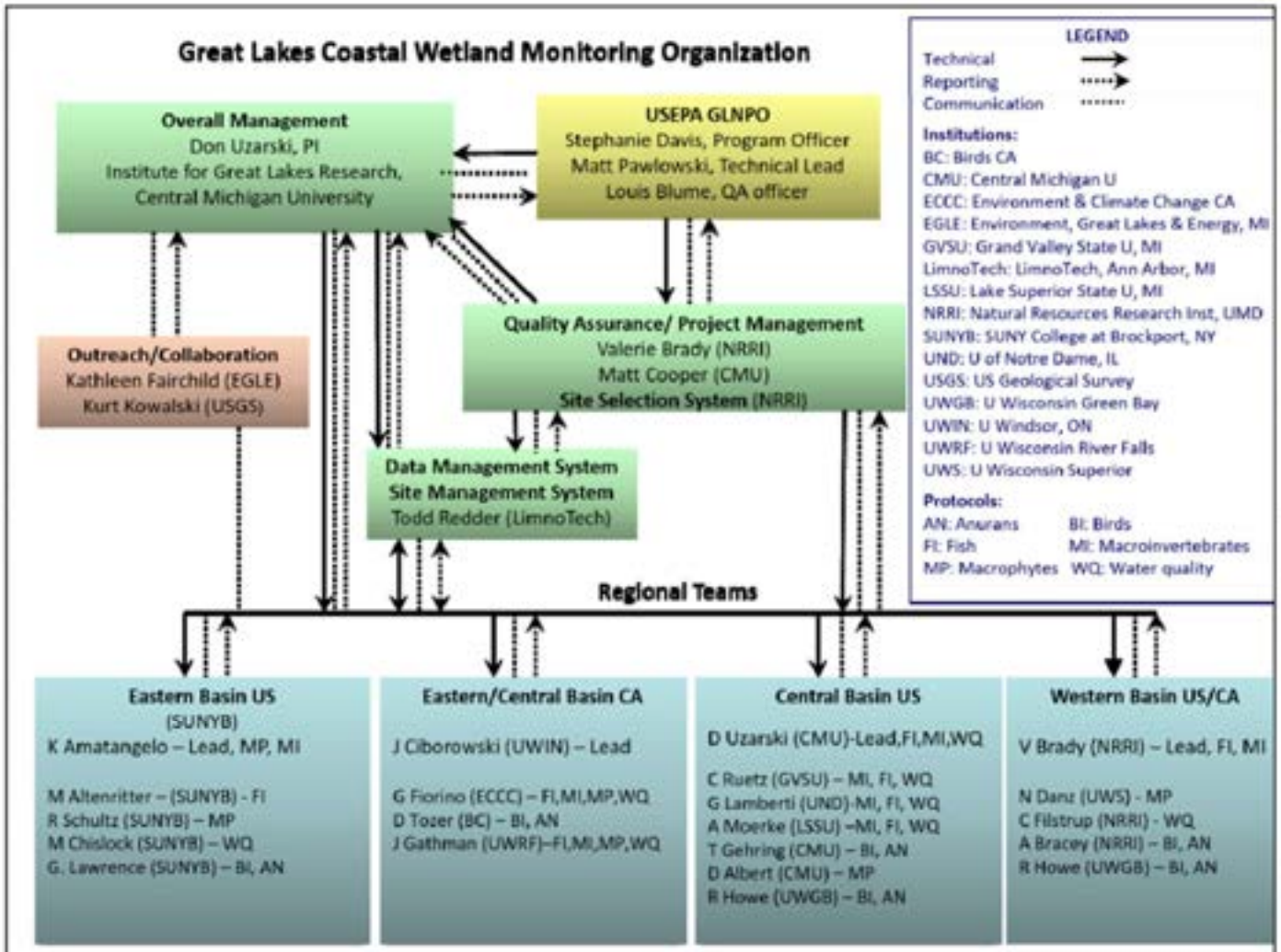
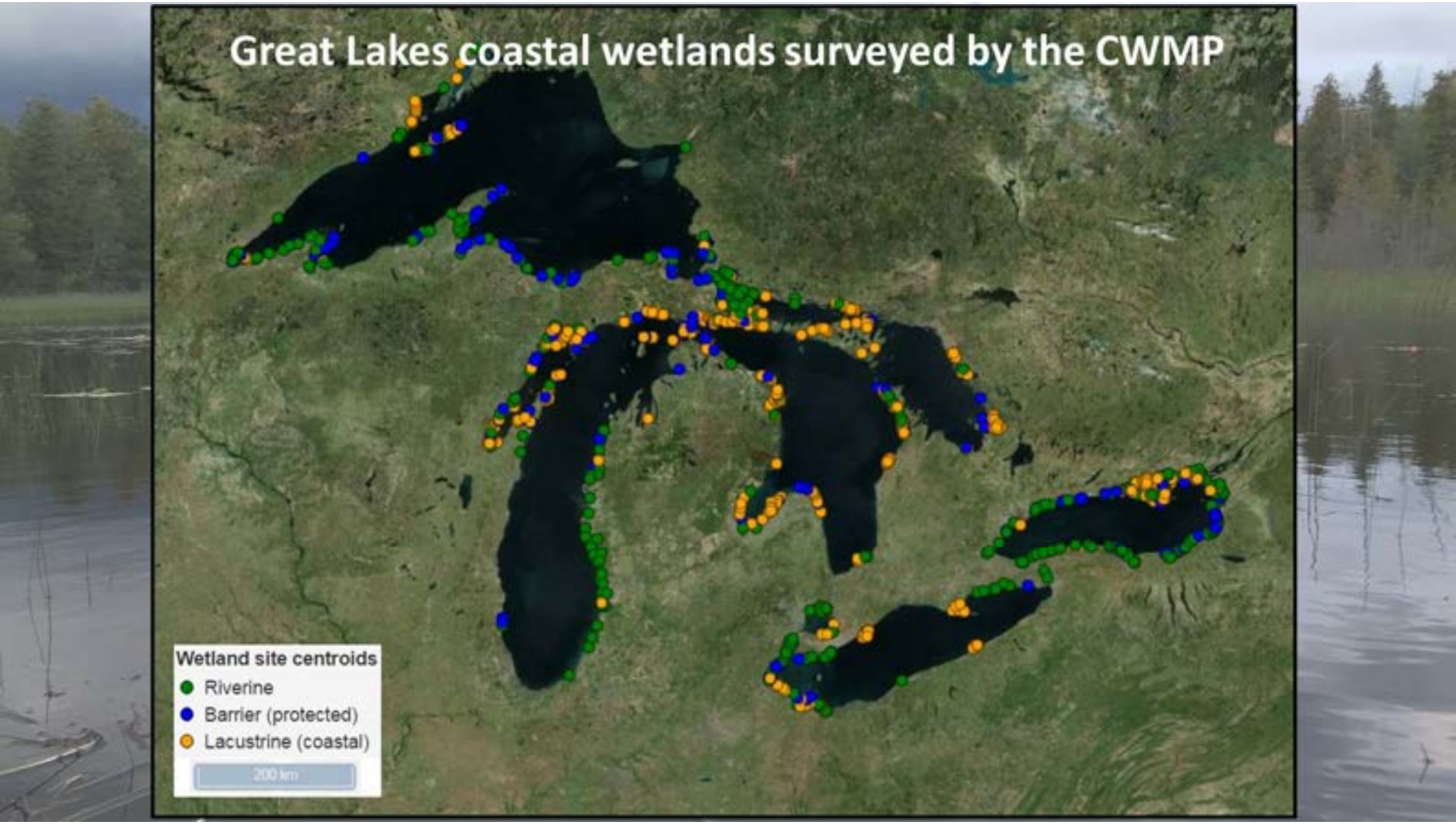


Figure 1. Organizational chart for the program showing lines of technical direction, reporting, and communication separately.


Great Lakes coastal wetlands surveyed by the CWMP
Wetland site centroids
Riverine
Barrier (protected)
Lacustrine (coastal)
200 km

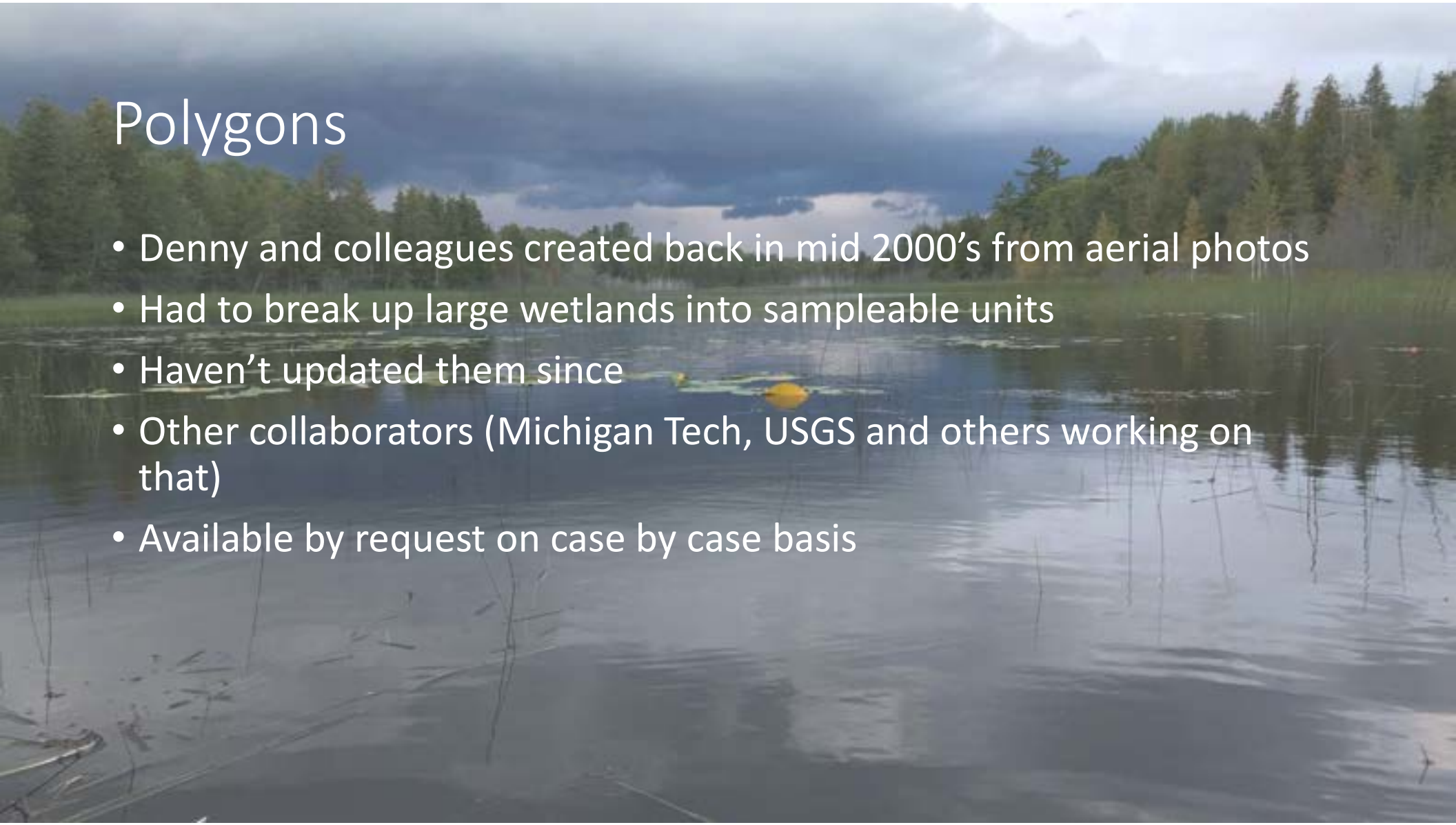
GLCWMP Wetland Definition

1) 4 ha or larger in size

2) have a direct, obvious surface water connection to a Great Lake or connecting channel at least every year or so

3) be close enough to that lake or connecting channel to be influenced by it (e.g., seiches)

4) contain herbaceous or standing-water wetland zones.



Polygons

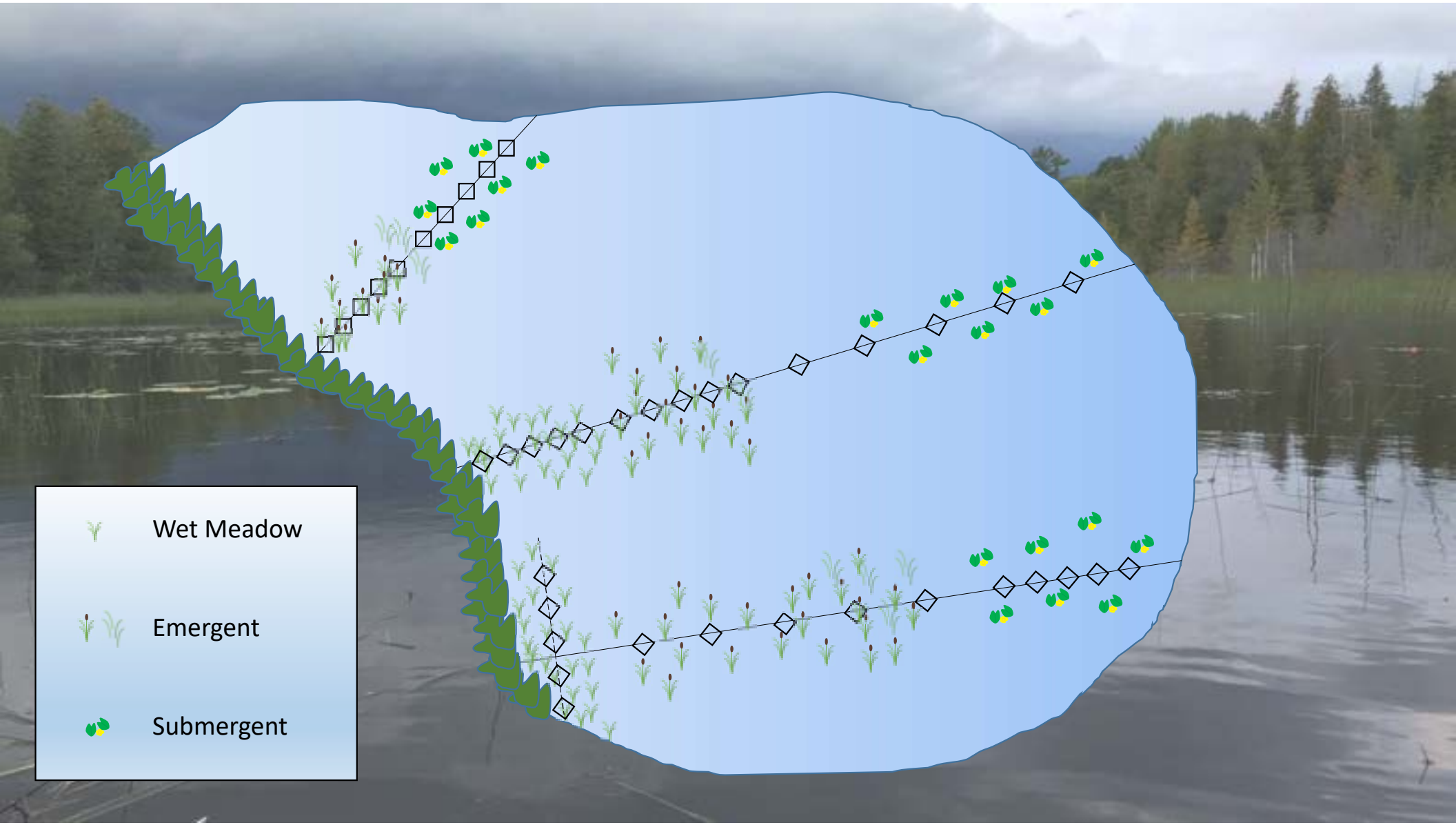
- Denny and colleagues created back in mid 2000's from aerial photos
- Had to break up large wetlands into sampleable units
- Haven't updated them since
- Other collaborators (Michigan Tech, USGS and others working on that)
- Available by request on case by case basis

Greatlakeswetlands.org

From left, Chris Ogozaly, Steven Smith, Matthew Ozanich, Adam Miedema and Stefanie Mills celebrate Emmy win in 2020.

Vegetation Sampling Methods

- Navigate to starting point
- Randomize starting point
- Measure length of transect and divide each zone by 6 to get distance apart
- Determine zones by dominant species
- 15-45 quadrats per site (3 transects, up to 3 zones, 5 quadrats per transect-zone combination

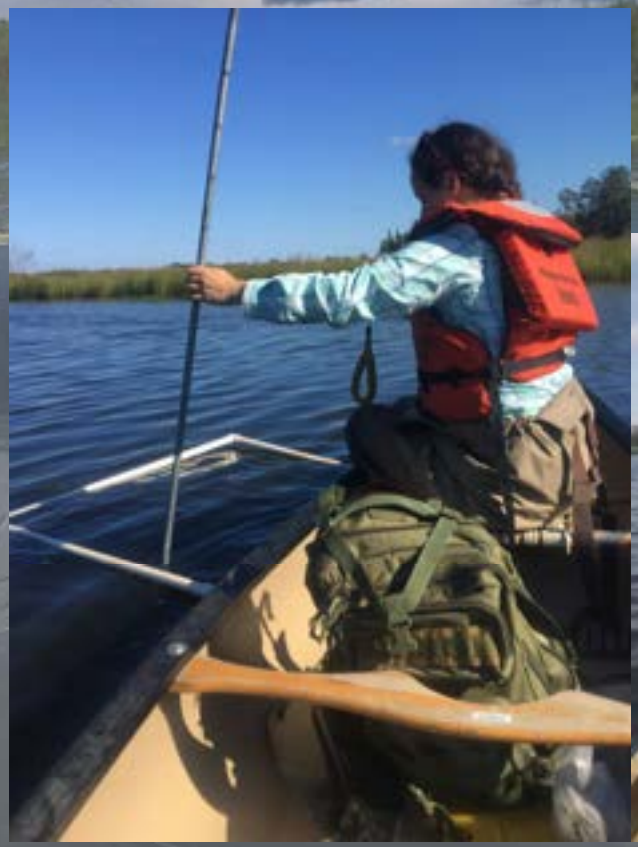

Wet Meadow
Emergent
Submergent

Vegetation Sampling Methods

- Abiotic data- Quadrat, photo, GPS, depth, soil

Vegetation Sampling Methods

- Percent cover
- Percent cover is 3D and can be greater than 100%
- Sample same side
- Submergent or deep emergent zones can be tricky (wind, raking, etc.)

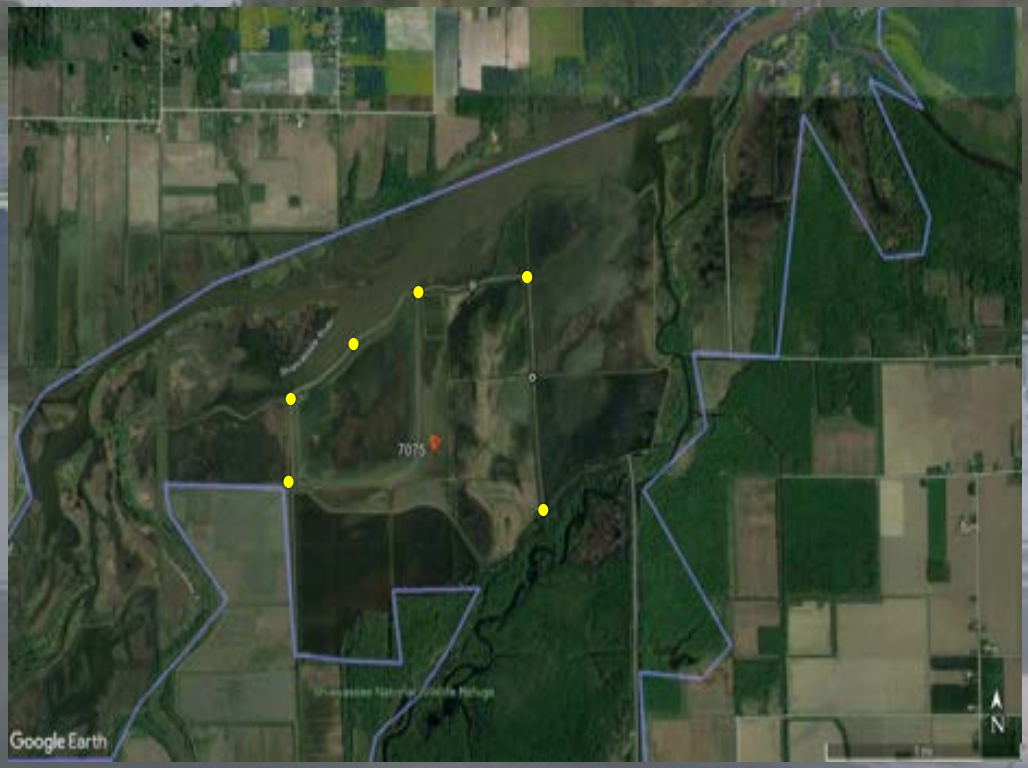


Vegetation Sampling Methods

- Narrow sampling method transects <12m
- Phragmites procedure

Anuran Survey Methods

- 3 surveys per point at least 15 days apart from March 20th-July 10th
- Minimum nighttime temperatures have to be met for each survey:
  1) 5C/41F
  2) 10C/50F
  3) 17C/63F
- Maximum of 6 points per wetland at least 500m apart
- ½ hour after sunset to 4 ½ hours after sunset



ANURAN MONITORING
Field Data Sheet
2022

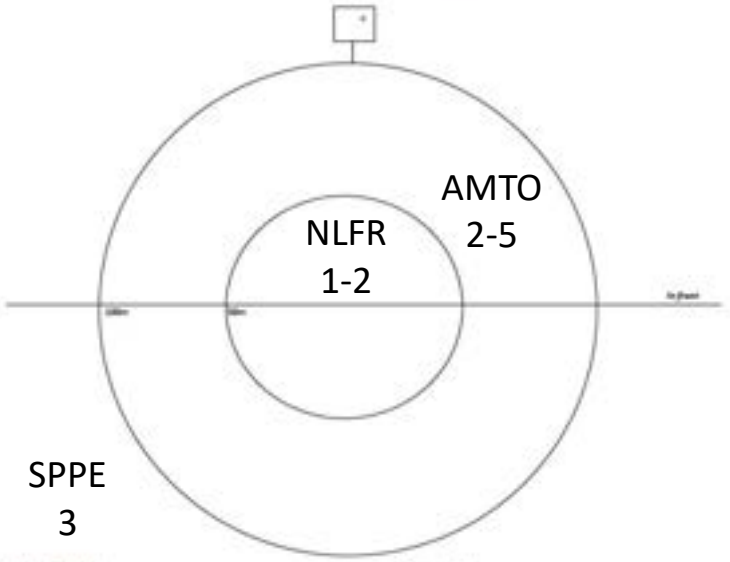
Point ID:			
Sample:	Weather: Dry Damp/Haze/Fog Drizzle Rain		Waypt:
Date: / 2022	% Cloud Cover:	Wind:	Lat:
Start Time: CDT EDT	Air Temp °C	Water Temp: °C	Lon:
Observer:	Noise:		Rec #:

Observations:
CHFR
x-y

x = calling code (1,2, or 3)
y = number of individuals (1, or if >1, if small group of the same species are at the same location); leave blank for calling code 3

Examples: AMTO 2-5 CHFR 2-8 SPPE 3

Calling Code	Description
1	Calls not simultaneous; individuals can be accurately counted
2	Some calls simultaneous; individuals can be reliably estimated
3	Full chorus, calls continuous & overlapping; not reliably estimated

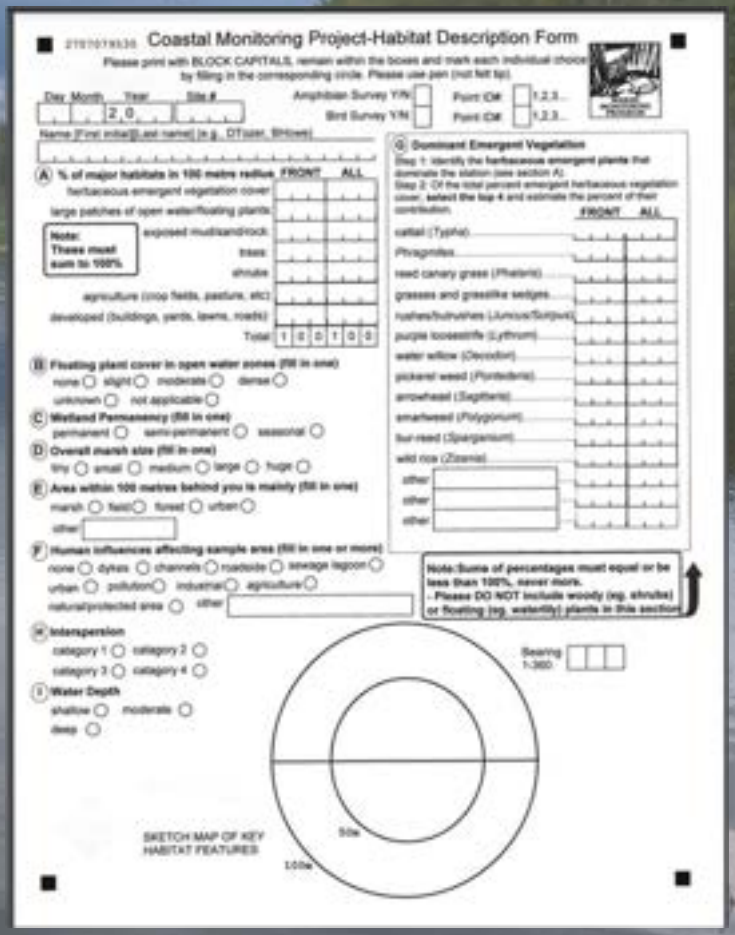


1st data entry (signature): _____ Comments:

2nd data entry (signature): _____

Bird Survey Methods

- May 20th-July 10th, at least 15 days apart
- 1-8 points per wetland
- Morning and an Evening survey for each point
- Morning survey ½ hour before sunrise to 4 hours after sunrise
- Evening survey 4 hours before sunset to ½ hour after sunset
- Collect abiotic data and vegetation data


Coastal Monitoring Project-Habitat Description Form

Please print with BLOCK CAPITALS, remain within the boxes and mark each individual choice by filling in the corresponding circle. Please use pen (not felt tip).

Day Month Year Site #

2 0

Amphibian Survey Y/N

Bird Survey Y/N

Point ID#

Name [First initial][Last name] (e.g. DTozer, BHowe)

A % of major habitats in 100 metre radius FRONT ALL

herbaceous emergent vegetation cover

large patches of open water/floating plants

exposed mud/sand/rock

trees

shrubs

agriculture (crop fields, pasture, etc)

developed (buildings, yards, lawns, roads)

Note: These must sum to 100%

Total 1 0 0 1 0 0

B Floating plant cover in open water zones (fill in one)

none slight moderate dense

unknown not applicable

C Wetland Permanency (fill in one)

permanent semi-permanent seasonal

D Overall marsh size (fill in one)

tiny small medium large huge

E Area within 100 metres behind you is mainly (fill in one)

marsh field forest urban

other

F Human influences affecting sample area (fill in one or more)

none dykes channels roadside sewage lagoon

urban pollution industrial agriculture

natural/protected area other

H Interspersion

category 1 category 2

category 3 category 4

I Water Depth

shallow moderate

deep

G Dominant Emergent Vegetation

Step 1: Identify the herbaceous emergent plants that dominate the station (see section A).

Step 2: Of the total percent emergent herbaceous vegetation cover, select the top 4 and estimate the percent of their contribution.

FRONT ALL

cattail (Typha)

Phragmites

reed canary grass (Phalaris)

grasses and grasslike sedges

rushes/bulrushes (Juncus/Scirpus)

purple loosestrife (Lythrum)

water willow (Decodon)

pickerel weed (Pontederia)

arrowhead (Sagittaria)

smartweed (Polygonum)

bur-reed (Sparganium)

wild rice (Zizania)

other

other

other

Note: Sum of percentages must equal or be less than 100%, never more.
- Please DO NOT include woody (eg. shrubs) or floating (eg. waterlily) plants in this section.

Bearing 1-360

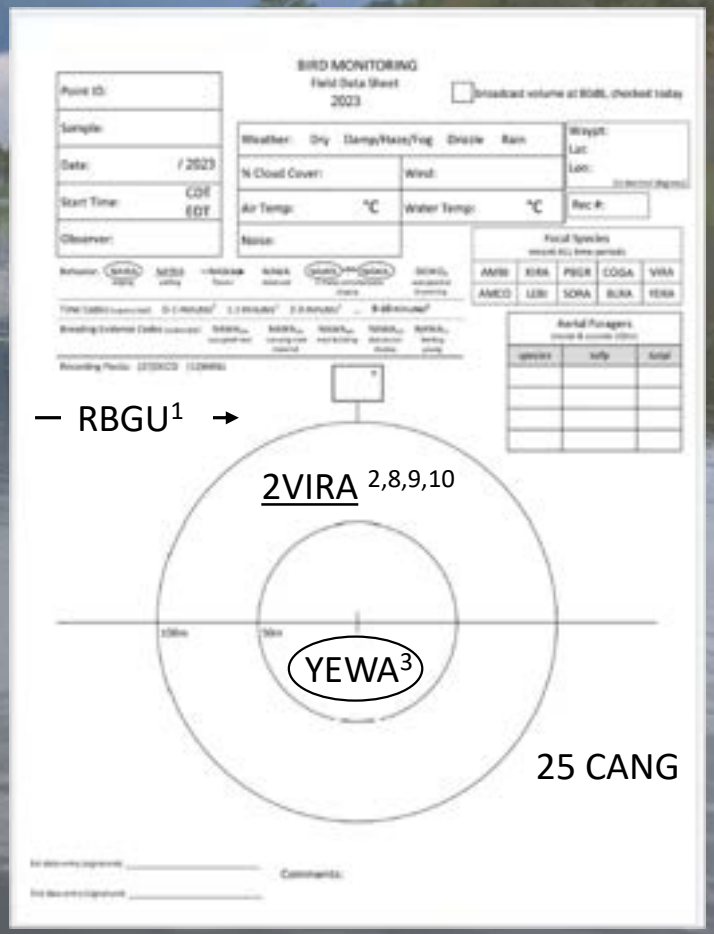
SKETCH MAP OF KEY HABITAT FEATURES

50m

100m

Bird Survey Methods

- 10 minute survey, first 5 minutes passive, second broadcasting secretive marsh bird calls
  - LEBI
  - 30 seconds silence
  - SORA
  - 30 seconds silence
  - VIRA
  - 30 seconds silence
  - COGA
  - 30 seconds silence
  - PBGR
  - 30 seconds silence



Water Quality Sampling Methods

- Monodominant vegetation zones
- A zone must be at least 400m^2 and at least 5cm deep

Water Quality Sampling Methods

- Collect sonde data
- Collect composite water sample

Water Quality Sampling Methods

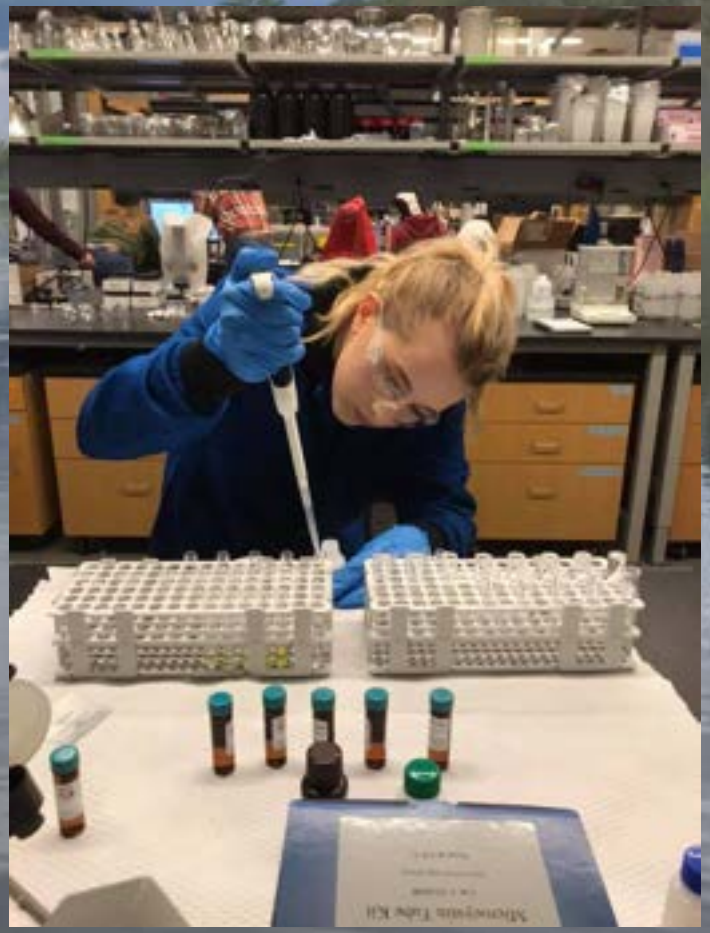
- Fill cubitainer with composite sample
- Turbidity tube measurement

Water Quality Methods

- Filtering
  - TN/TP- Raw water sample
  - $NO_{2/3}/NH_4$ – 1st filtrate (dissolved nutrients)
  - Chloride/Ions- 2nd filtrate
  - Chlorophyll a- 1st filter
- Titration
  - Total
  - Phenolphthalein

Water Quality Lab Methods

- Raw water samples digested prior to running
- Raw and dissolved nutrients samples run on auto analyzer
- Ions samples run on Ion Chromatography Instrument (IC)
- Chlorophyll samples dissolved in buffered acetone and analyzed using spectrophotometer



Fish Sampling Methods

- Day 1 Set fyke nets (3 per zone, max of 3 zones)
  - Large- 0.5m to 1.3m
  - Small- 15cm to .49m
- Record time and depth
- Nets must fish for 12-24hrs

Fish Sampling Methods

- Day 2 record depth and retrieve fyke nets
- Identify species
- Record length for first 25 fish of each species and size class (only larger species)
- Size classes: “YOY” < 100mm and other >= 100mm

Invertebrate Sampling Methods

- Sweep for invertebrates using D-framed dip nets
- Empty into gridded tray
- Record # of 1m sweeps
- Sweep until combined trays appear to have 150 invertebrates in them

Invertebrate Sampling Methods

- Pick for 30 person picking minutes then continue until collecting the next rep of 50 up to a max of 150 invertebrates
- 4 person example: after picking for 7.5 minutes, 58 invertebrates have been picked, so they would continue picking until 100 invertebrates have been collected and then record that time