Unified Lower Eagle River Chain of Lakes Commission

Eagle River Chain of Lakes EWM Management Project

Informational Meeting

November 13, 2019

Unified Lower Eagle River Chain of Lakes Commission

Eddie Heath

Onterra LLC

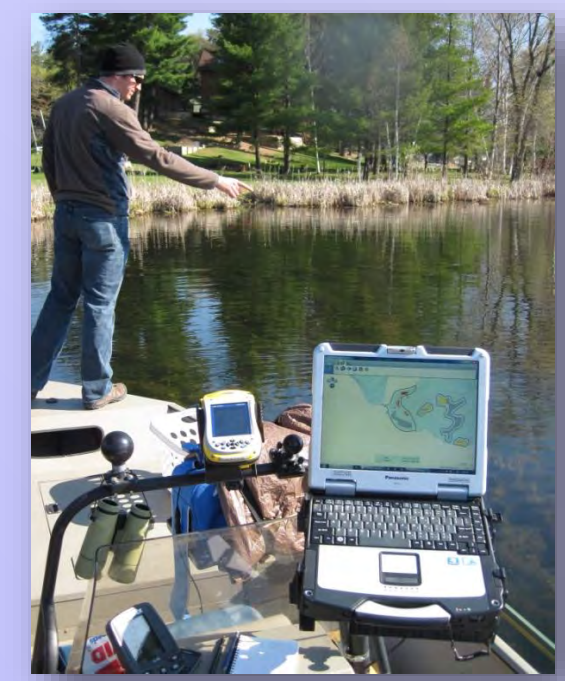
Lake Management Planning

Presentation Outline

- EWM Population in the ERC
  - Lake-Specific Survey Results
  - Chain-Wide Survey Results
- Eurasian Watermilfoil Management 101
  - Hand-Harvesting
  - Herbicide Spot Treatment
- 2020 Strategy Development Discussion
  - Evolved Management Perspective
- Concluding Comments

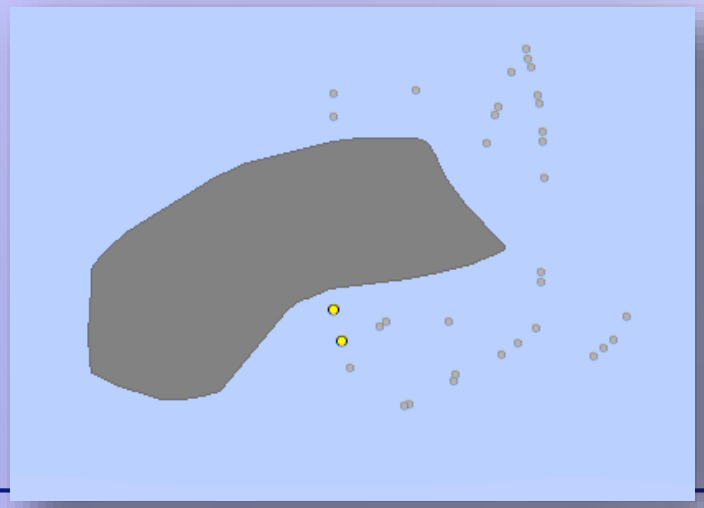
EWM Population in the ERC

Professional AIS Mapping



Point-Based Mapping

- Single or Few Plants
- Clumps of Plants
- Small Plant Colony



Polygon-Based Mapping

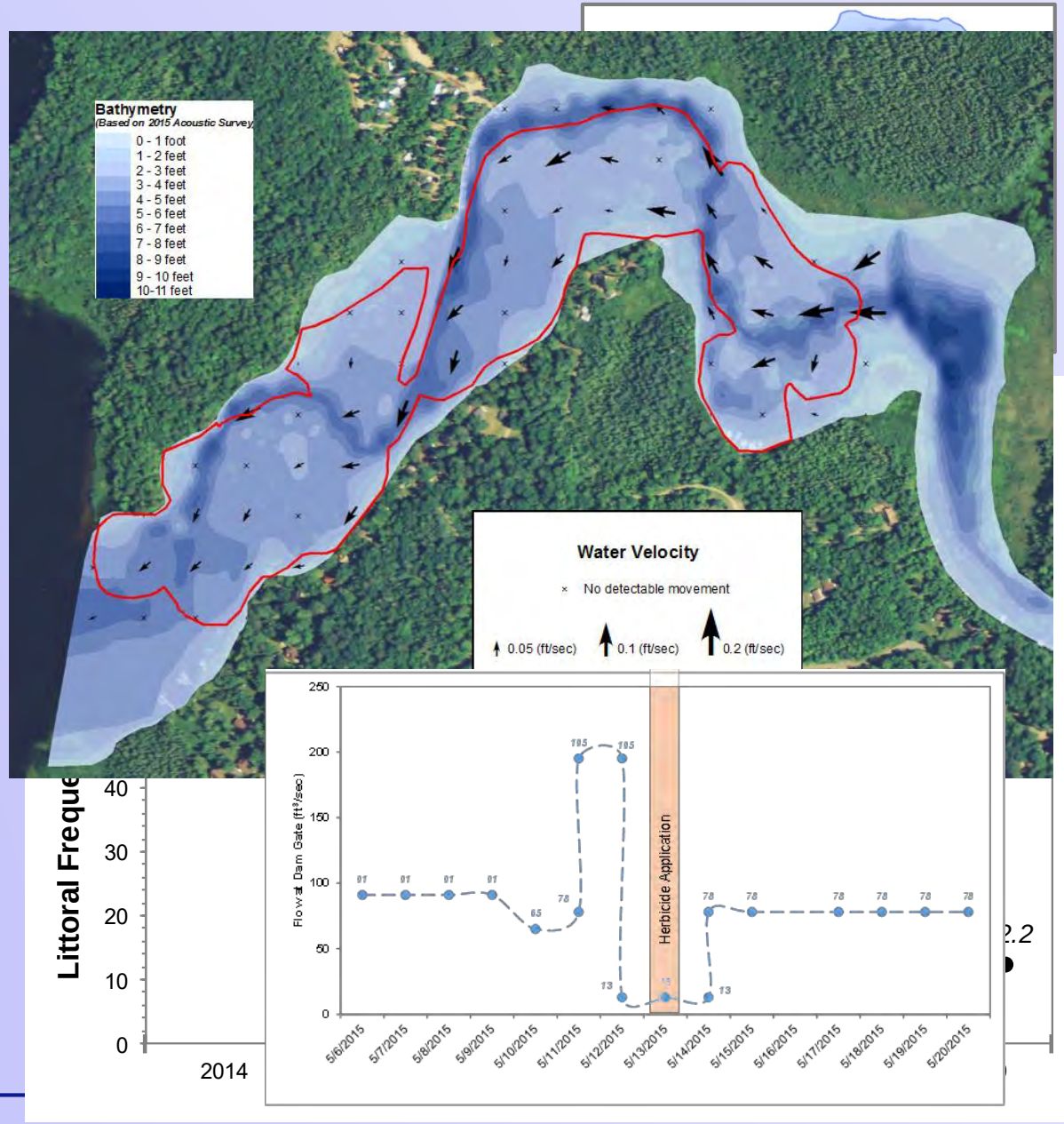
- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting

Cranberry

Late-Summer 2019

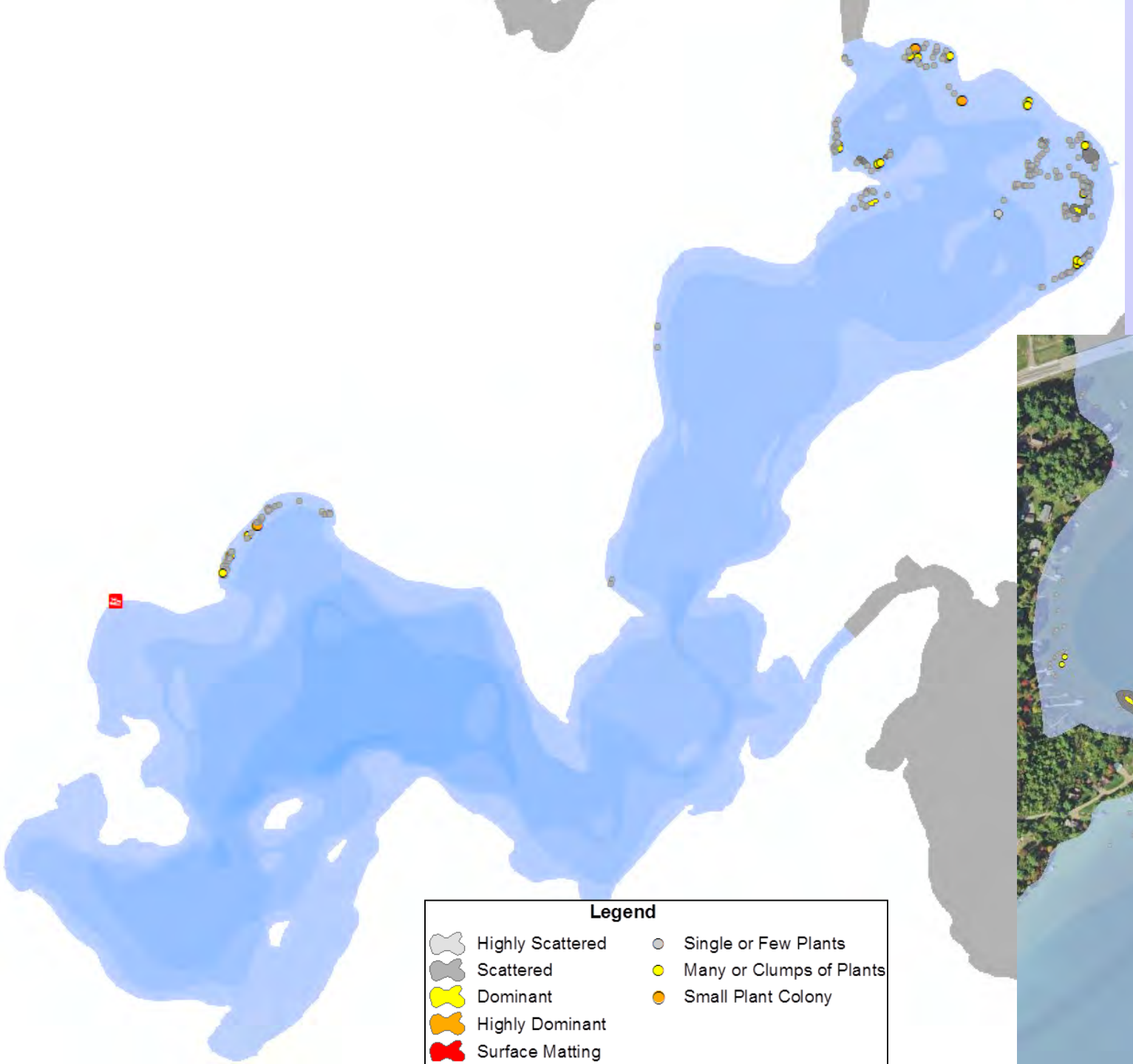
Cranberry Channel 2015 Treatment

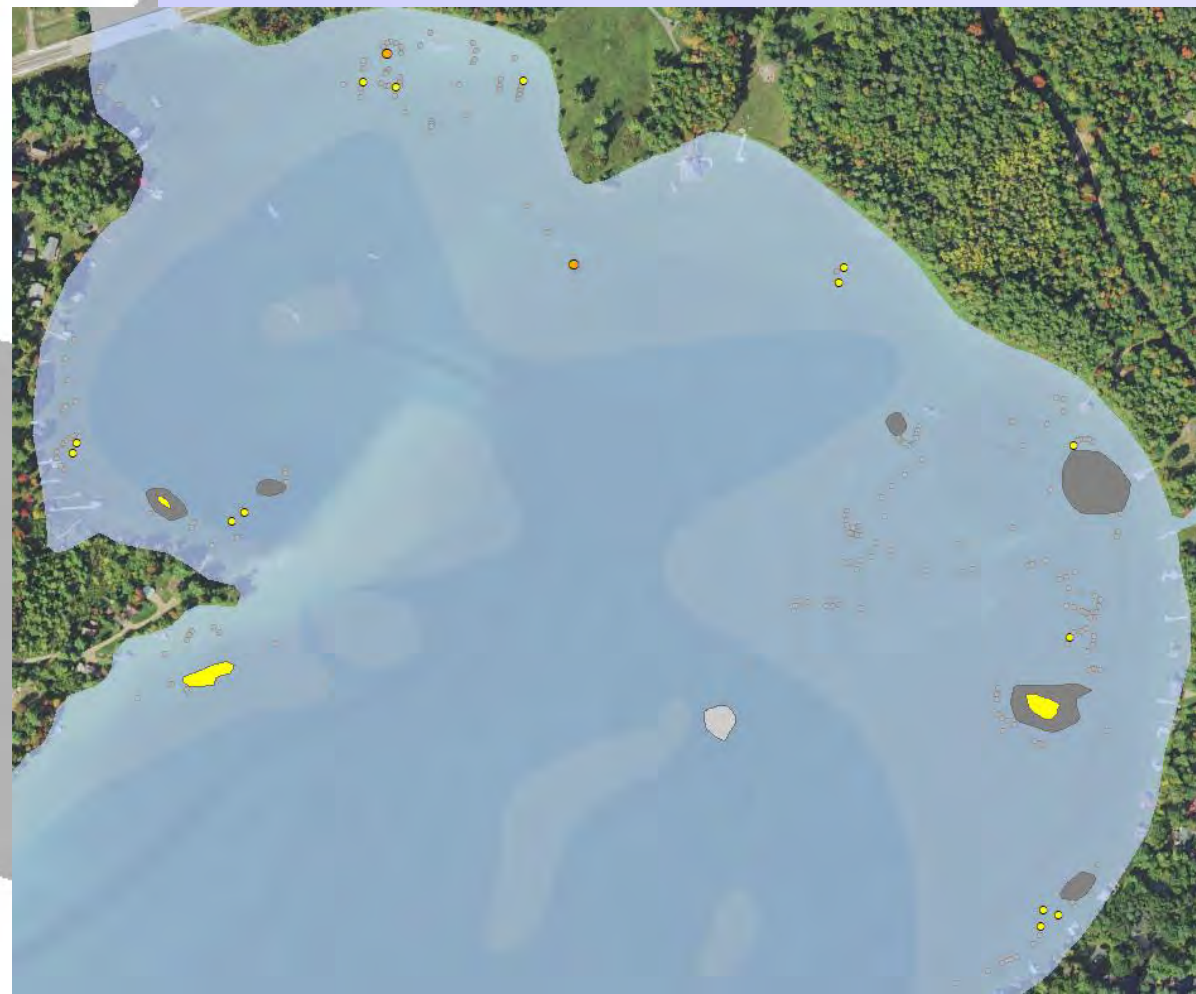
- Low precipitation surrounding 2015 treatment allowed water flow manipulation
- Herbicide concentration monitoring indicated maintained 2,4-D concentrations for 24+ HAT
- Resulted in 2 summers (2015-2016) of almost no colonized EWM, an additional summer (2017) of low-density EWM colonies
- Population trending toward pretreatment levels in 2018
- Considered for potential treatment in 2019 and 2020



Catfish

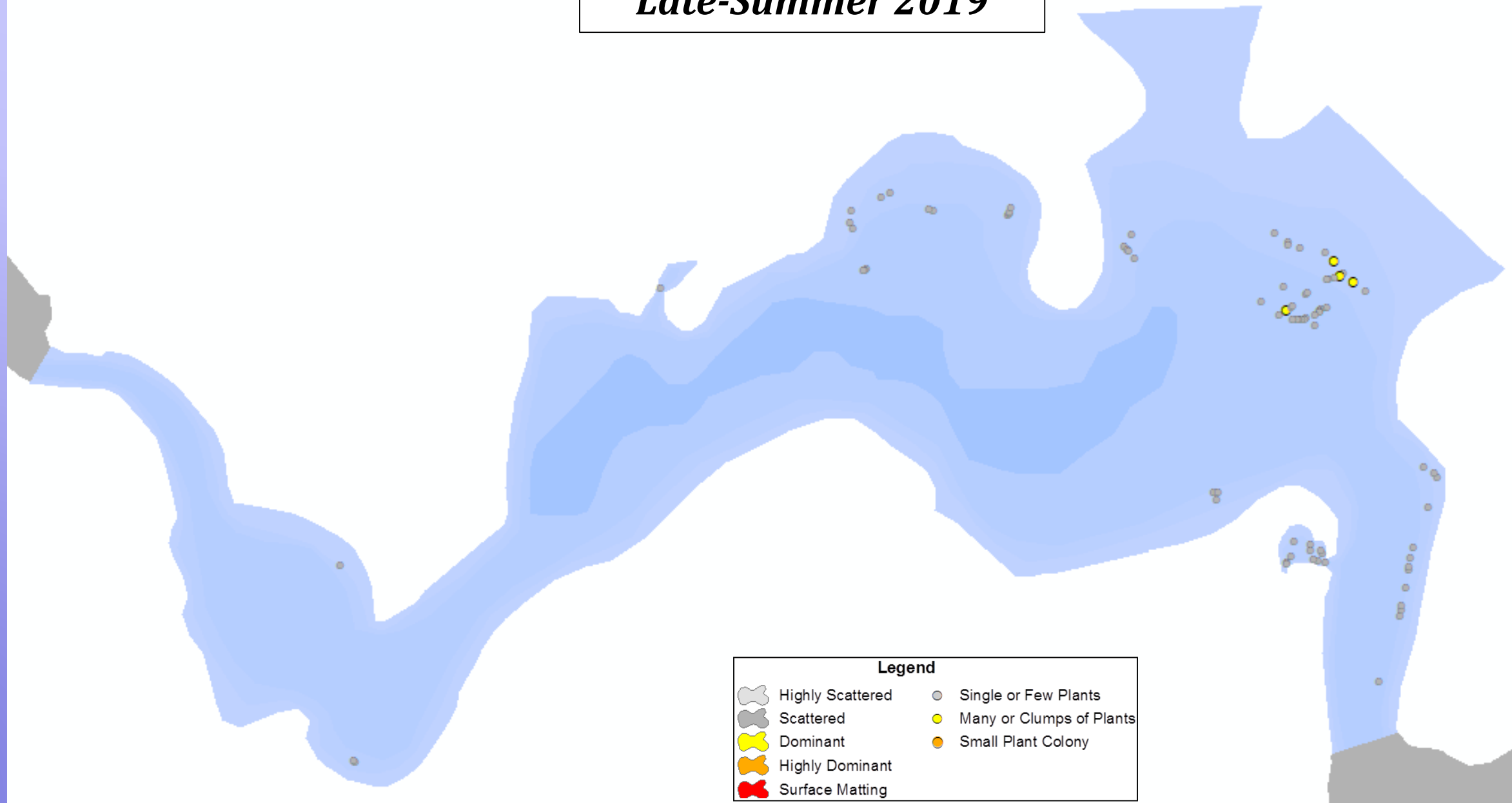
Late-Summer 2019





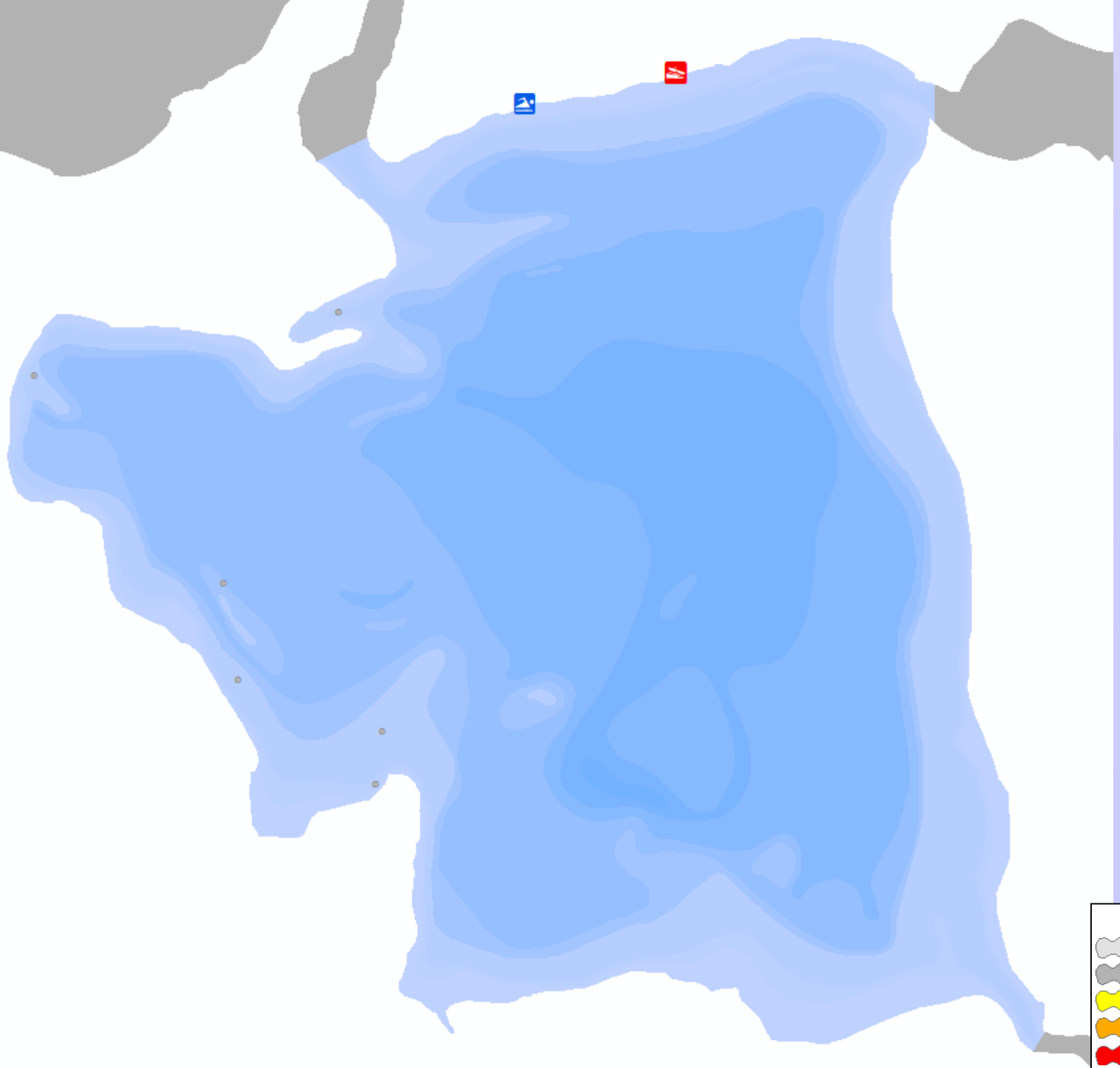
Voyageur

Late-Summer 2019



Eagle

Late-Summer 2019



Legend

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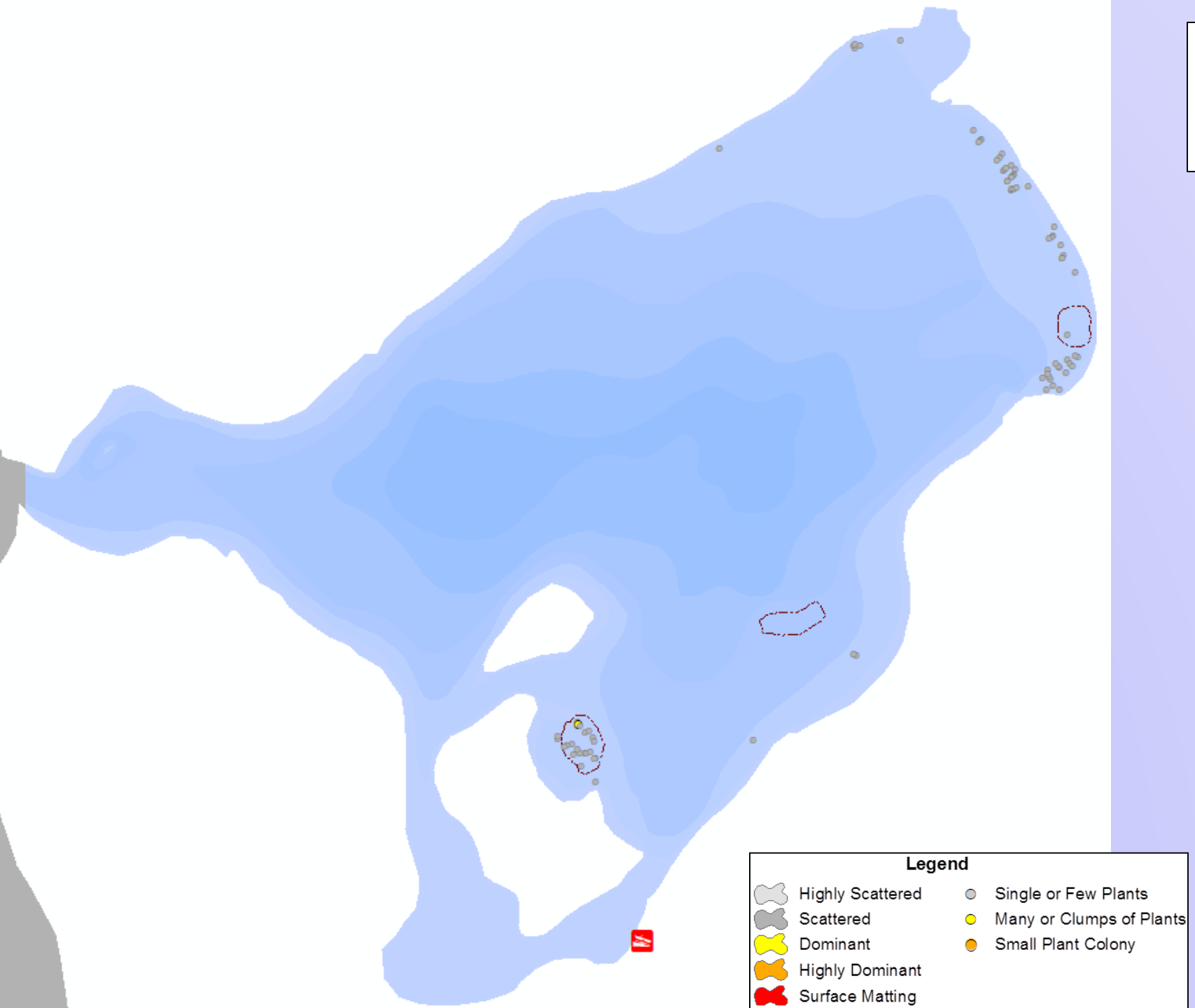
Scattering Rice

Late-Summer 2019



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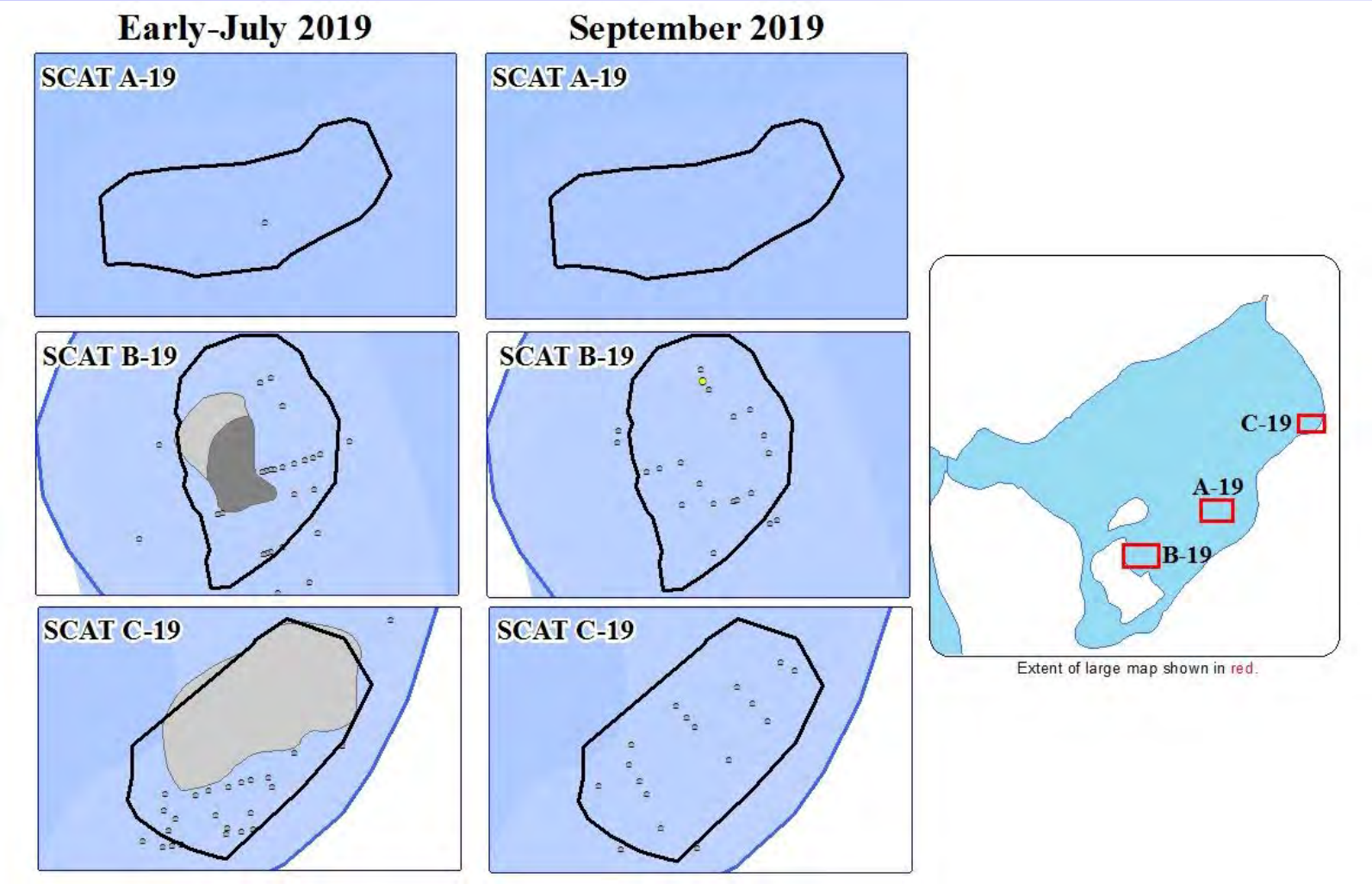
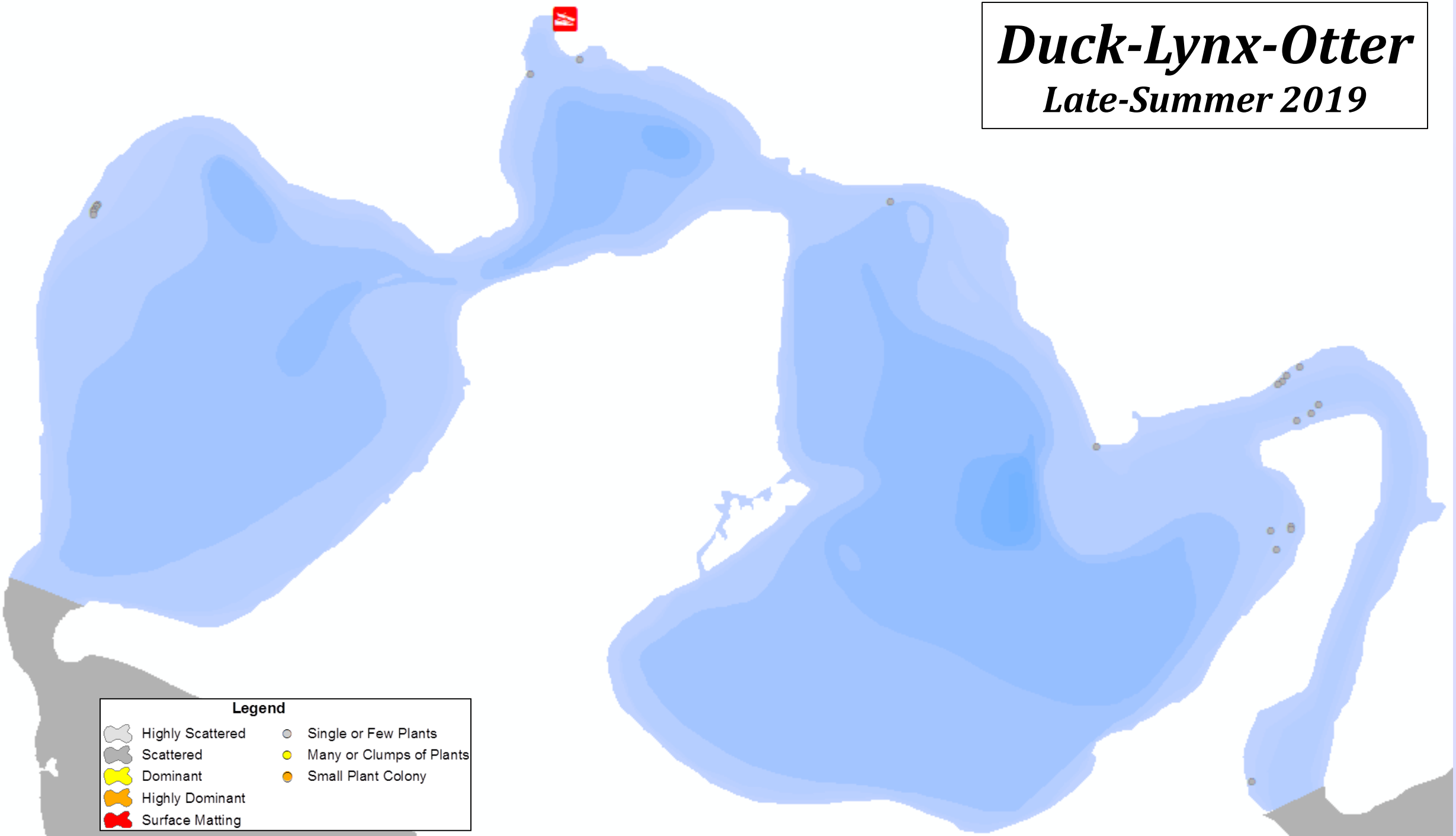
Scattering Rice 2019 Hand-Harvesting

- EWM populations lower in September vs early-July
- Awaiting information relating to hand-harvesting effort (time spent), timing (sufficient time for rebound), and plants removed (quantity)



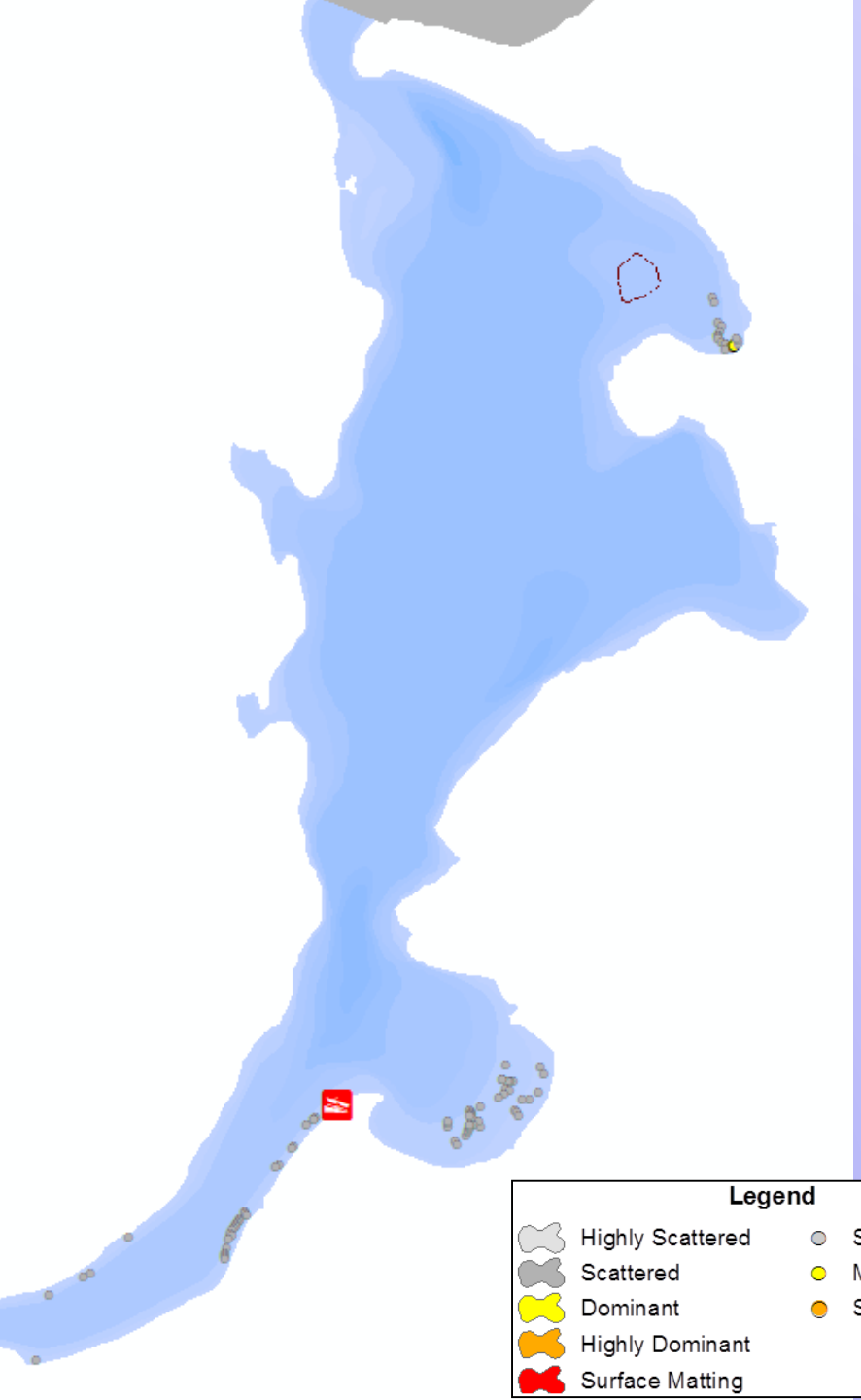
Duck-Lynx-Otter

Late-Summer 2019



Yellow Birch

Late-Summer 2019



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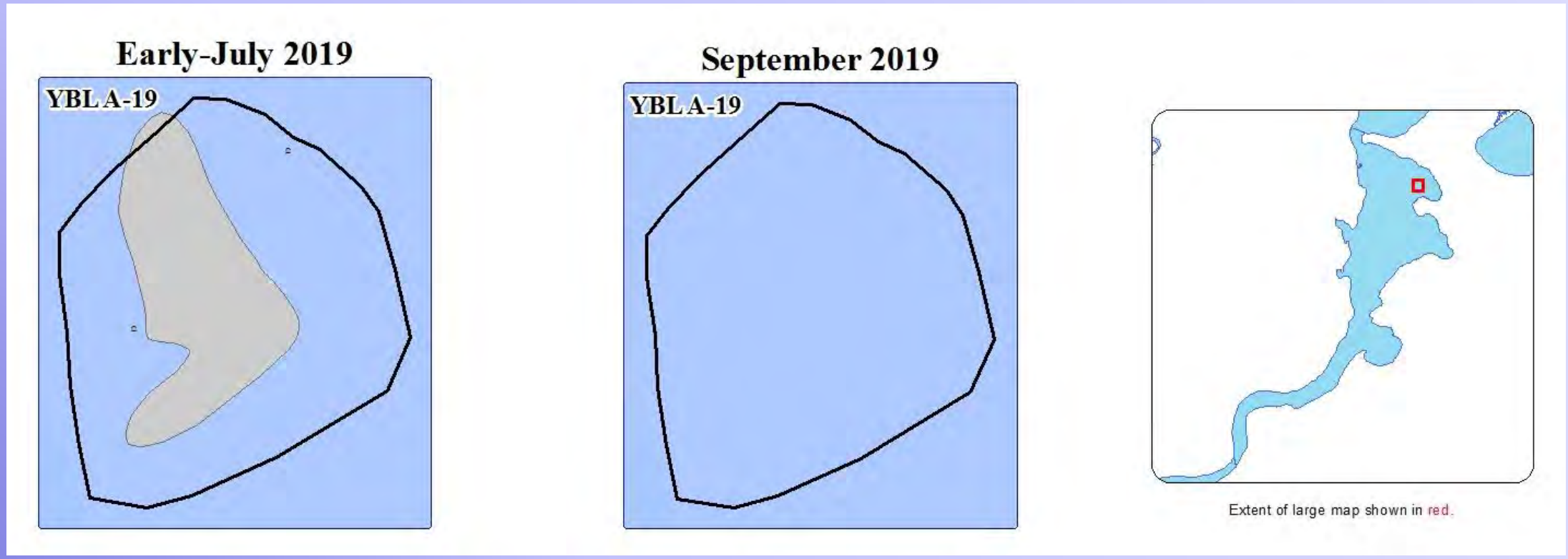
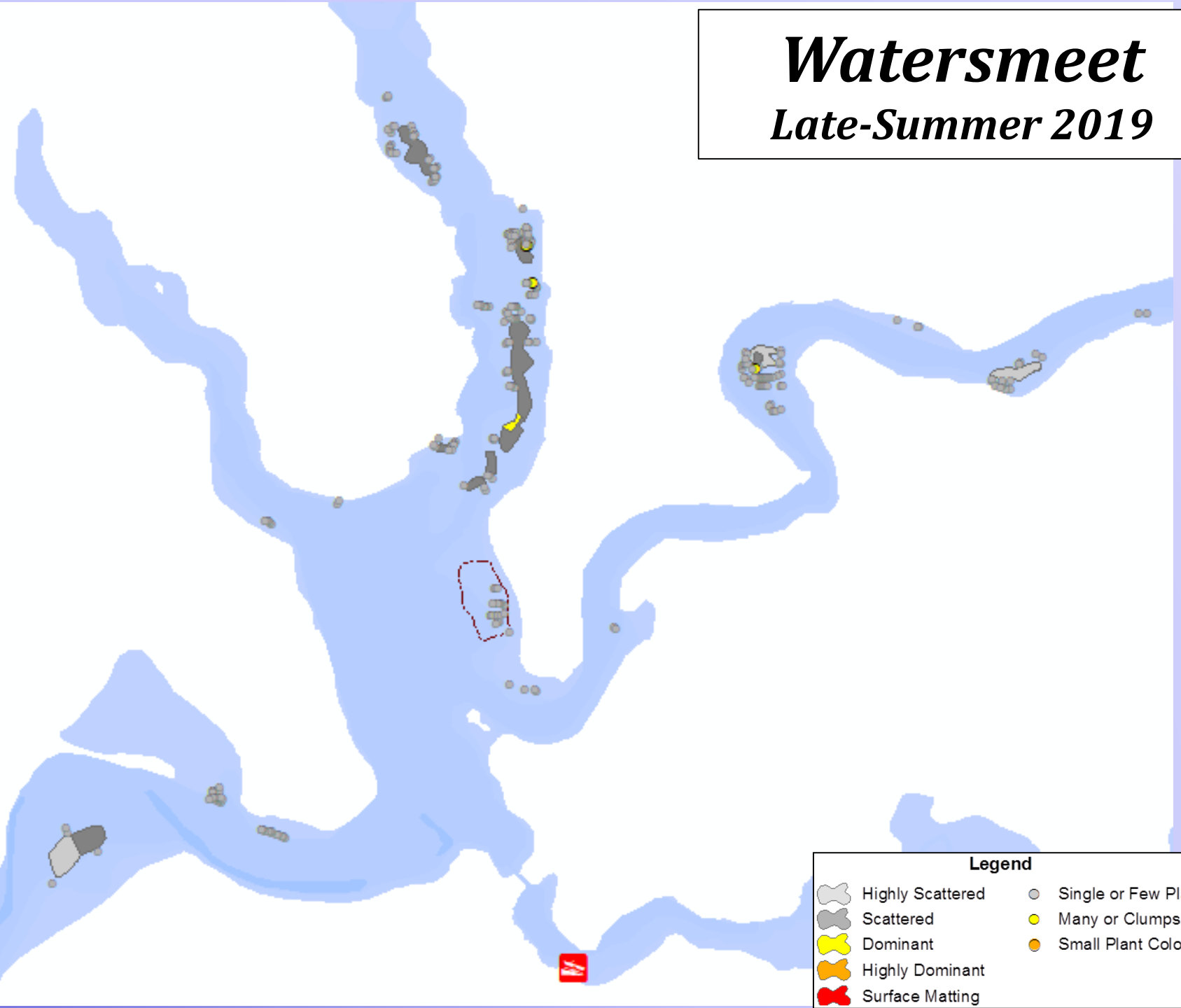


Watersmeet

Late-Summer 2019



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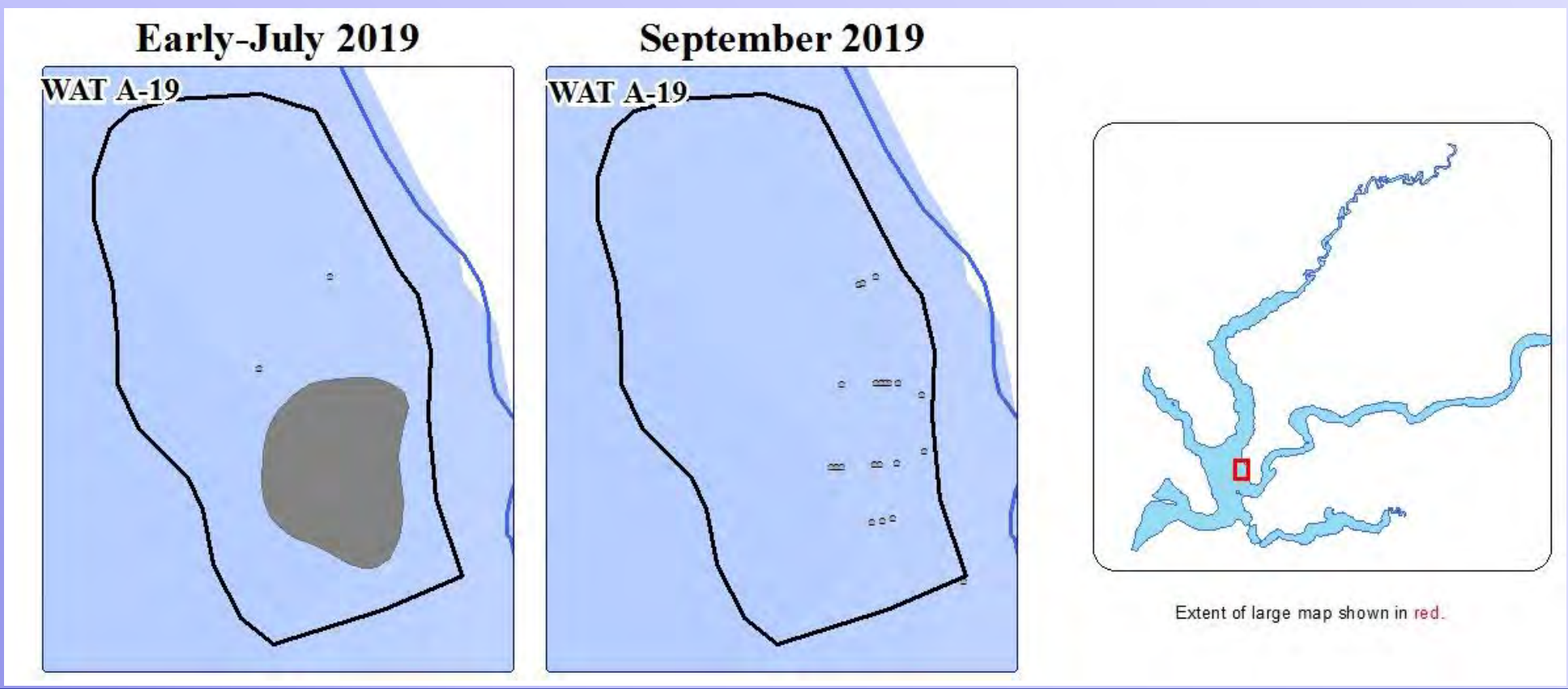
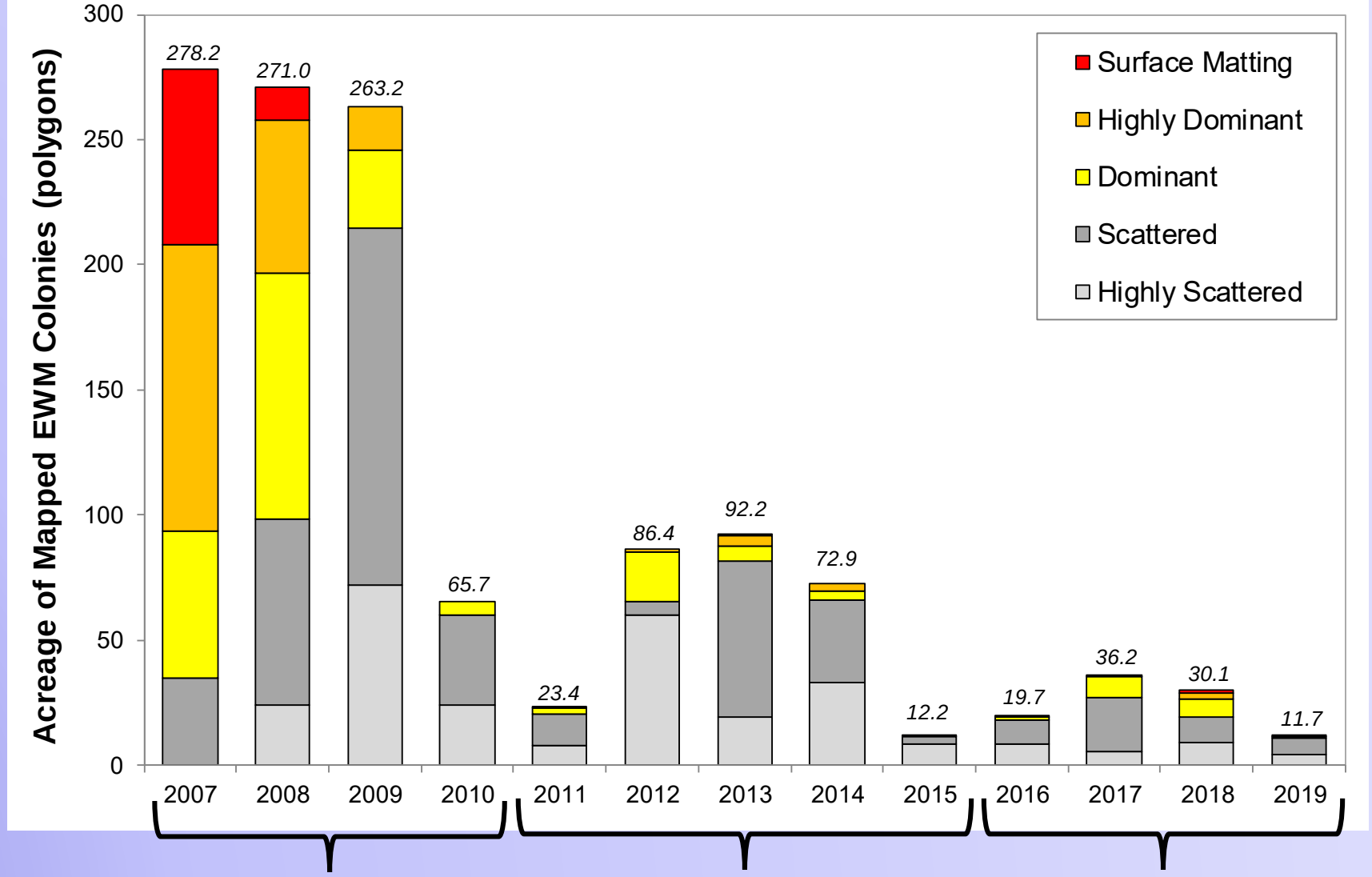


C

EWM populations is currently low

1. Result of management

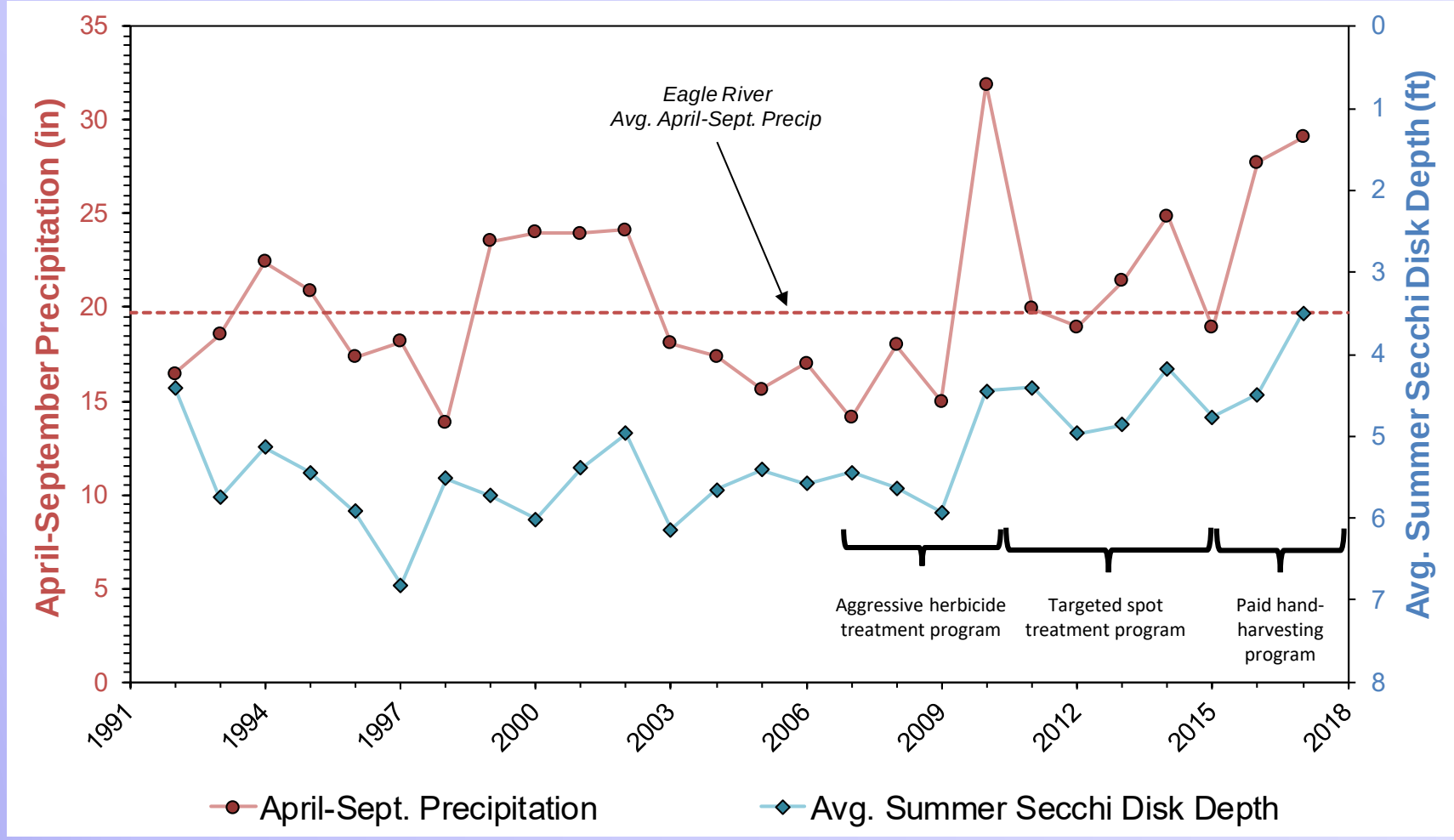


Chain-Wide Results

EWM populations is currently low

1. Result of management
2. Reduced water clarity

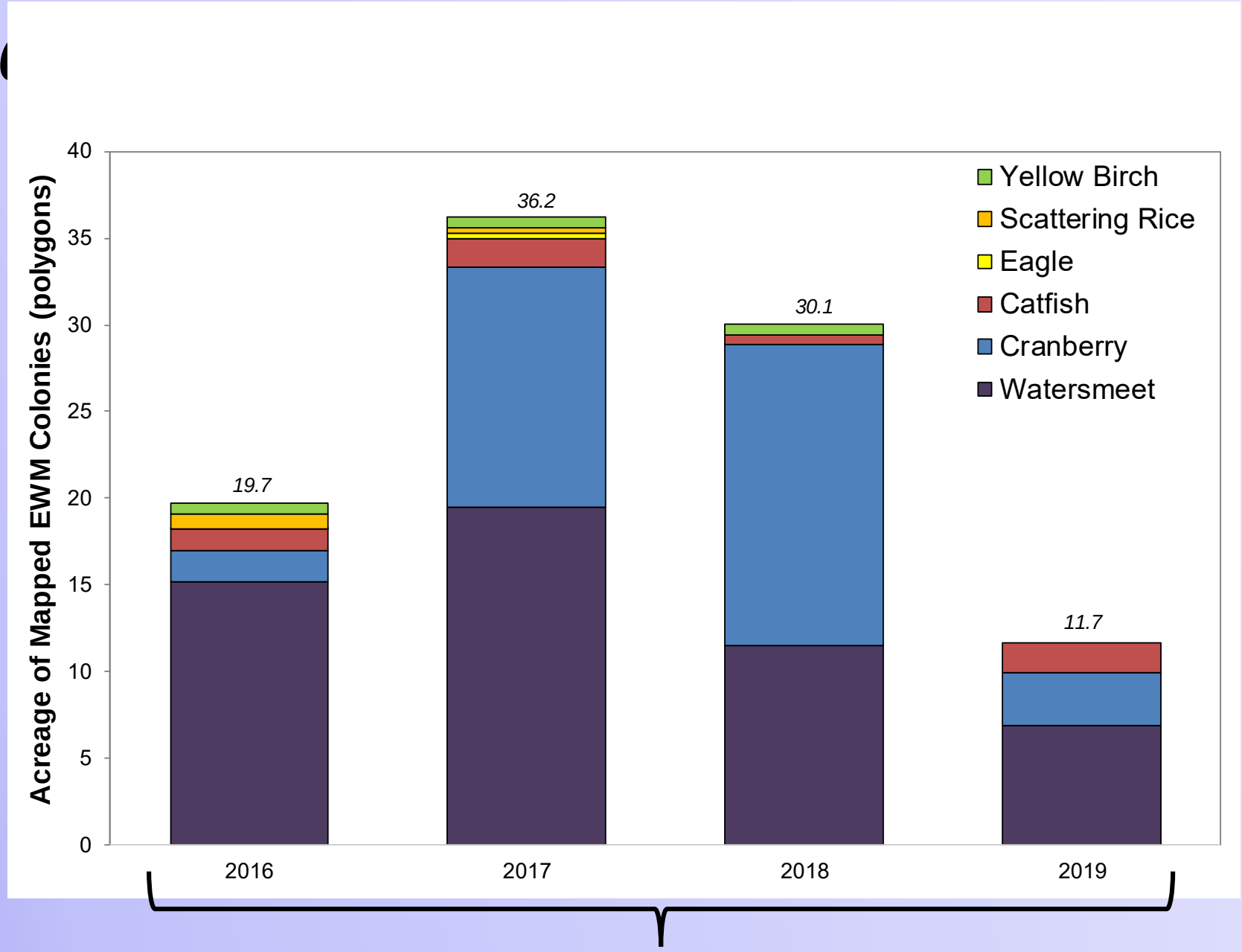
Increased environmental stress from low water clarity results in management being more effective and population rebound more difficult



Ch

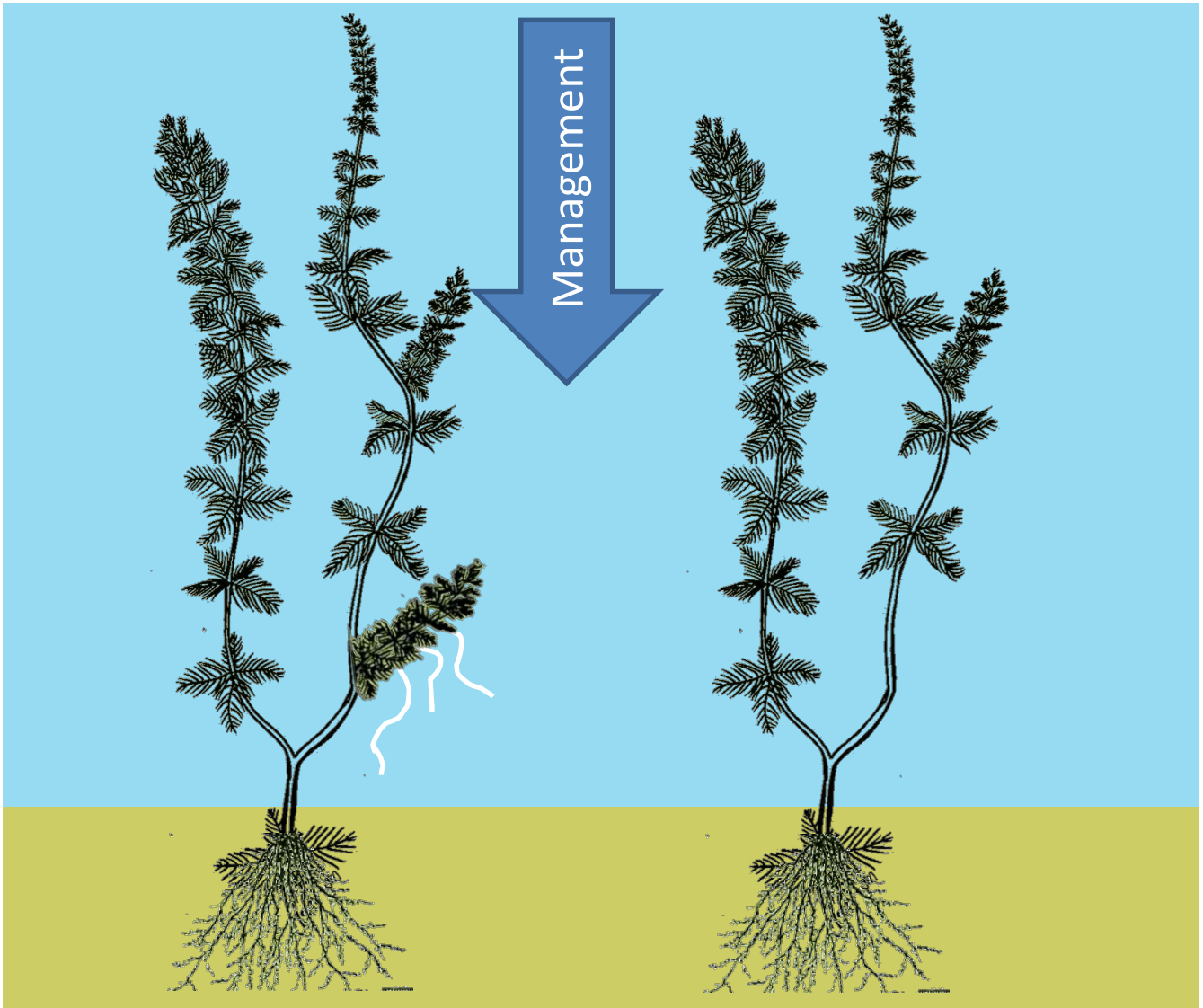
Since Herbicide Management Ceased

- Cranberry Channel spring 2015 treatment
- Professional hand-harvesting program
  - 2016: Voyageur
  - 2017: Voy, ScatRice, Wat
  - 2018: YBL, ScatRice, Wat




Eurasian Watermilfoil
Management 101

EWM Life-Cycle & Control Strategy Philosophy



- Herbicide needs to translocate to root crown (*hard to kill with herbicides*)
- Hand-harvesting that extracts roots is effective (*extremely time intensive*)
- Mechanical harvesting can minimize nuisance conditions (*spread to new areas not a concern for established populations)*
- Sometimes EWM does not cause nuisance conditions or ecological changes

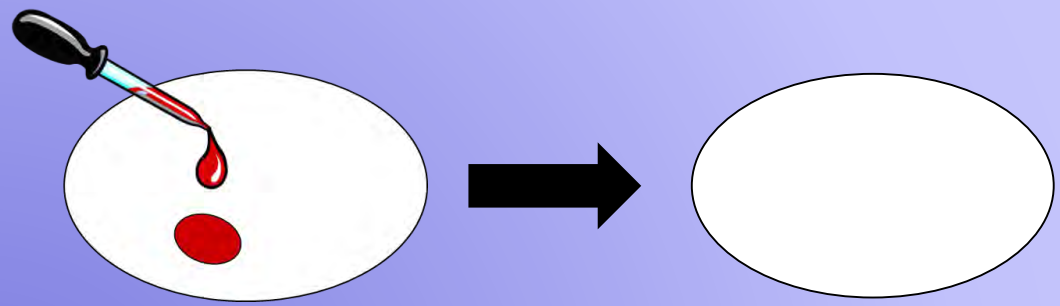
Hand-Harvesting of EWM

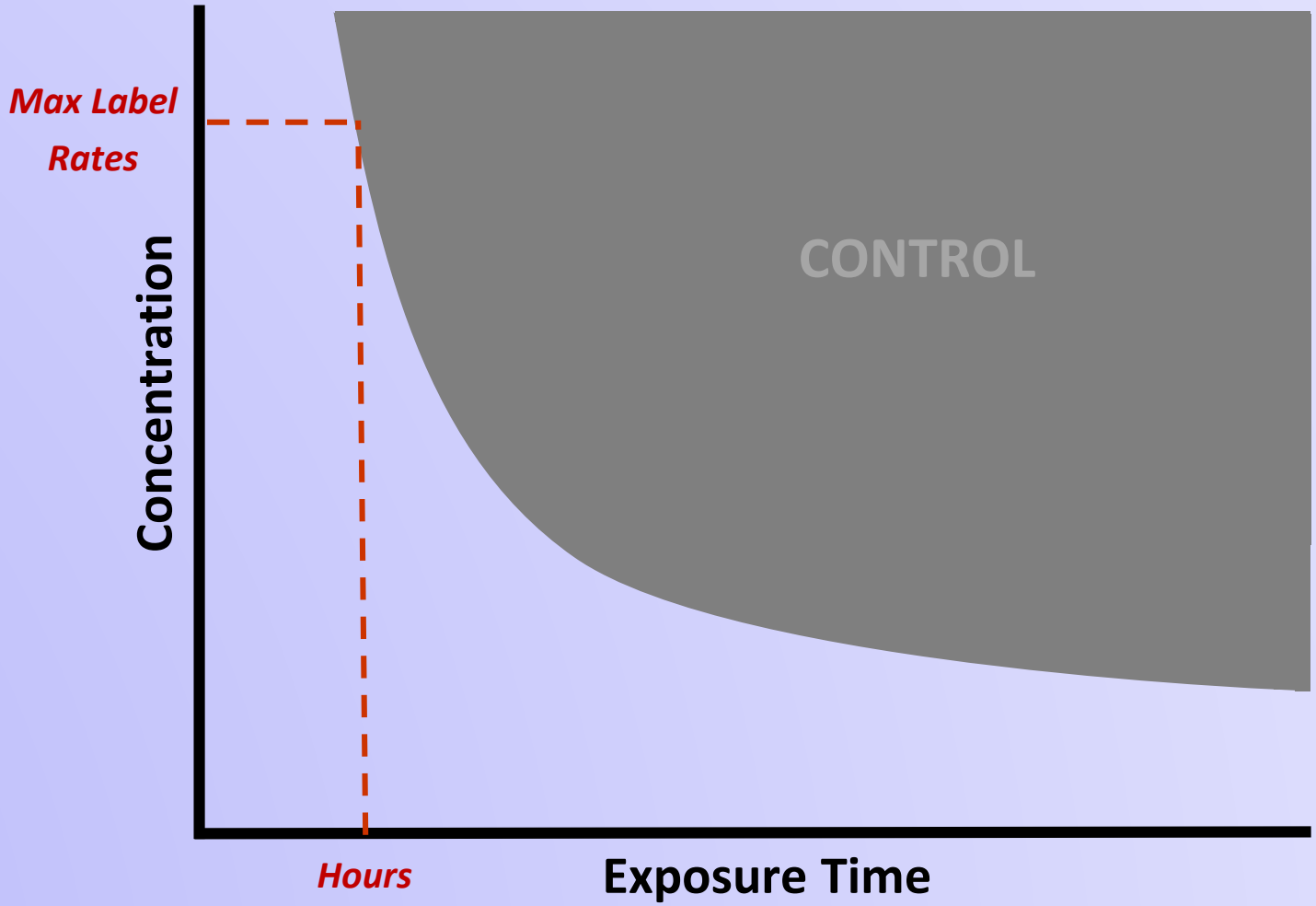
- Removal of entire root material required to reduce rebound
- Scale limitations, not for large or dense areas
- Diver-Assisted Suction Harvest (DASH) can increase efficacy
- Limitations
  - Density of EWM & native plants
  - Clarity of water
  - Sediment type
  - Obstructions

Herbicide Treatment

Spot Treatment:

Herbicide applied at a scale where dissipation will not result in significant lake wide concentrations; impacts are anticipated to be localized to in/around application area.





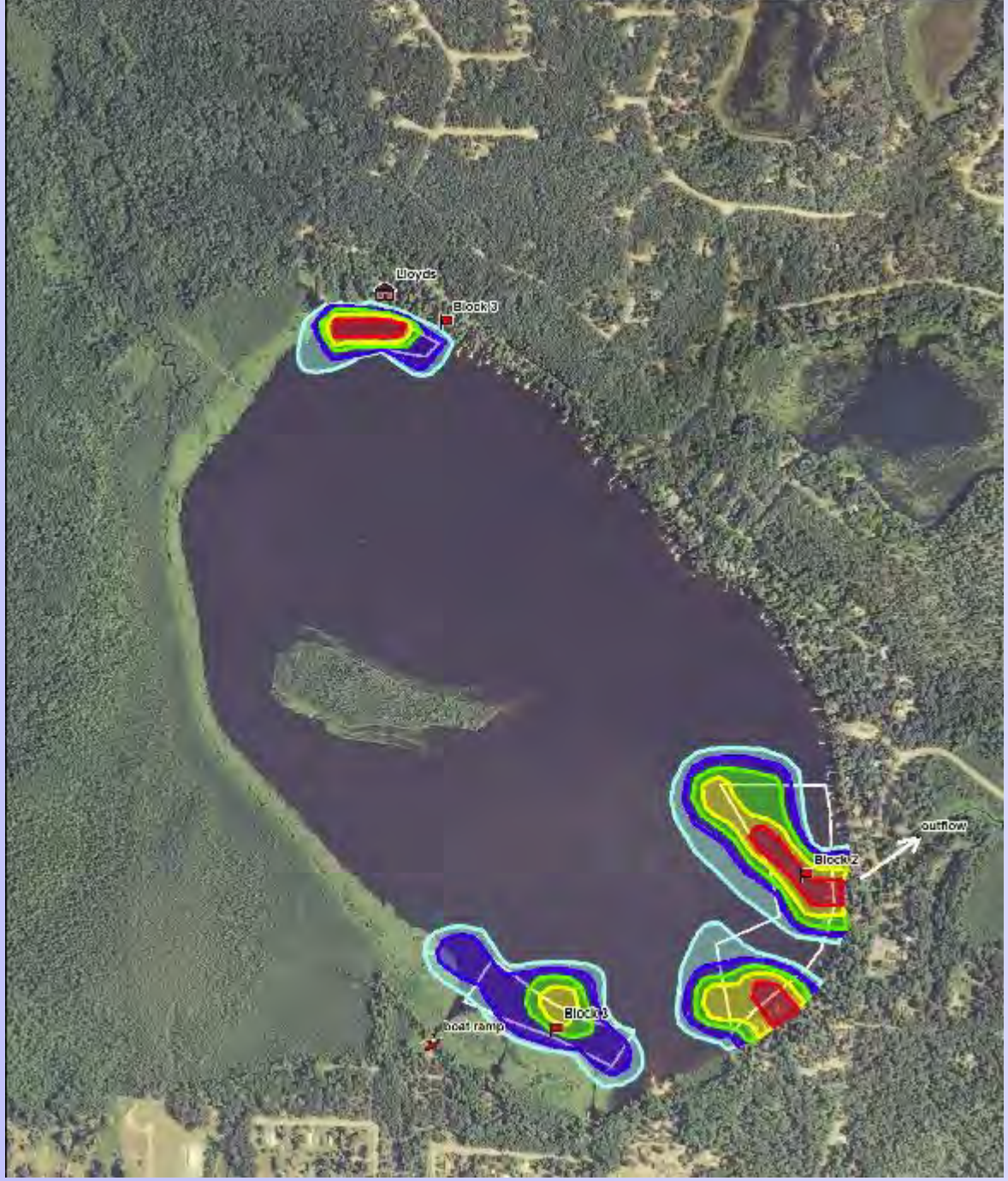
High Concentration ► Short Exposure Time

Horizontal Herbicide Mixing (Dissipation)

- ~25 acres of 305 acre lake (8%)
- Tracer Dye (Rhodamine WT) Survey

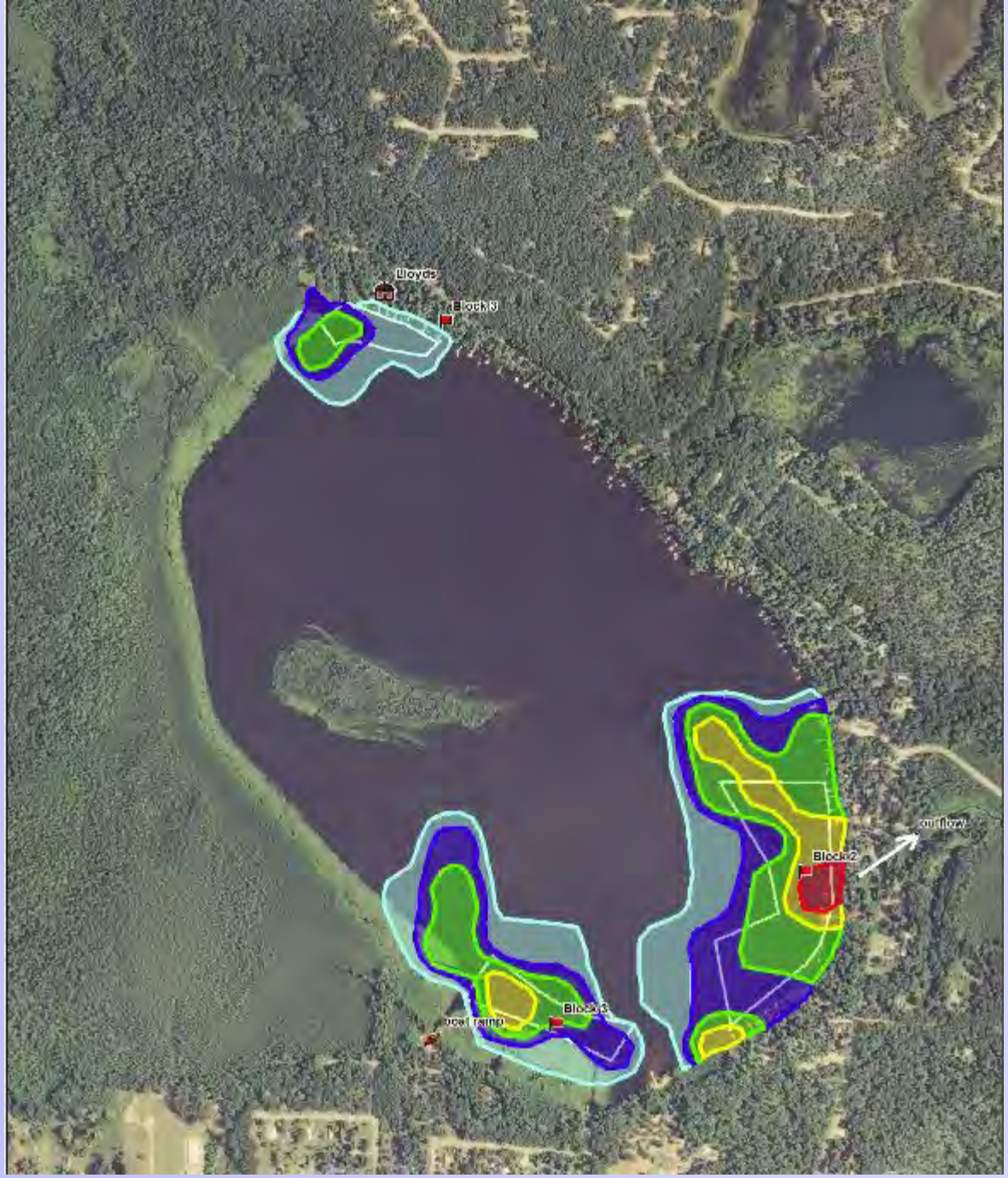
1 HAT

75-100%
50-75%
25-50%
10-25%
5-10%



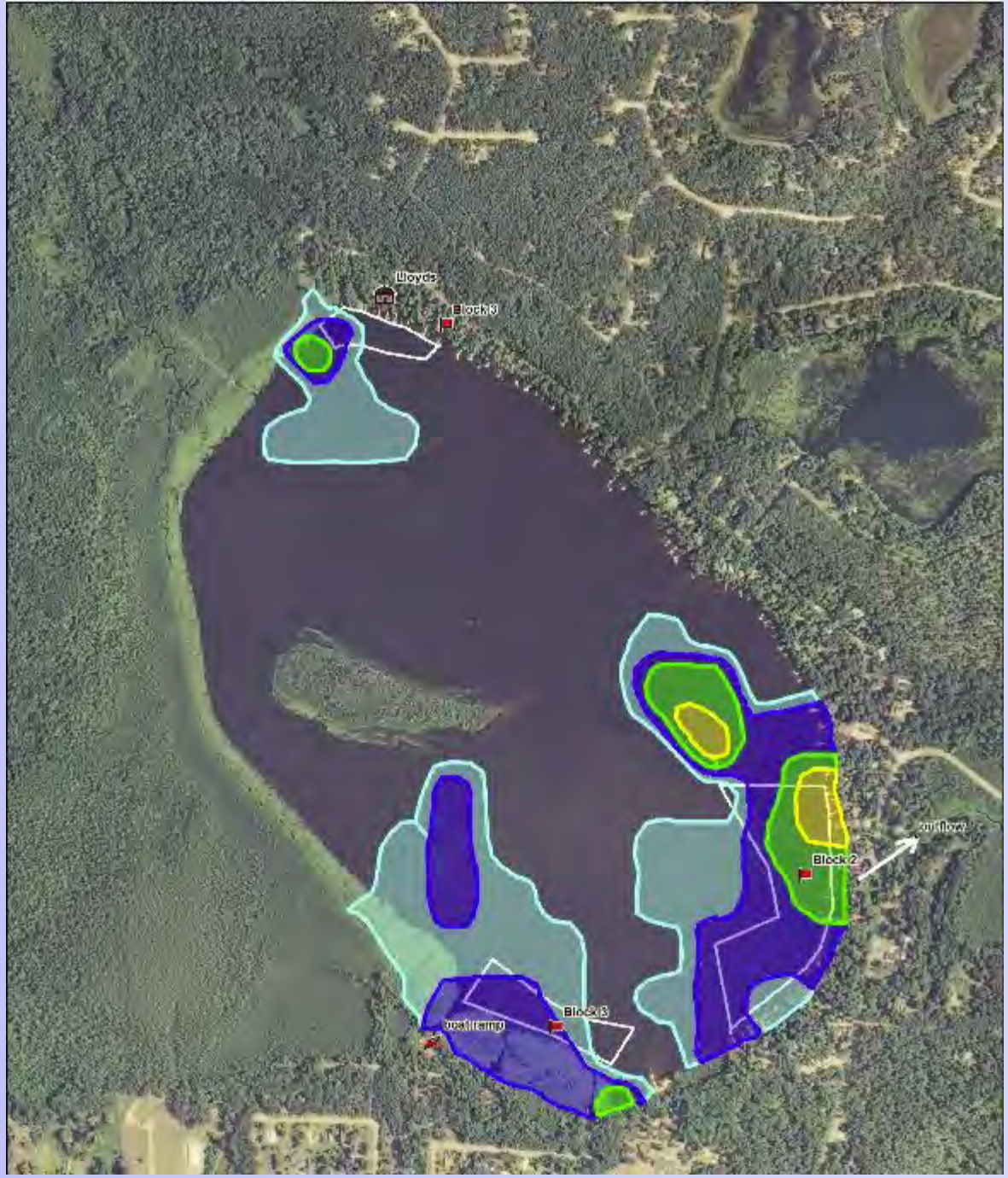
2.5 HAT

75-100%
50-75%
25-50%
10-25%
5-10%



4 HAT

75-100%
50-75%
25-50%
10-25%
5-10%

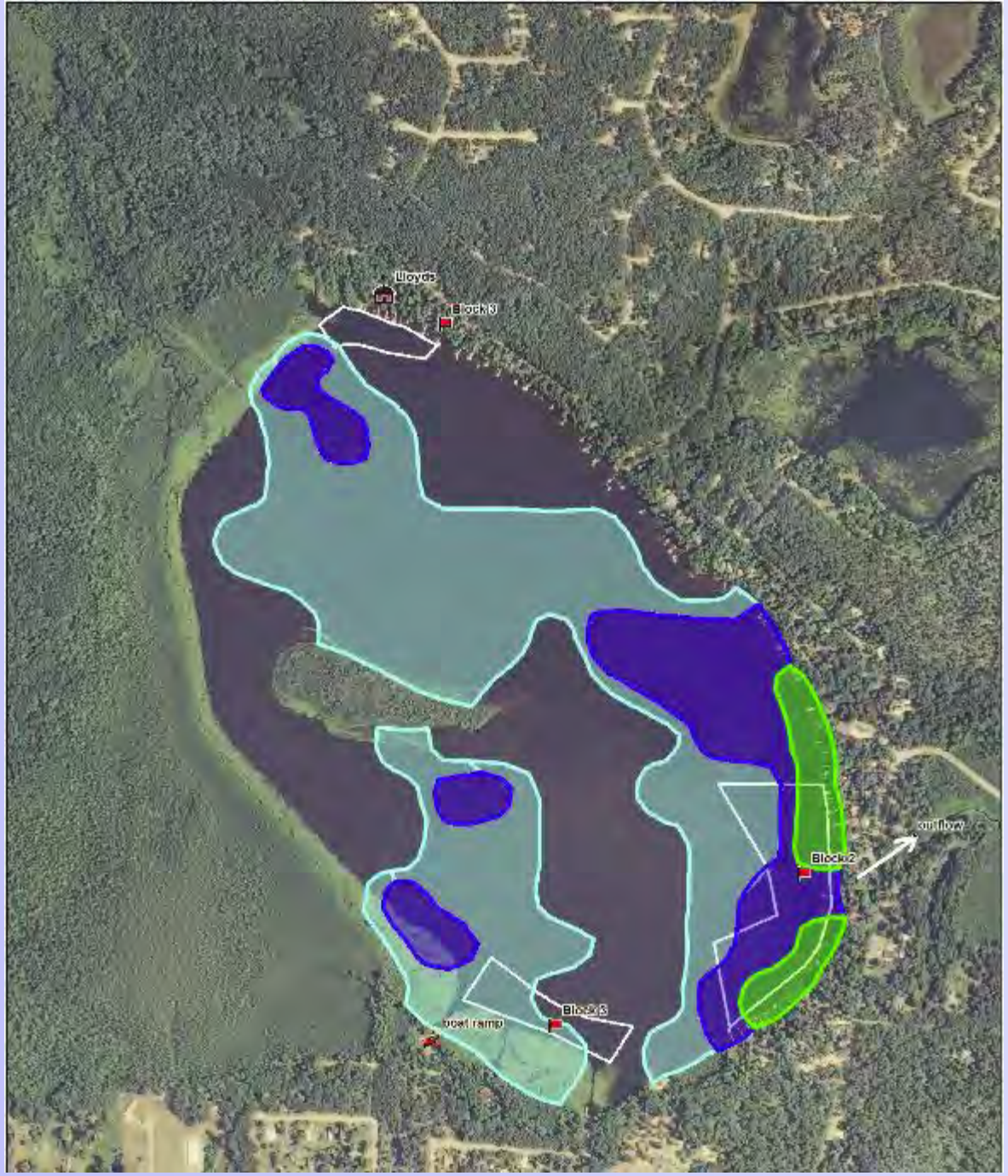


6 HAT

75-100%
50-75%
25-50%
10-25%
5-10%

2,4-D CET needed for EWM control based upon published studies:

- sustained 4.0 ppm for 12 hours
- sustained 2.0 ppm for 24 hours
- 0.1-0.3 ppm for 6 weeks (whole-lake)



Spot Treatment Guidance

- **Factors that lead to longer exposure time**
  - Larger size (working definition: > 5 acres per site)
  - Broader shape (hold concentrations in core of treatment area)
  - Protected location (limit dissipation direction)
  - Stagnant waters (flow increases dissipation)
- **New Management Directions**
  - Alternative herbicides (diquat, ProcellaCOR™, herbicide combos)
  - Modify conditions (dam operations, barrier curtains)
  - Alternative management strategies (hand-harvesting)
  - Adopting nuisance management strategies (mechanical harvesting)
  - Increasing human tolerance

2020 Preliminary Management Strategy

Evolved Management Strategy

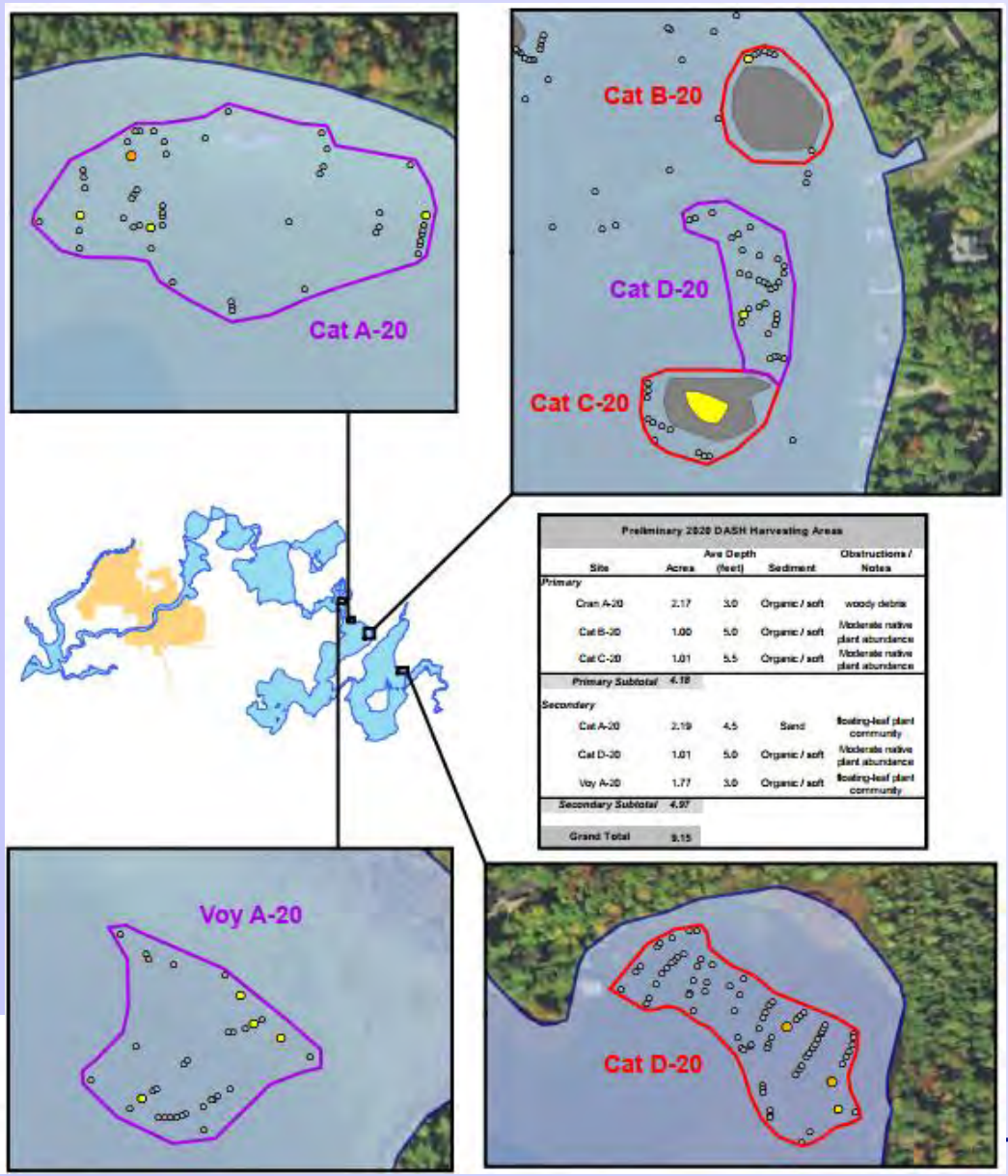
- **EWM populations have been greatly reduced**
  - Remnant areas too small to effectively controlled using herbicides
  - Below levels that cause ecological impacts or cause impacts to navigation or recreation
  - <u>Herbicide Treatment Trigger:</u>

    colonized EWM of *dominant* or greater density, with preference to high-use areas, that have a high likelihood of the treatment being effective (factors discussed in "Spot Treatment Guidance")

    ✓ No areas met this threshold since 2014 (spring 2015 treatment)
- **Maintain positive strides**
  - Need to balance a level of EWM population tolerance while not allowing population to return to pre-management levels

2020 Preliminary Hand-Harvesting Plan

- Primary areas have higher EWM populations, potentially stretching scale at which hand-harvesting is effective
  - Additional time to account for
- Secondary areas are likely manageable with hand-harvesting



Preliminary 2020 DASH Harvesting Areas

Site	Acres	Ave Depth (feet)	Sediment	Obstructions / Notes
Primary				
Cran A-20	2.17	3.0	Organic / soft	woody debris
Cat B-20	1.00	5.0	Organic / soft	Moderate native plant abundance
Cat C-20	1.01	5.5	Organic / soft	Moderate native plant abundance
Primary Subtotal	4.18			
Secondary				
Cat A-20	2.19	4.5	Sand	floating-leaf plant community
Cat D-20	1.01	5.0	Organic / soft	Moderate native plant abundance
Voy A-20	1.77	3.0	Organic / soft	floating-leaf plant community
Secondary Subtotal	4.97			
Grand Total	9.15			

ERC Project Conclusions

- **Overall, significant reduction of EWM since start of the program**
  - Maintaining low EWM population is going to be difficult, particular if/when water clarity returns to normal
- **No Herbicide Treatment Proposed AGAIN for 2020**
  - 5 consecutive years without herbicide management
- **Conduct Professional-Based Hand-Harvesting in 2020**
  - Based on the ESAIS Survey (early July), the final professional hand-harvesting strategy will be developed
- **Important to Continue to Improve the ERC**
  - Ongoing Management Planning effort developing protection & enhancement goals
  - Navigate additional science, changing technologies, and regulatory environment

Thank You

Onterra, LLC

Lake Management Planning