Unified Lower Eagle River Chain of Lakes Commission

Eagle River Chain of Lakes Aquatic Invasive Species Project

Informational Meeting

November 15, 2018

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Onterra LLC

Lake Management Planning

Presentation Outline

- **Evolved EWM Management Strategy**
- **2018 EWM monitoring results**
  - **Chain-wide**
  - **Individual Lakes & Hand-Harvesting**
  - **Cranberry Channel Pretreatment**
- **2019 EWM Control Strategy Discussion**
- **ERC Project Conclusions**

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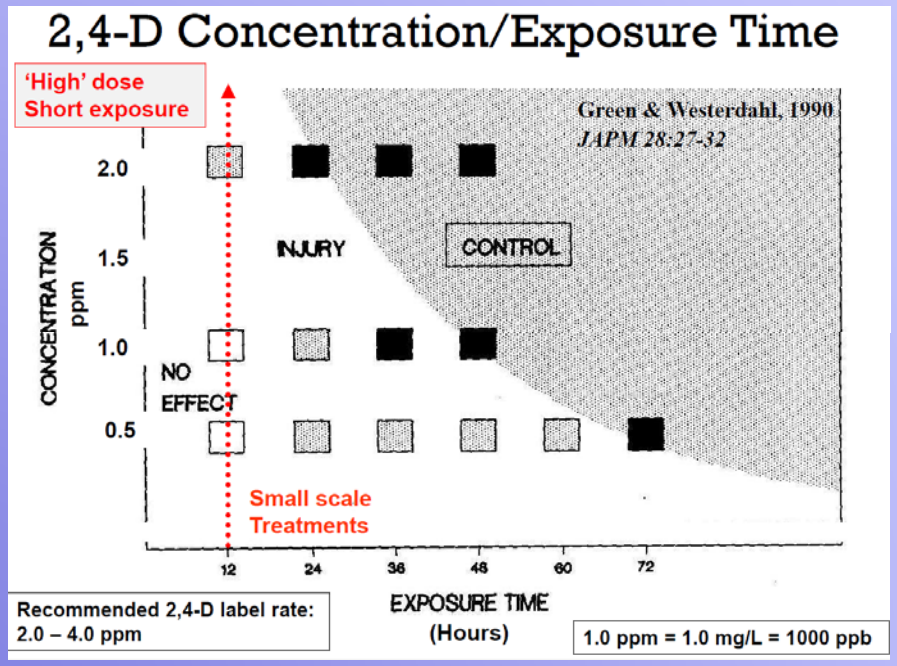
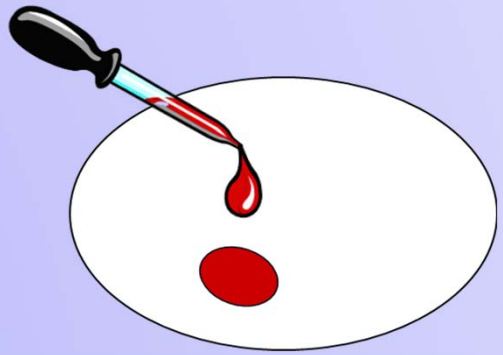
Herbicide Spot Treatment

- **Ecological Definition:** 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.





Herbicide Spot Treatment

- **Factors that lead to longer exposure time**
  - Larger size (> 5 acres per site)
  - Broader shape
  - Protected location
  - Stagnant waters
- **Difficult scenarios**
  - Alternative herbicides (diquat, florpyrauxifen-benzyl, combos)
  - Alternative control strategies (hand-harvesting)
  - Modify conditions (dam operations, barrier curtains)
  - Increasing human tolerance

Evolved Control 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
  - Herbicide Treatment Trigger: colonized areas where a sufficiently large treatment area can be constructed to hold CETs (preference to *dominant* or greater density), traffic, etc.
    - No areas met this threshold in 2016, 2017, or 2018

Evolved Control Strategy

- **Maintain positive strides**
  - ULERCLC does not want to abandon management and simply wait for EWM populations to reach levels that are again applicable for herbicide control
  - Need to balance a level of EWM population tolerance while not allowing population to return to pre-management levels
  - Continue a professional-based hand-harvesting program
    - Challenges: water clarity, native plant abundance, permitting, safety/traffic, etc.

Hand Removal vs. Diver-Assisted Suction Harvester (DASH)

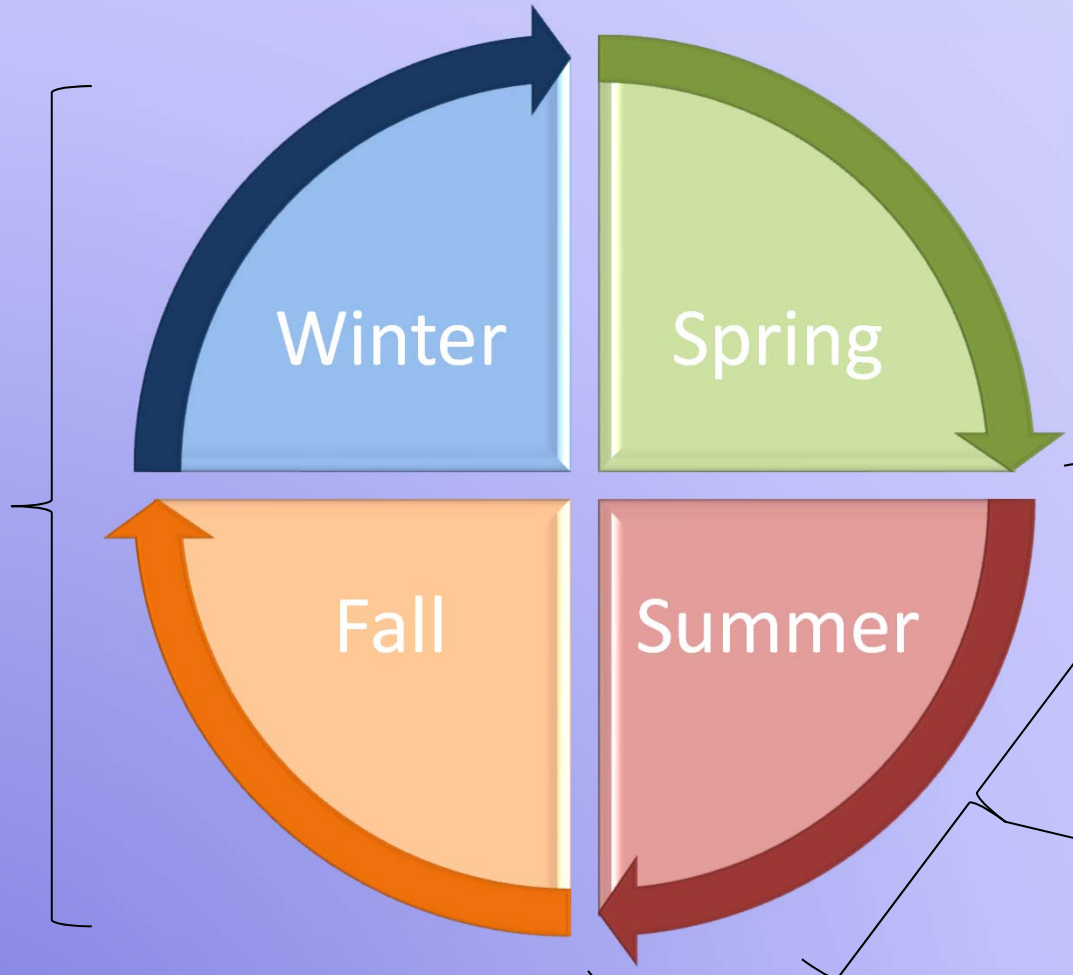
Hand Removal

- Can be volunteer-based or contractors are available
- Used for small colonies and scattered individual plants
- Does not require a permit

DASH

- Typically used by contractors
- Used for colonies (not highly maneuverable)
- Requires mechanical harvesting permit

Hand-Harvest Control & Monitoring Strategy



Results Reporting

Early-Season AIS Survey (Pre- Hand-Harvest)

DASH
DIVER ASSISTED SUCTION HARVESTING LLC

Late-Summer EWM Peak-Biomass Survey (Post Hand-Harvest)

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

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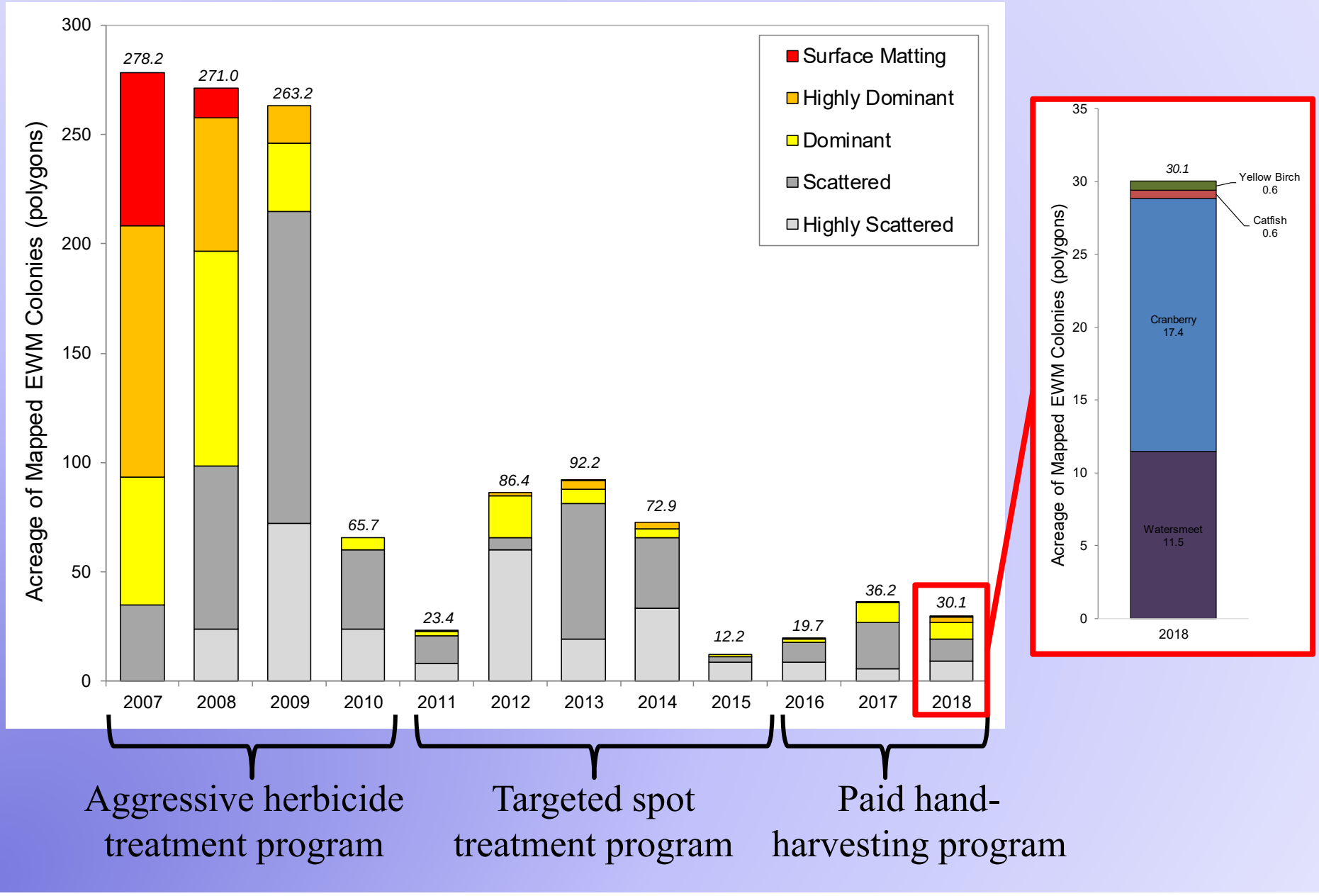
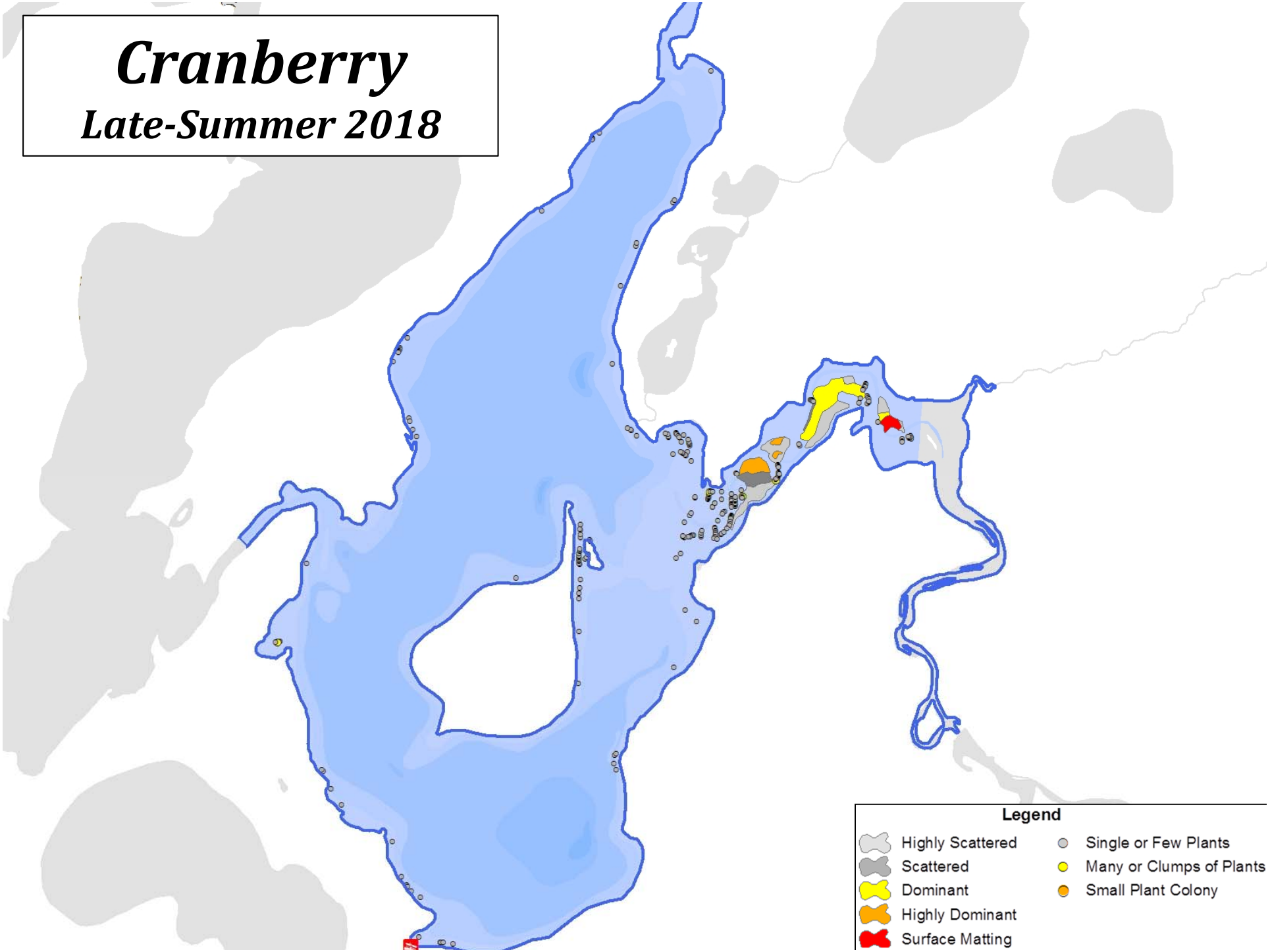
EWM Colonies



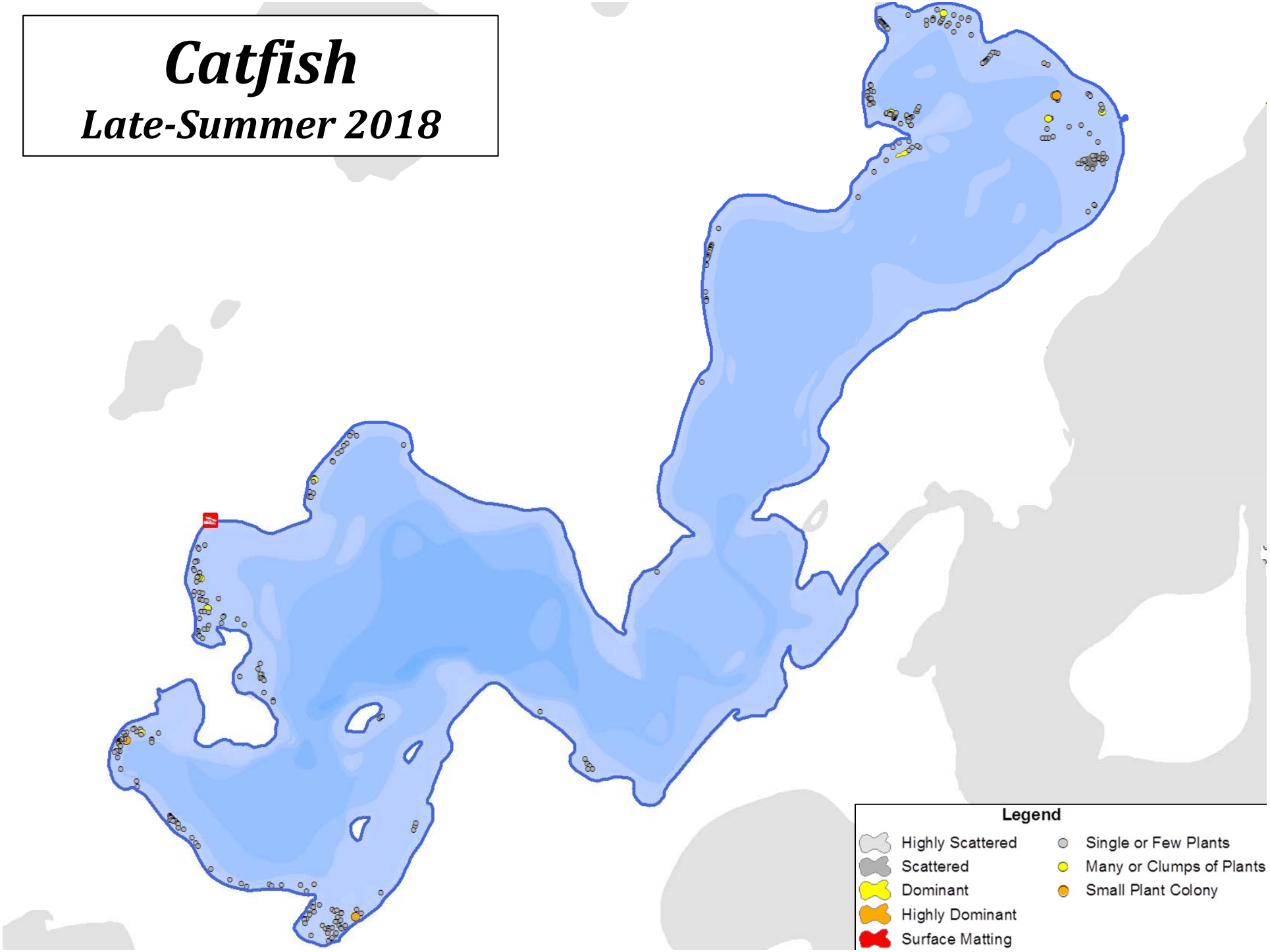
Cranberry

Late-Summer 2018



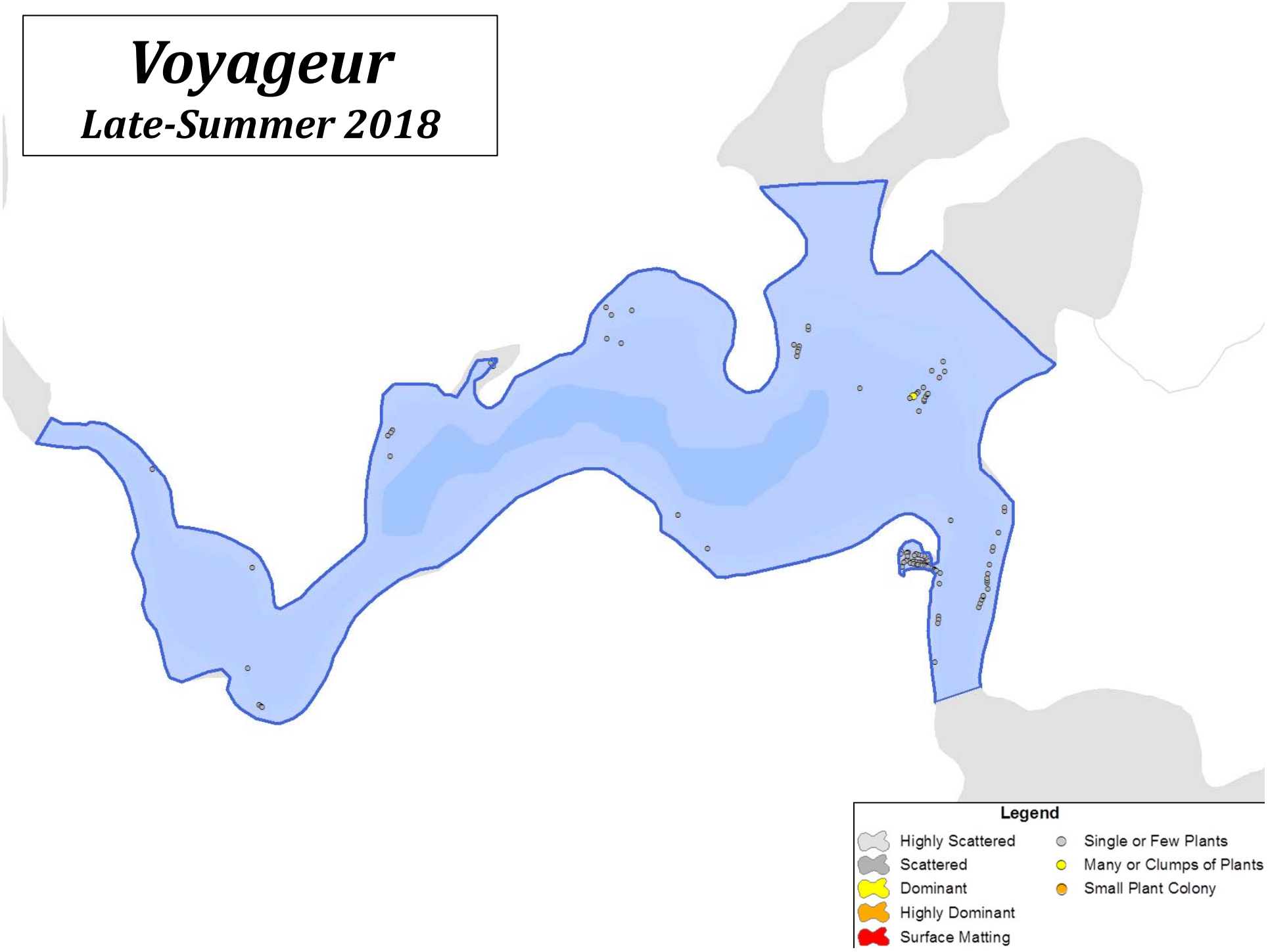
Catfish

Late-Summer 2018



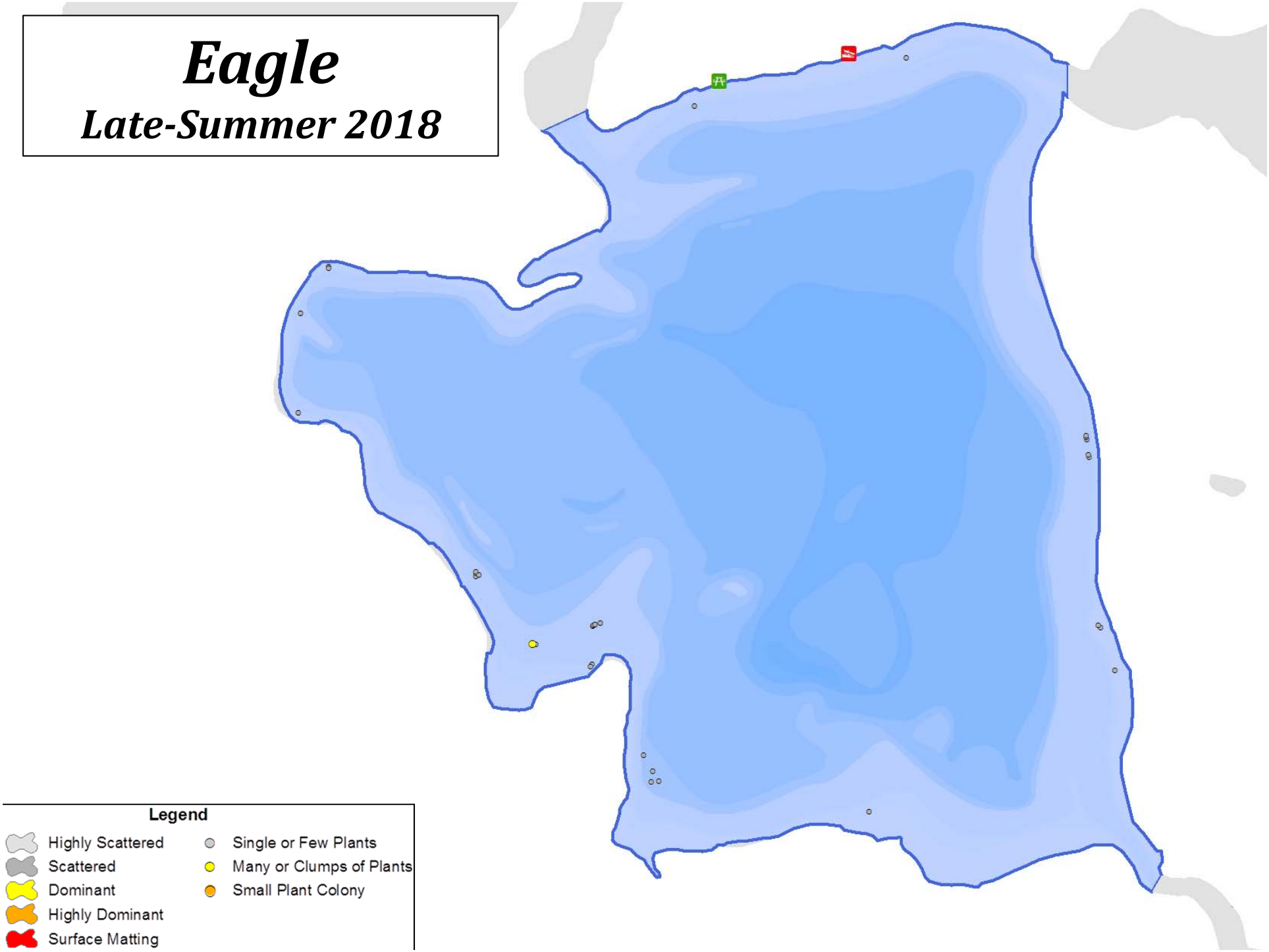
Voyageur

Late-Summer 2018



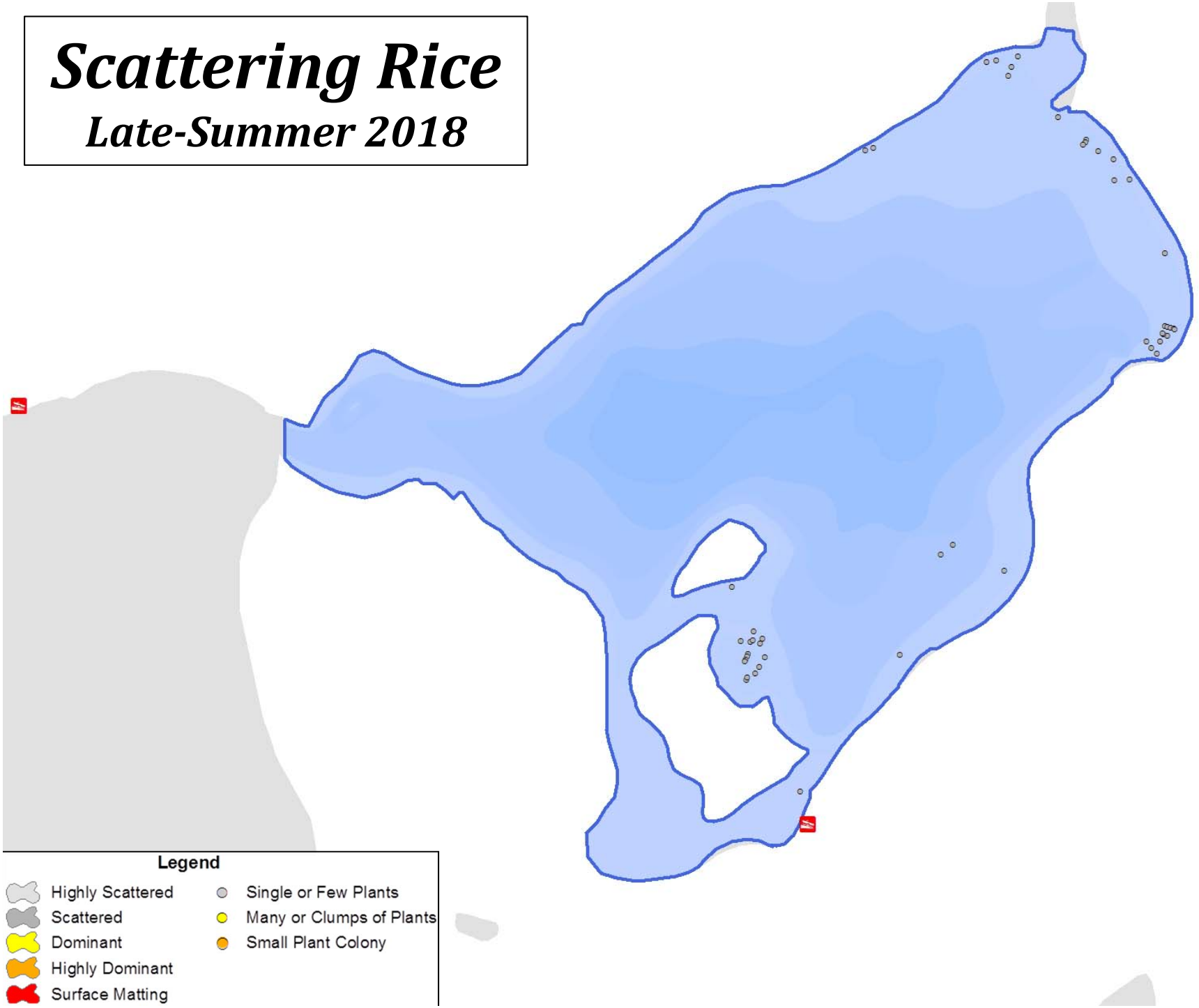
Eagle

Late-Summer 2018



Scattering Rice

Late-Summer 2018



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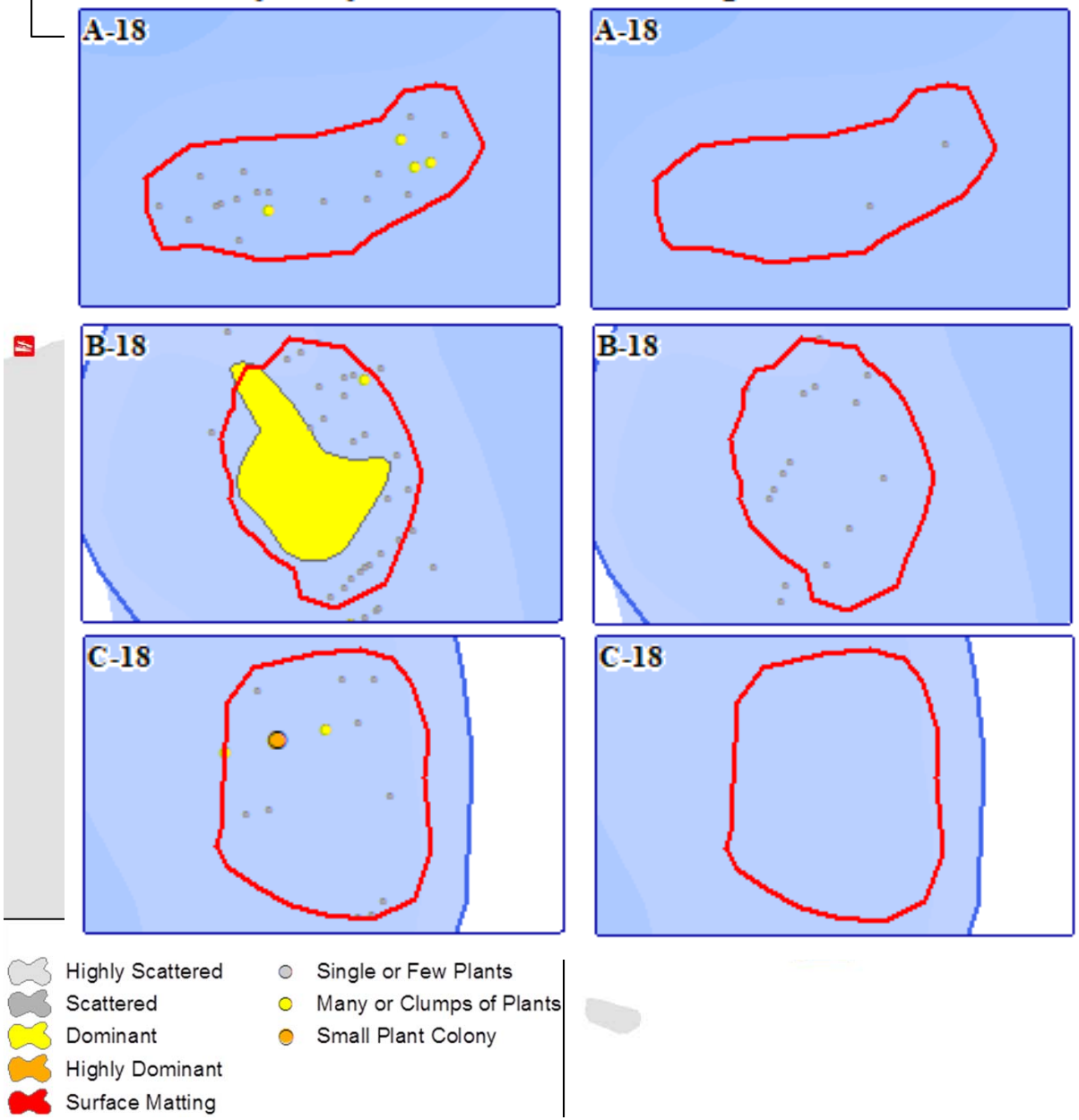
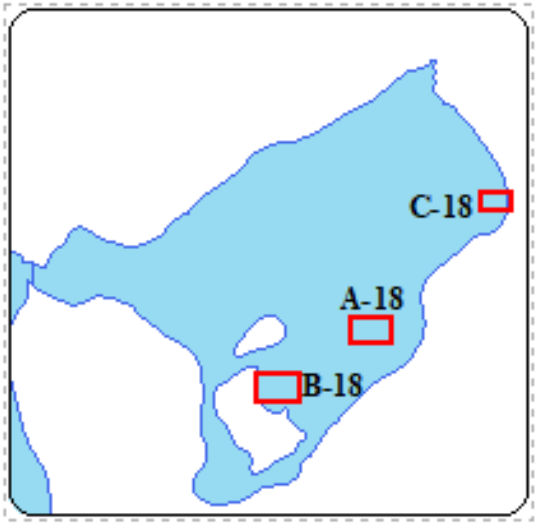
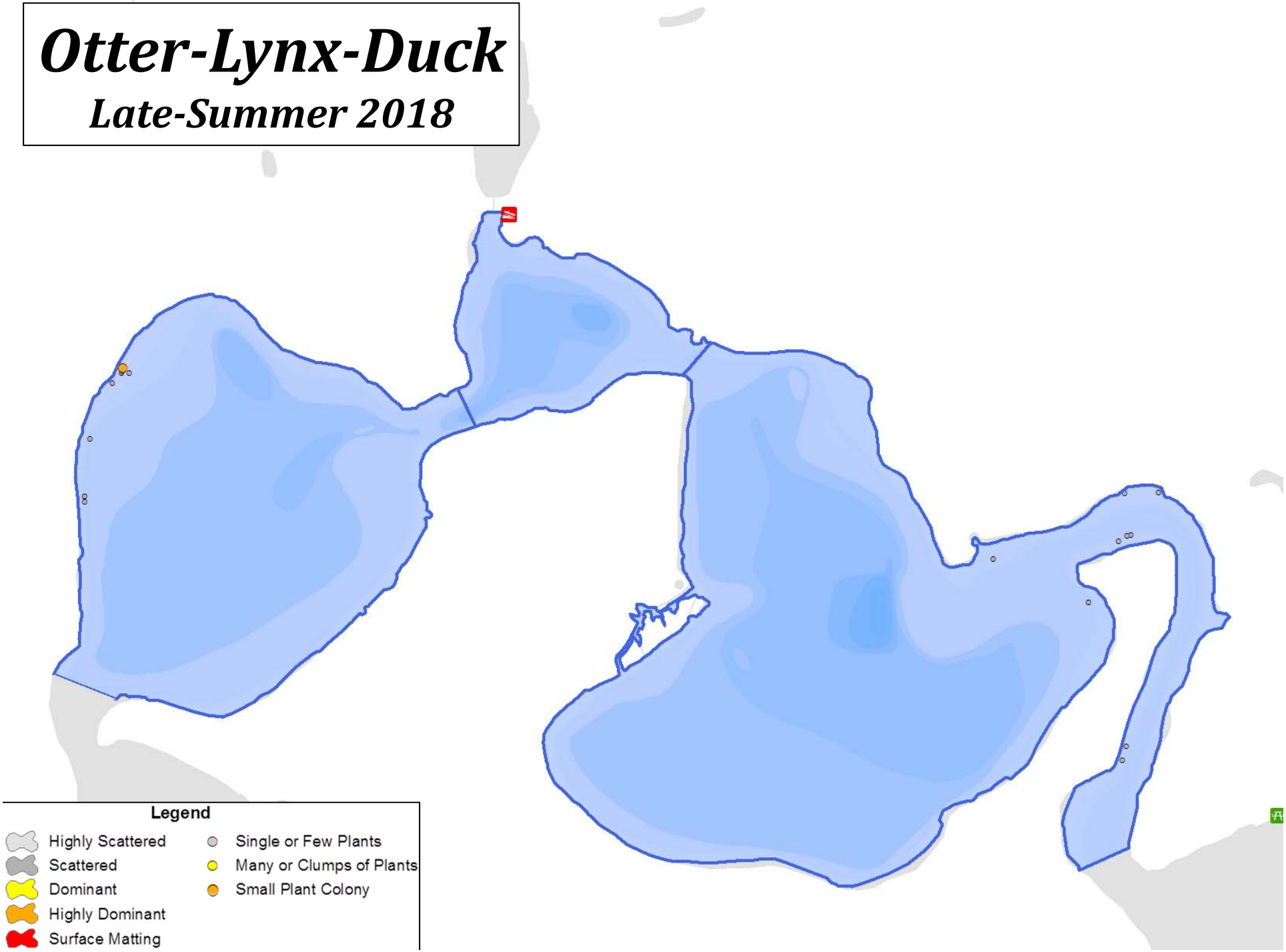




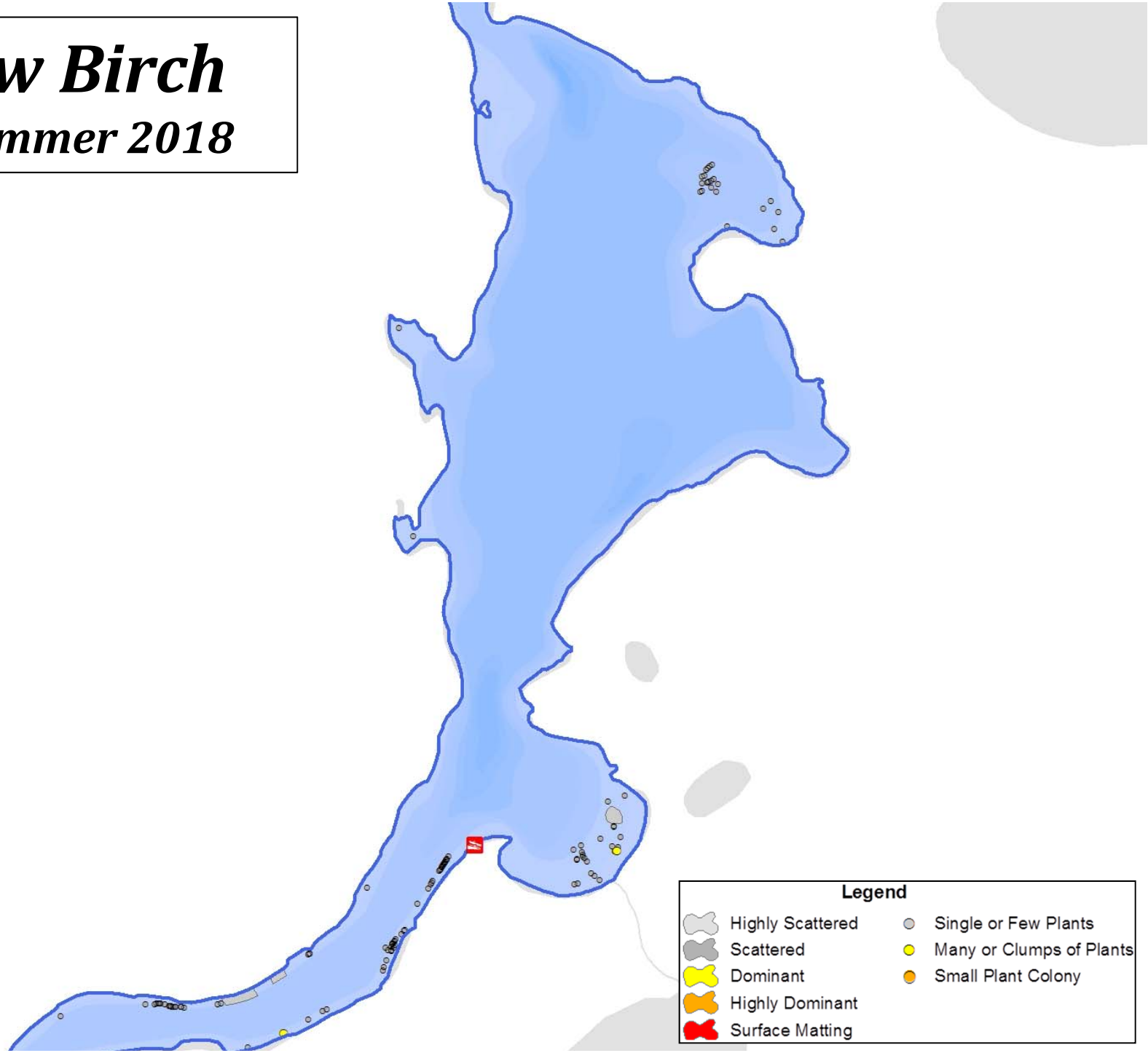
Otter-Lynx-Duck

Late-Summer 2018



Yellow Birch

Late-Summer 2018



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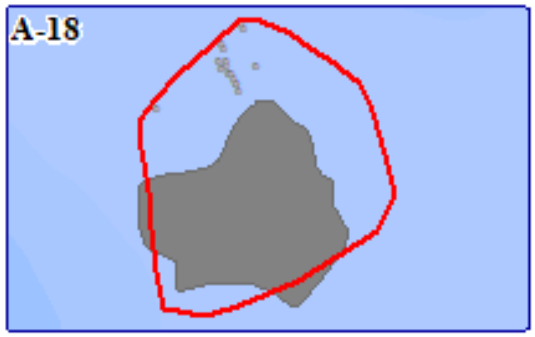
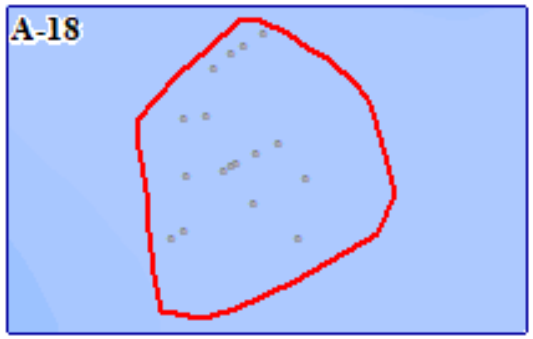
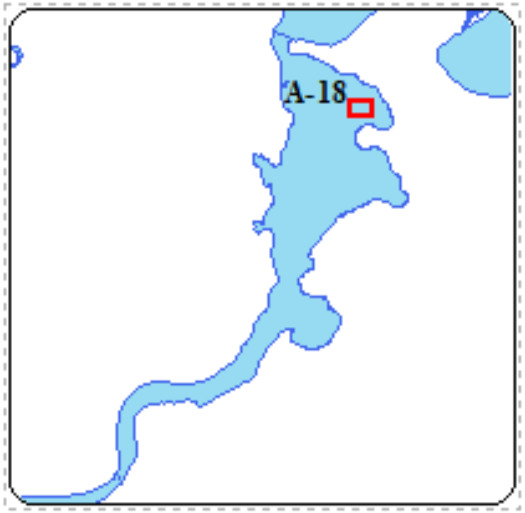
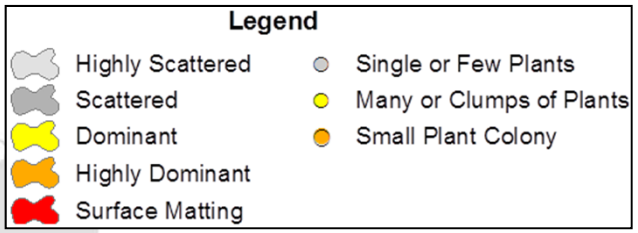


Early-July 2018



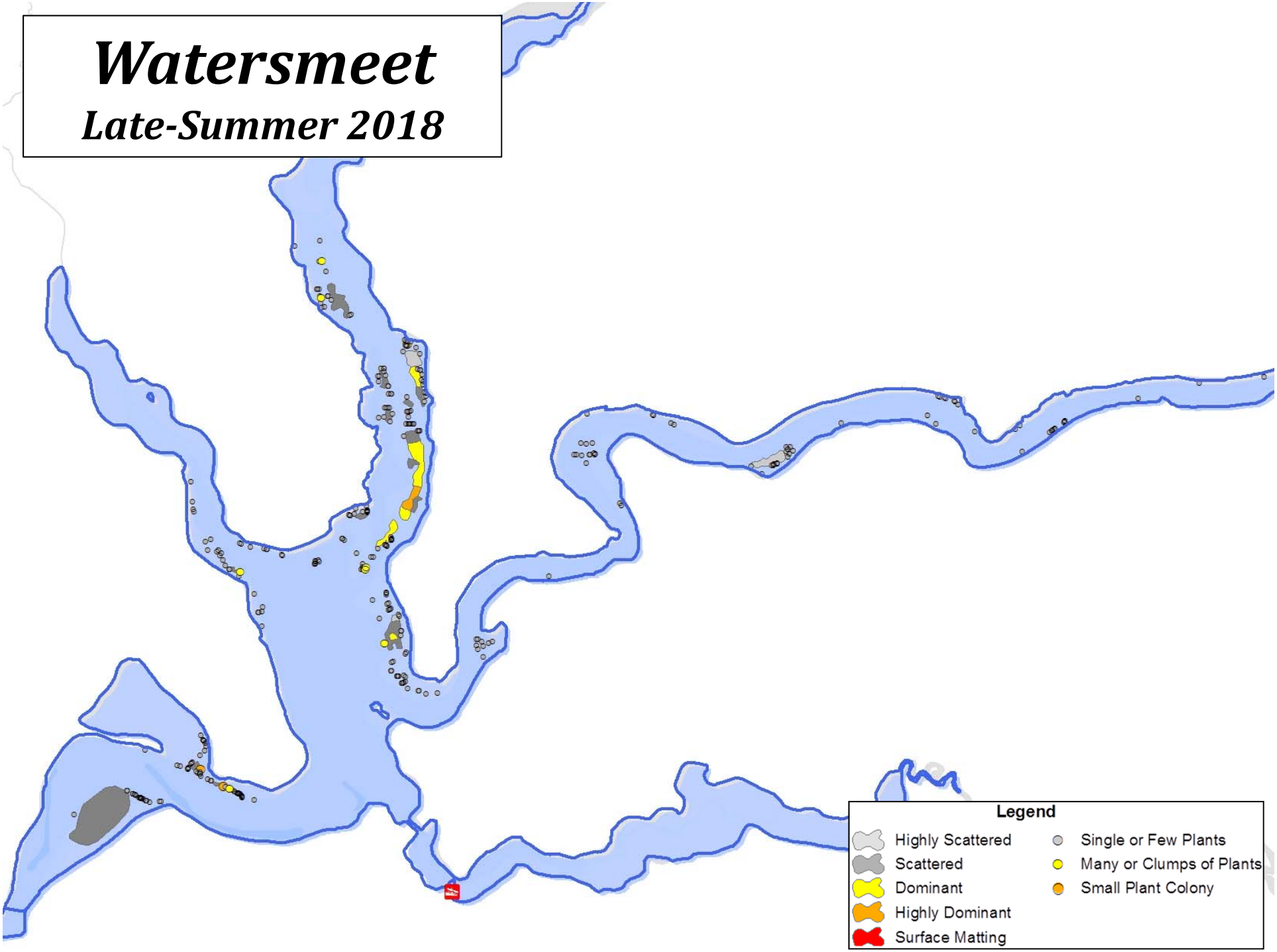
September 2018





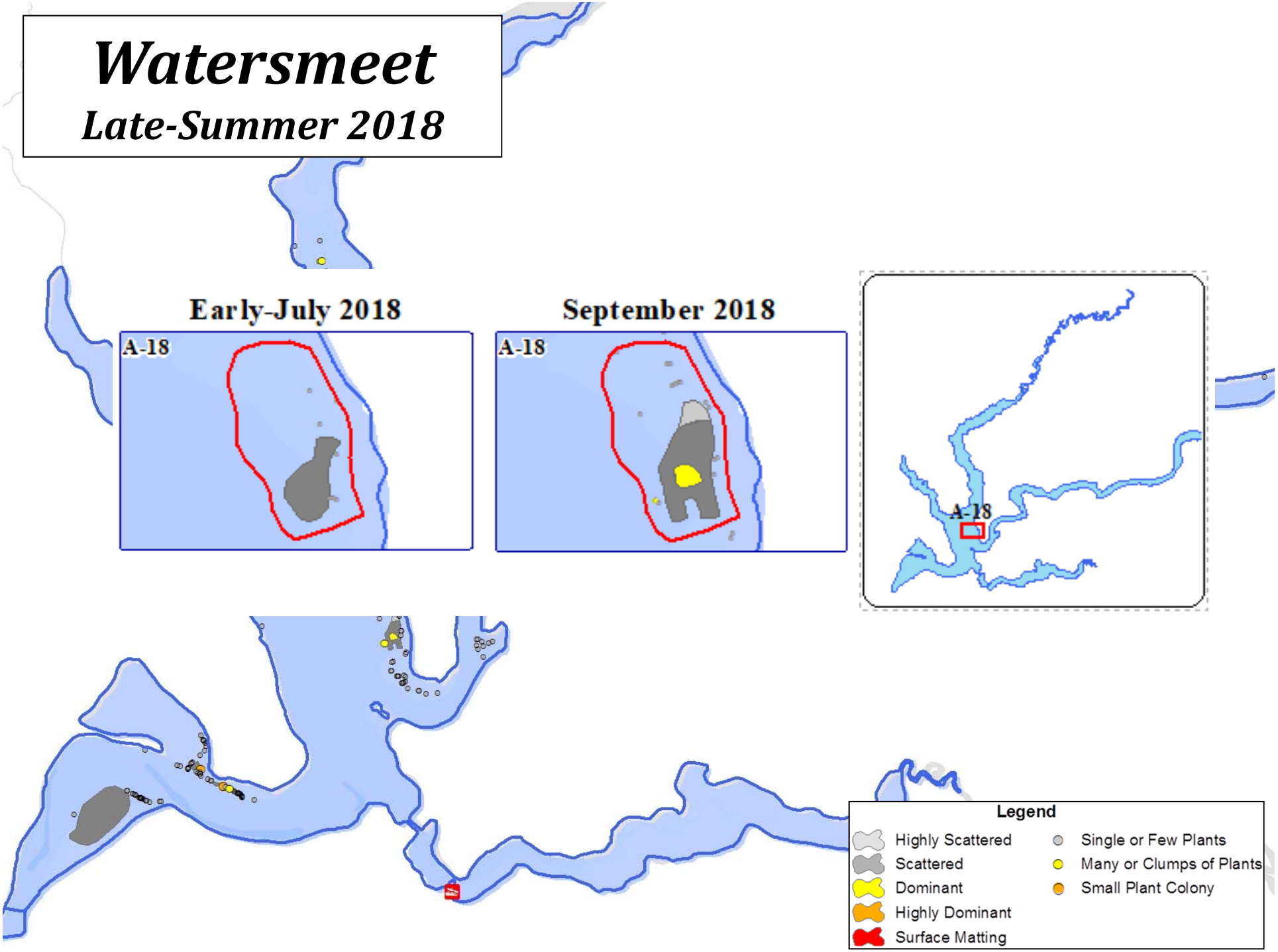
Watersmeet

Late-Summer 2018



Watersmeet

Late-Summer 2018

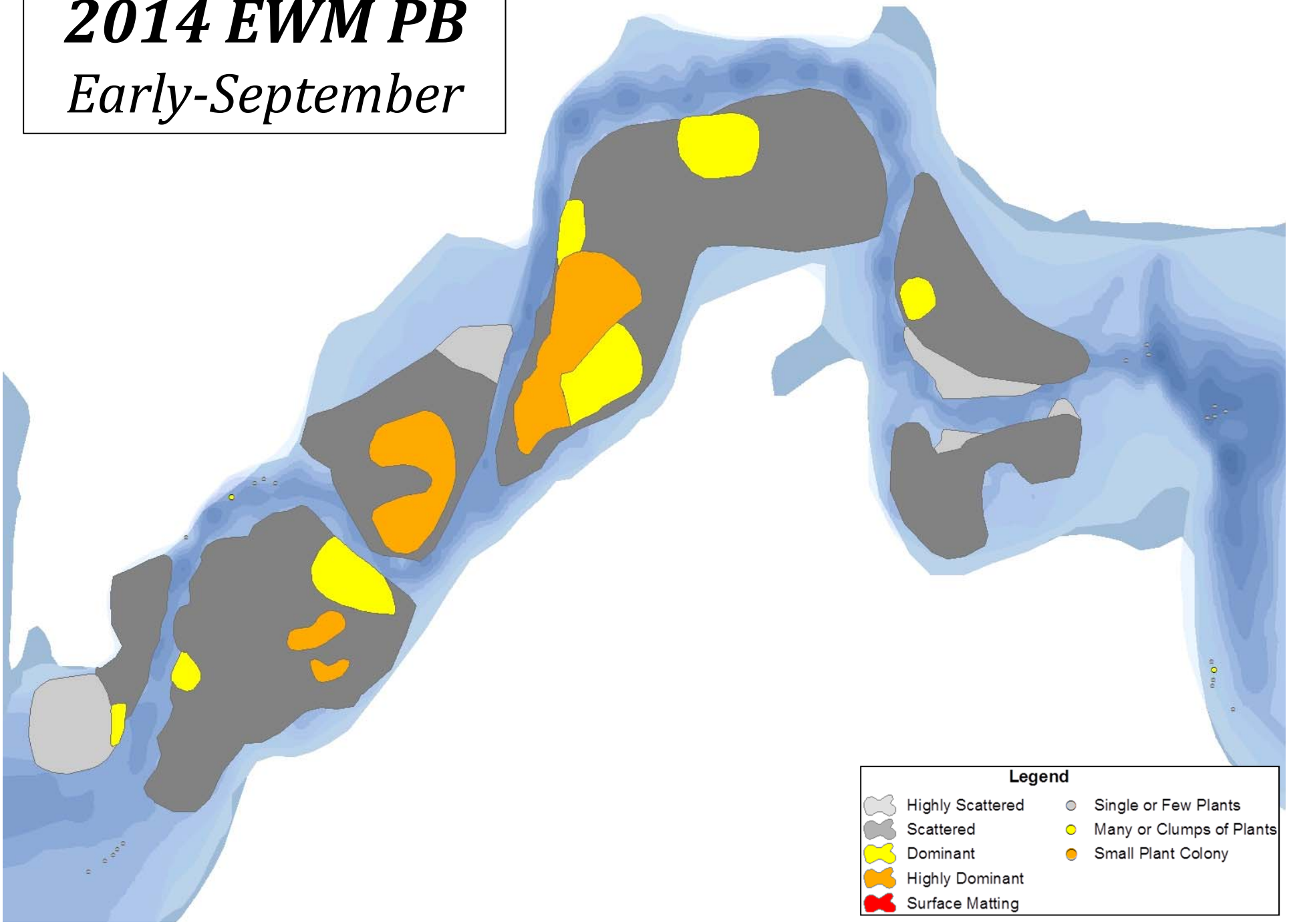


Hand-Harvesting Conclusions

- **Best Results to Date!**
  - EWM reductions in all sites except Watersmeet
  - Continued understanding of how to implement this tool
- **2019 preliminary hand-harvesting strategy**
  - Revisit all 2018 hand-harvesting area with prioritization
  - Target Watersmeet earlier (clearer water? and less plants)
  - Potentially expand/modify effort based on 2019 ESAIS

2014 EWM PB

Early-September

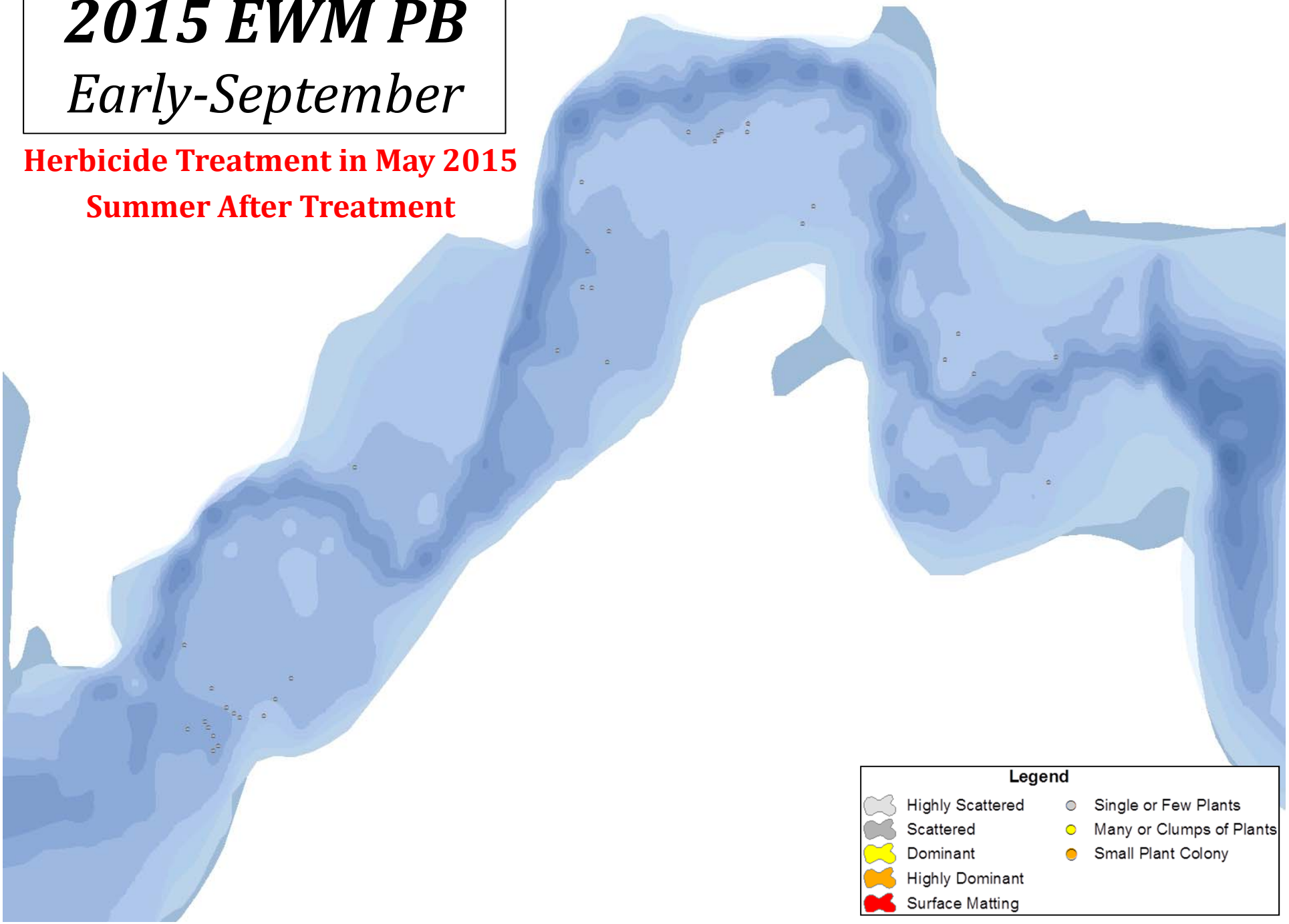


2015 EWM PB

Early-September

Herbicide Treatment in May 2015

Summer After Treatment

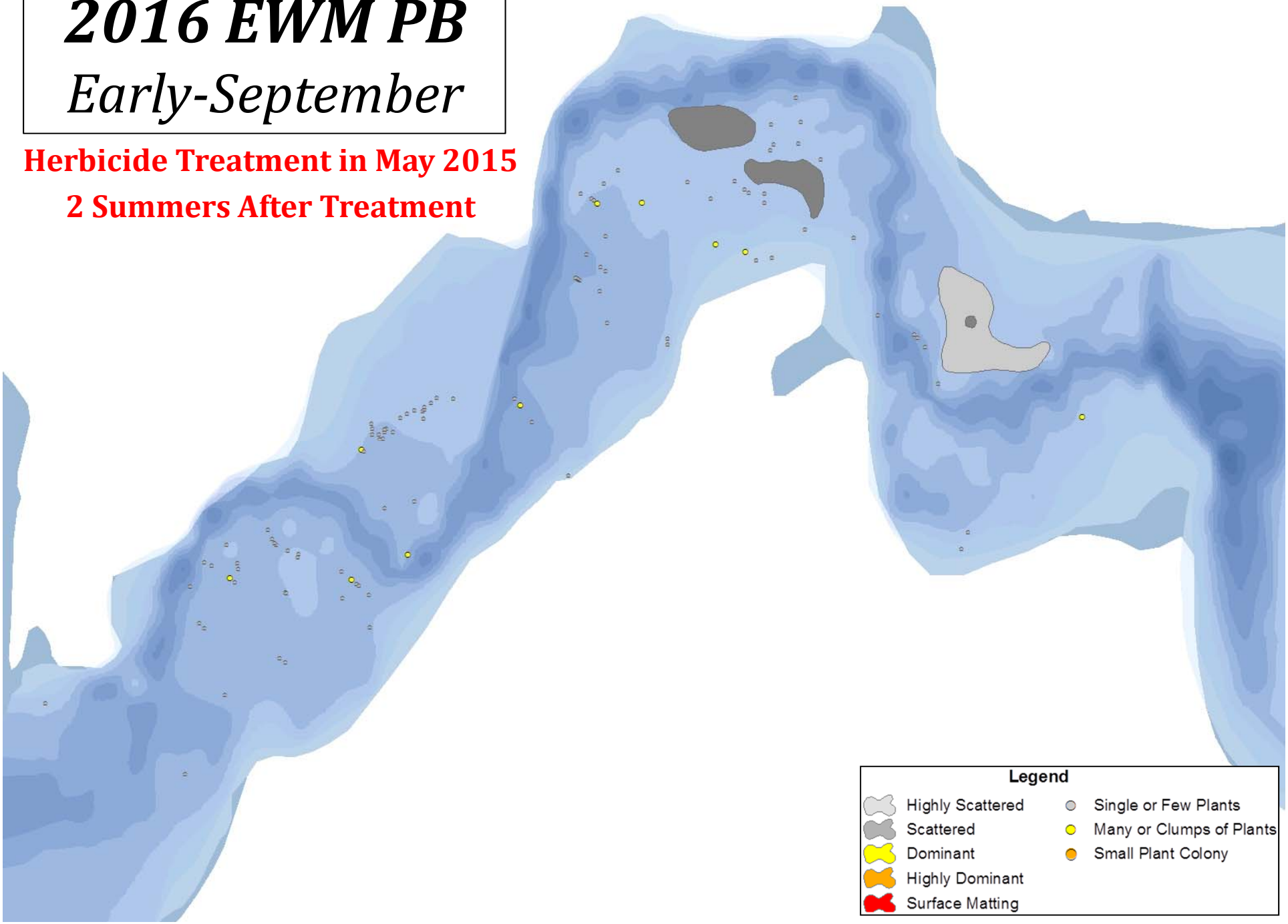


2016 EWM PB

Early-September

Herbicide Treatment in May 2015

2 Summers After Treatment

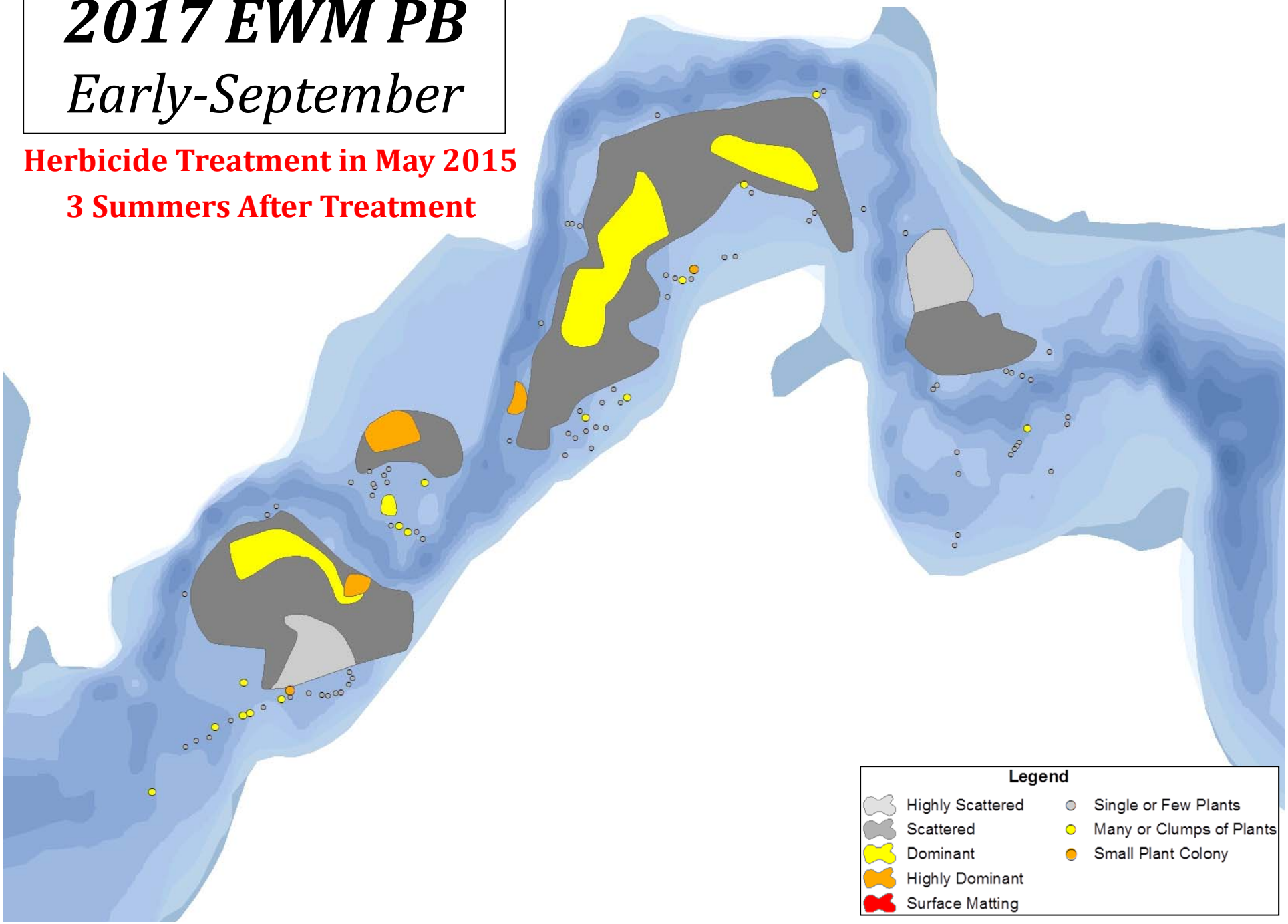


2017 EWM PB

Early-September

Herbicide Treatment in May 2015

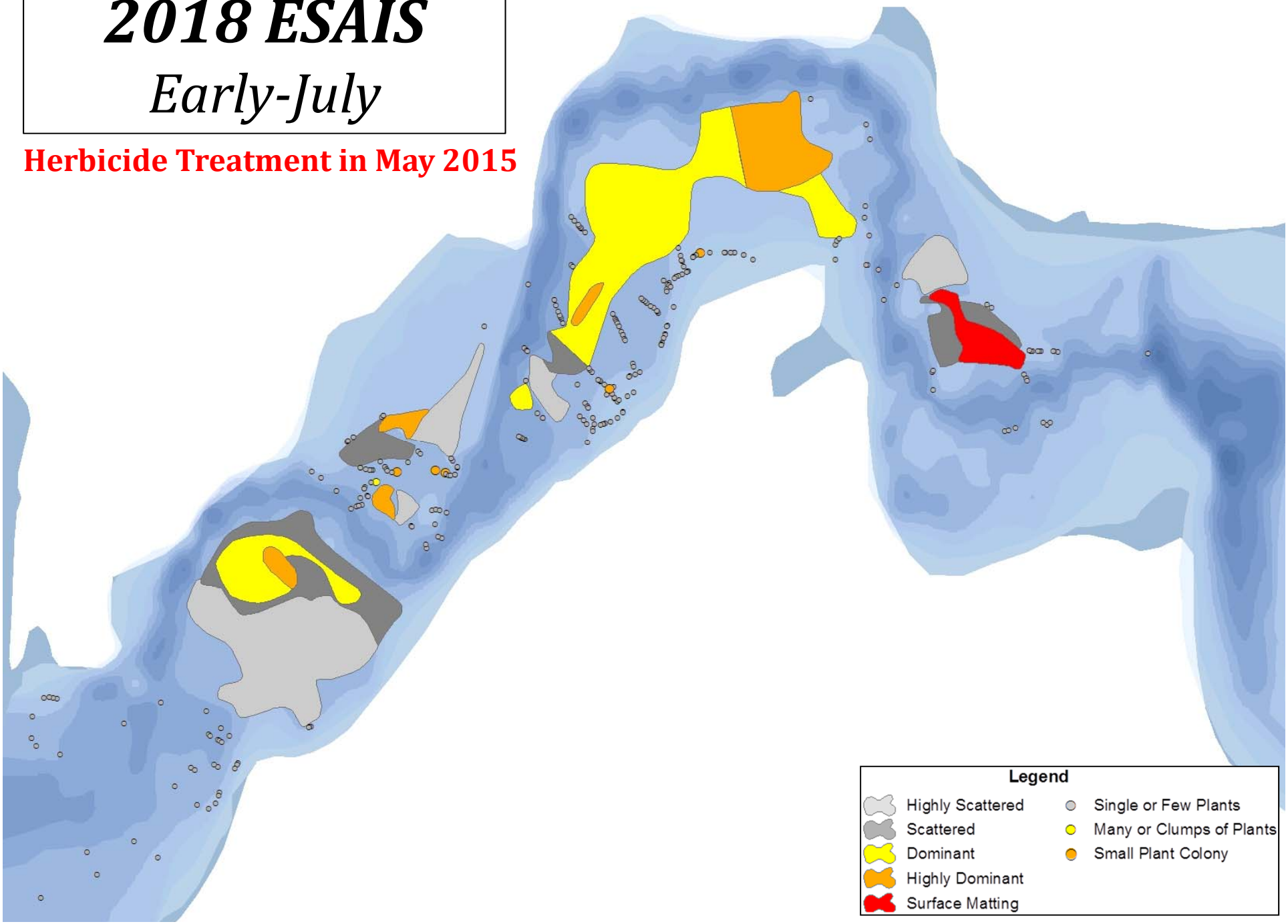
3 Summers After Treatment



2018 ESAIS

Early-July

Herbicide Treatment in May 2015

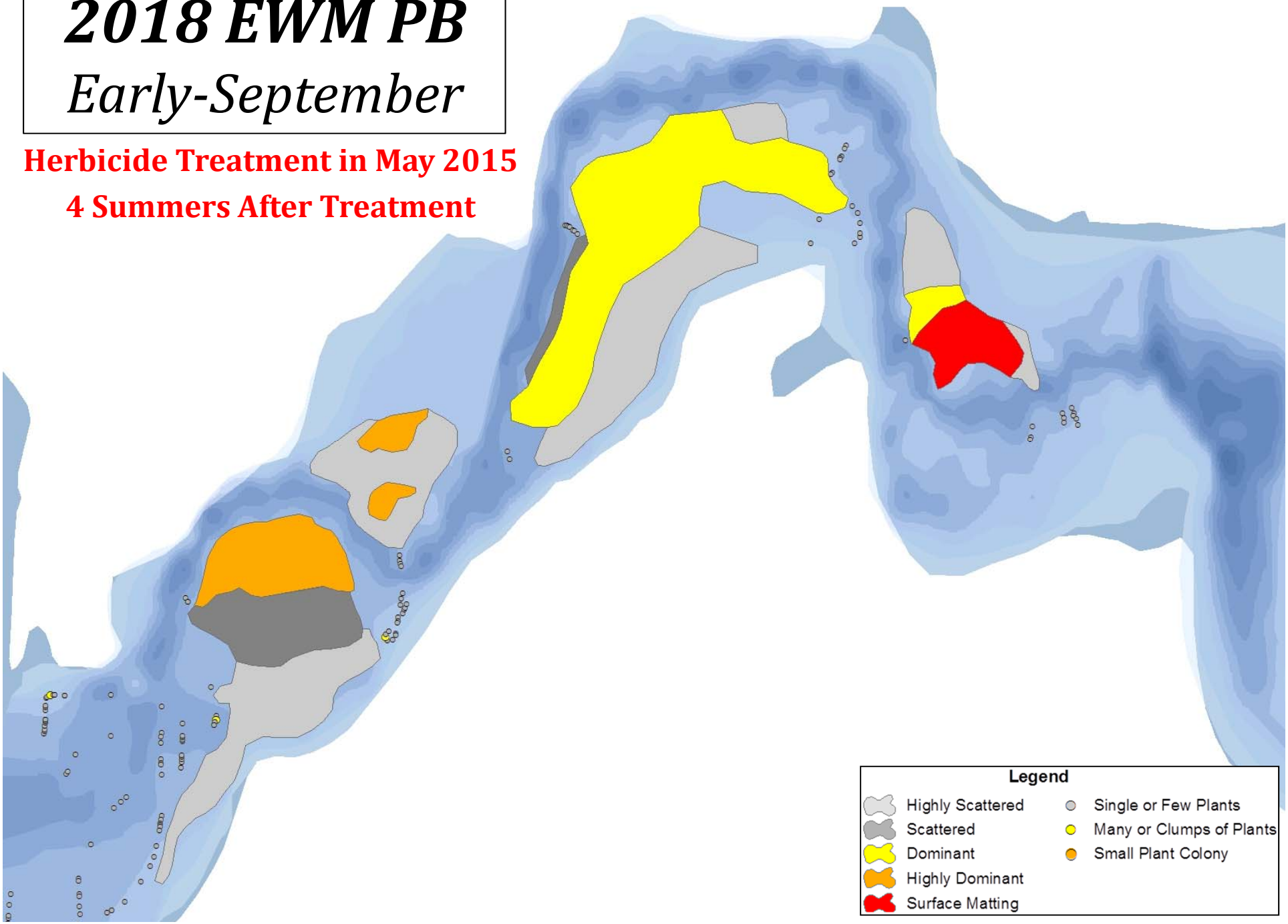


2018 EWM PB

Early-September

Herbicide Treatment in May 2015

4 Summers After Treatment



Cranberry Channel Treatment

- **2015 Treatment was perfectly executed**
  - 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 mostly low-density EWM colonies
  - 2018 was slated as pretreatment year for potential spring 2019 treatment
  - 4th summer after treatment (2018) did not progress to anticipated population size nor density

Cranberry Channel Treatment

- **Strategy for 2019**
  - Concerns exist that best case scenario 2,4-D spot treatment will only results in 2-3 years of reduced EWM in this difficult scenario
    - Are the financial cost and ecological risks commensurate with the amount of control achieved?
  - Alternative herbicide options may be considered, but have greater financial costs and less known about ecological risks
    - While greater than past years, the EWM population is likely below levels that would trigger the use of alternative herbicides
  - Postpone chemical control until after 2019, with 2019 being again considered as a pretreatment year

ERC Project Conclusions

Overall, significant reduction of EWM since start of the program

- Holding onto gains made is difficult, but continues to be working on the chain

No Herbicide Treatment Proposed AGAIN for 2019

- 4 consecutive years without herbicide management

Conduct Professional-Based Hand-Harvesting in 2019

- Work on permits earlier
- 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

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