

Aquatic Invasive Species Action Plans for Le Sueur County, Minnesota

SUMMARY

Prepared by Steve McComas, Blue Water Science, November 3, 2015

Prevention

- Inspections (optimize inspection program)
- Education and Outreach (prepare materials)

Management

- Existing Conditions Summary (summarize water quality, etc)
- Suitability Assessment (use lake data to determine the potential for AIS growth in each lake)
- Early Detection (use sampling methods to detect new AIS invasions)
- Rapid Response Assessment (use quantitative measures after an invasion is discovered to determine the level of rapid response).
- Rapid Response Plan (have plans in place for each species to implement action based on the rapid response assessment)
- Management (short term and long term management approaches for each major aquatic invasive species. Additional informational materials should be produced.)

Table 1. List of aquatic invasive species that will be evaluated in the AIS Action Plan. Also the presence of known AIS is listed as well.

| Lake Name | DNR ID # | Lake Size (ac) | Littoral Zone (ac) | Curlyleaf Pondweed | Eurasian Watermilfoil | Zebra Mussels | Common Carp | Flowering Rush | Purple Loosetrife |
|--|------------|----------------|--------------------|--------------------|-----------------------|---------------|-------------|----------------|---|
| Clear | 40-0079 | 279 | 198 | Yes | No | No | No | No | |
| Emily | 40-0124 | 300 | 165 | Yes | No | No | Yes | No | |
| Frances | 40-0057 | 927 | 502 | Yes | No | No | Yes | No | |
| German | 40-0063 | 792 | 521 | Yes | Yes | No | Yes | No | |
| Gorman | 40-0032 | 521 | 499 | Yes | No | No | Yes | No | |
| Greenleaf | 40-0020 | 302 | 263 | Yes | No | No | Yes | No | |
| Jefferson Chain | | | | | | | | | |
| East Jefferson | 40-0092-01 | 685 | 343 | Yes | Yes | No | Yes | No | |
| Middle Jefferson | 40-0092-04 | 667 | 667 | Yes | Yes | No | Yes | No | |
| West Jefferson | 40-0092-02 | 439 | 348 | Yes | Yes | No | Yes | No | Reported in 1992, but not found in 2014 |
| Swedes Bay | 40-0092-03 | 492 | 492 | Yes | Yes | No | Yes | No | |
| Rays | 40-0056 | 166 | 139 | Yes | Yes | No | Yes | No | Yes |
| Sakatah | | | | | | | | | |
| Lower Sakatah | 66-0044 | 372 | 310 | Yes | No | No | Yes | Yes | |
| Upper Sakatah | 40-0002 | 892 | 881 | Yes | No | No | Yes | Yes | |
| Tetonka | 40-0031 | 1,358 | 548 | Yes | Yes | No | Yes | Yes | |
| Volney | 40-0033 | 269 | 130 | Yes | No | No | Yes | No | |
| Washington | 40-0117 | 1,519 | 783 | Yes | No | No | Yes | No | |
| Species not observed: zebra mussels and rusty crayfish | | | | | | | | | |
| Species not here yet or with low probability of invading: bighead carp, silver carp, hydrilla, quagga mussels, snakehead, spiny water flea, LMB virus, VHS virus, New Zealand mud snails, faucet snail, water hyacinth | | | | | | | | | |
| Species that may be present, but not reported: Chinese Mystery snail | | | | | | | | | |

Aquatic Invasive Species Action Plans for Le Sueur County, Minnesota

Abstract

Twelve major lakes with public access within Le Sueur County were evaluated in 2014 to determine the potential for aquatic invasive species (AIS) introductions and the ecological and recreational consequences. Lake sediment surveys and water quality data were collected for all 12 lakes.

Lake sediment phosphorus release, which could contribute to blue-green algal blooms including the invasive cylindro, was significant for a majority of the lakes. Only Frances and Rays had low p-release levels and Gorman and Volney had some of the highest potential p-release rates.

Curlyleaf pondweed currently is found in all 12 lakes. Lake sediment surveys indicated that all of the lakes had the potential to produce moderate to heavy curlyleaf pondweed growth. However, for Lake Volney only about half of the nearshore area appeared to be conducive to moderate or heavy curlyleaf growth. Curlyleaf pondweed could be significant in the other lakes, with year to year variability.

Eurasian watermilfoil (EWM) currently is found in German, Jefferson, and Rays lakes. Predicted EWM growth varies within the county lakes. It appears Emily, Frances and Rays lakes have the potential for mostly light to moderate growth. The other lakes could have areas of heavy growth unless water clarity limits EWM distribution and abundance.

At the end of 2014, no zebra mussels have been observed in lakes in Le Sueur County. Lake water quality and substrate conditions indicate that for all 12 lakes, if zebra mussels do invade, growth would be light due to blue-green algal concentrations that could limit zebra mussel growth. Zebra mussels do not grow well in lakes with colonial blue-green algae and all 12 lakes have this condition.

Common carp are documented in 11 out of the 12 lakes. Only Clear Lake did not report carp in the last MnDNR fish survey. Off-lake carp spawning and rearing areas are present for all 12 lakes which indicate that carp could reproduce and grow to a size safe from predation in these off lake areas and then re-enter the lake. The potential exists for moderate to dense carp populations in all the lakes. It will be an ongoing challenge to reduce the carp population in most of these lakes.

An environmental risk assessment was prepared for the AIS of interest for each of the 12 lakes. For all 12 lakes the recreational and ecological consequences of AIS establishment range from moderate to high except for zebra mussels which are low. Curlyleaf pondweed and common carp appear to pose the greatest AIS impacts on county lakes. Although consequences may be moderate in some cases, even a moderate consequence is perceived as a potential problem and control actions are often implemented.

Locations of LeSueur Co, MN Lakes with AIS Evaluations

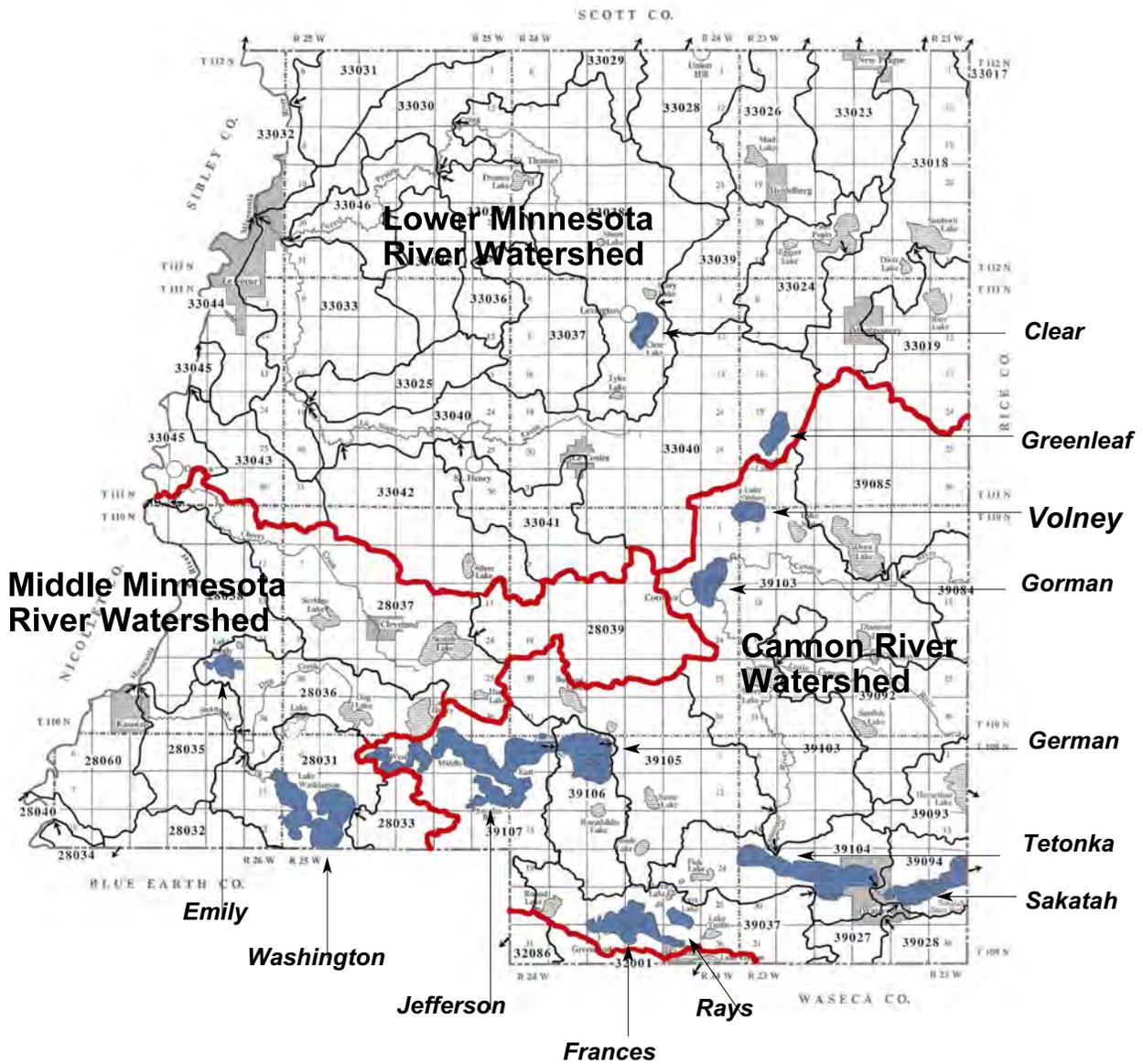
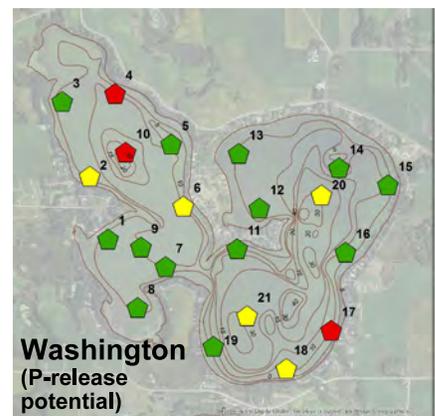
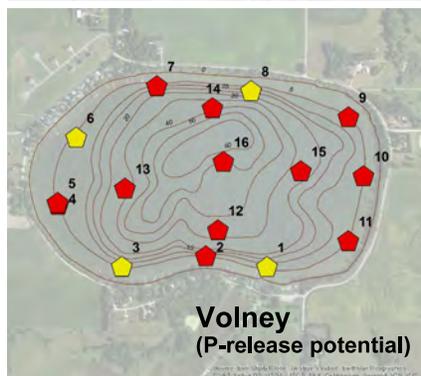
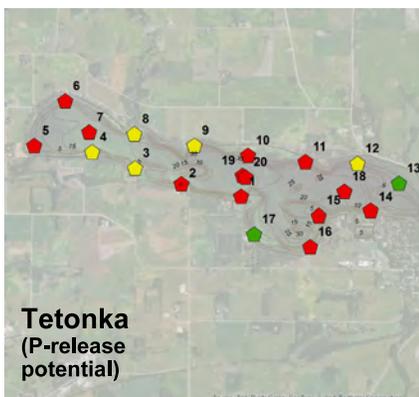
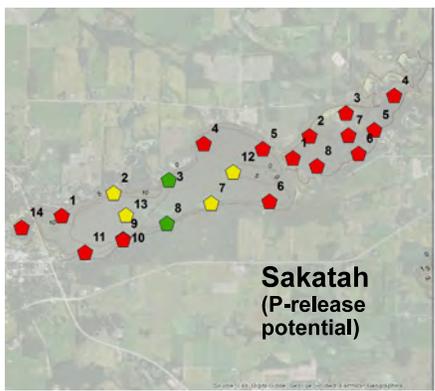
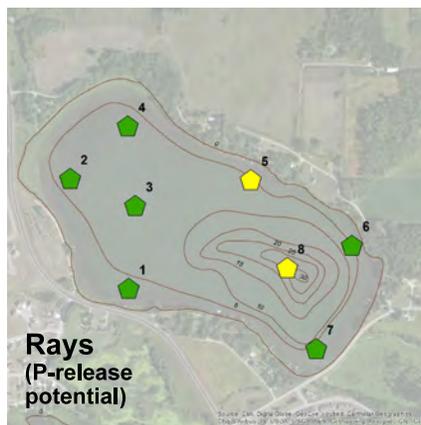
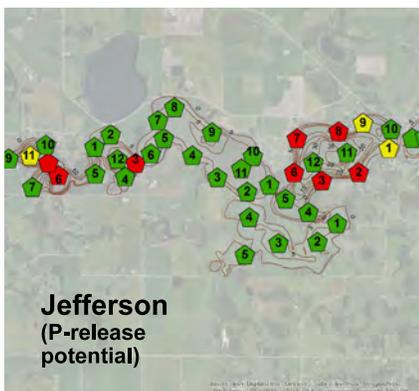
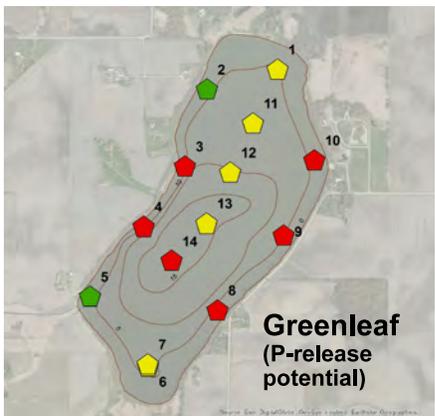
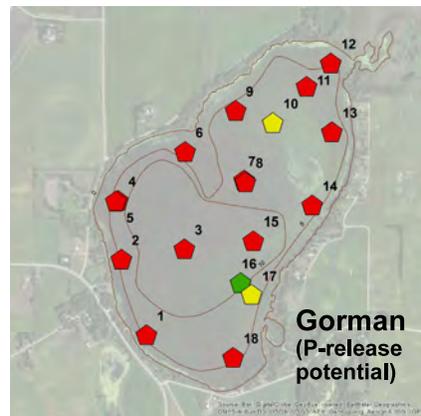
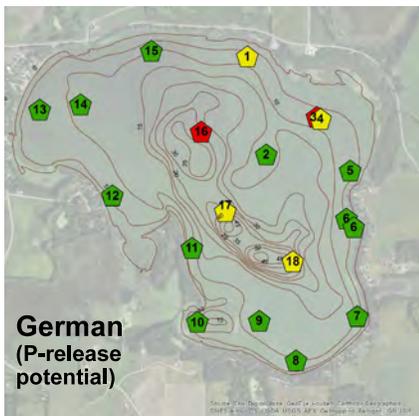
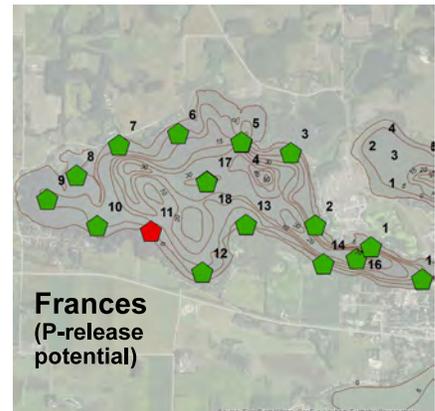
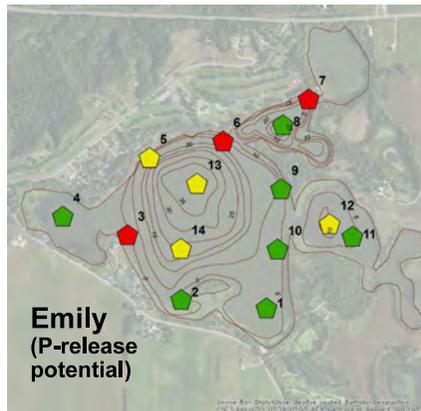
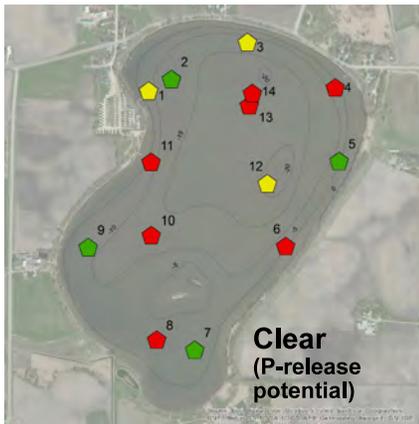
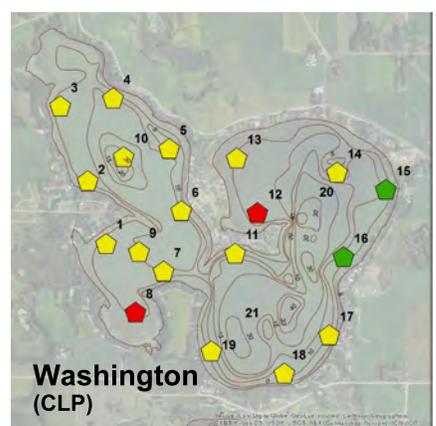
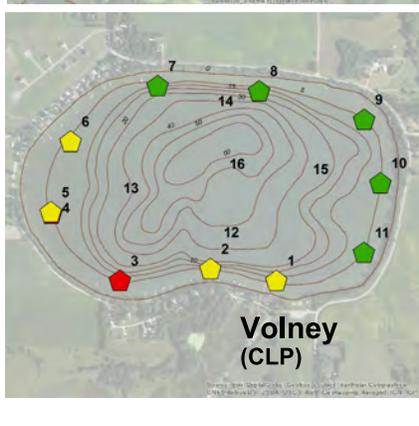
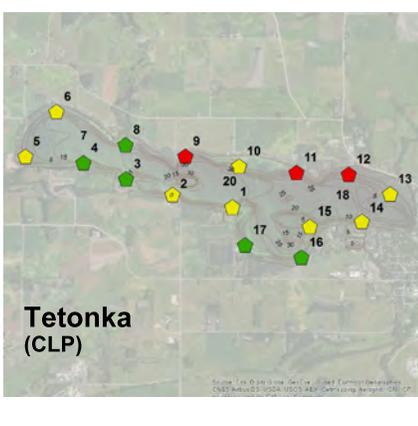
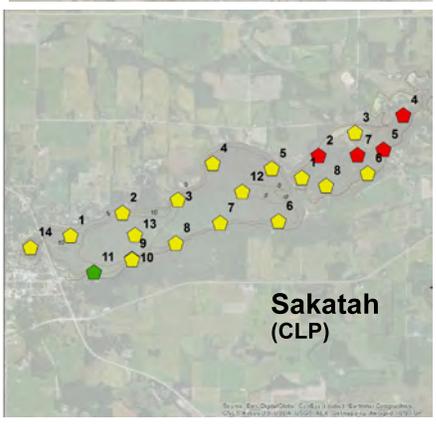
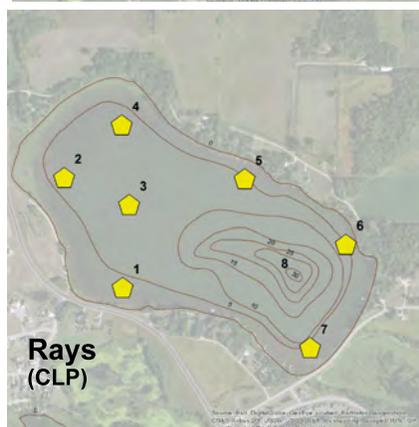
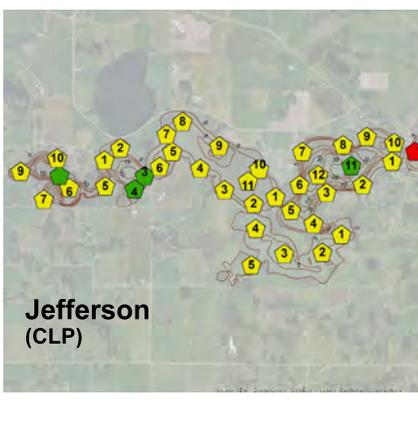
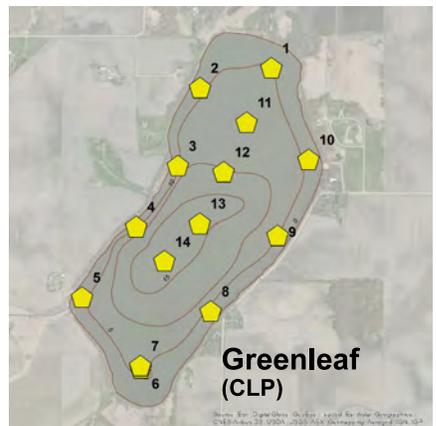
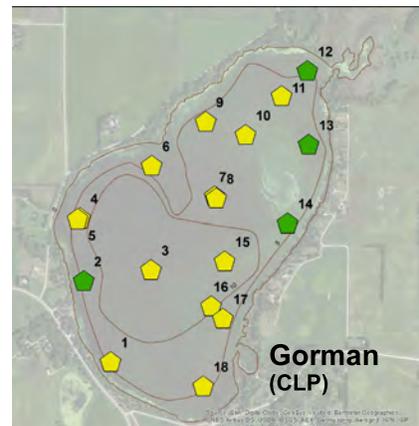
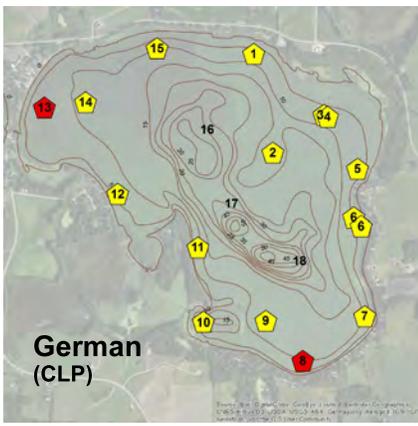
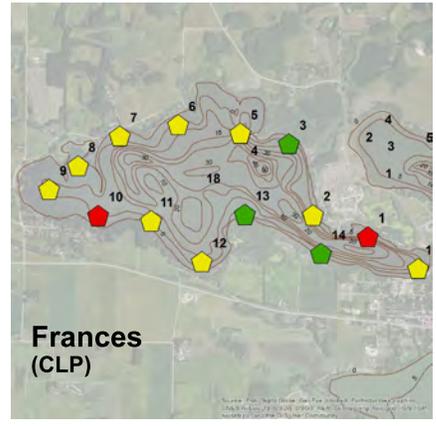
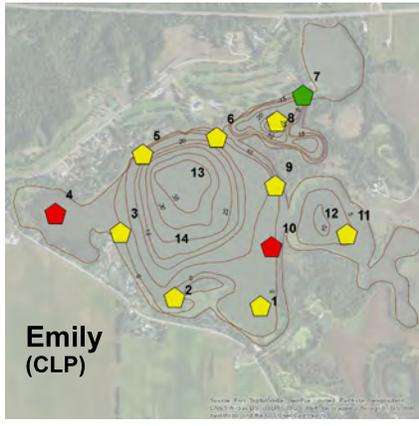
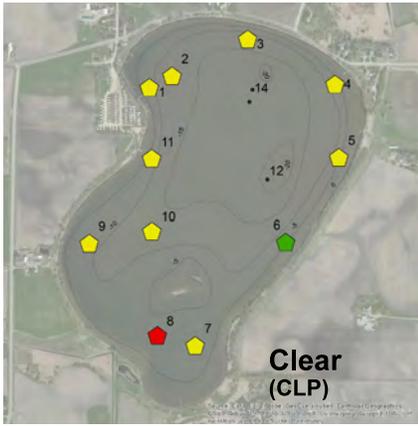


Figure 1. Three major watersheds are located in Le Sueur County.

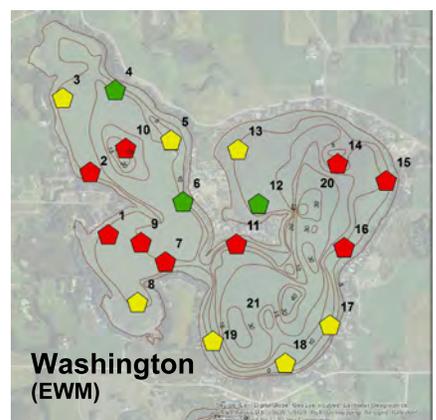
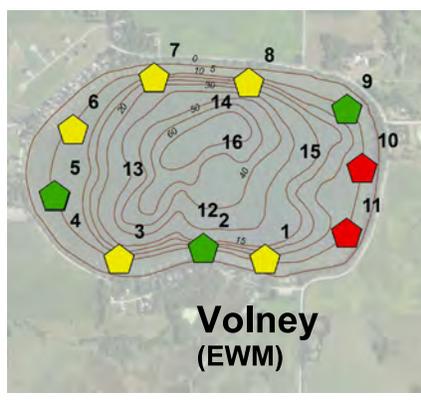
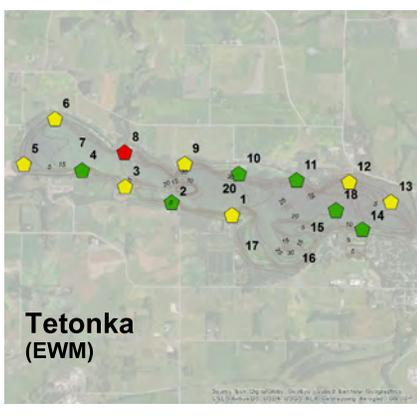
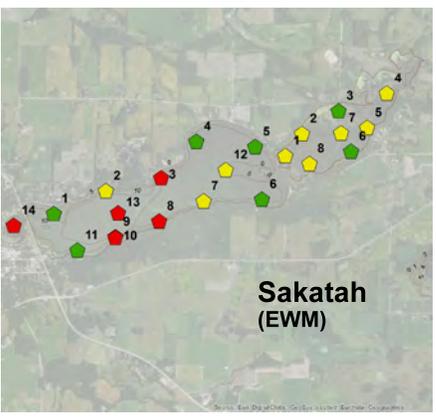
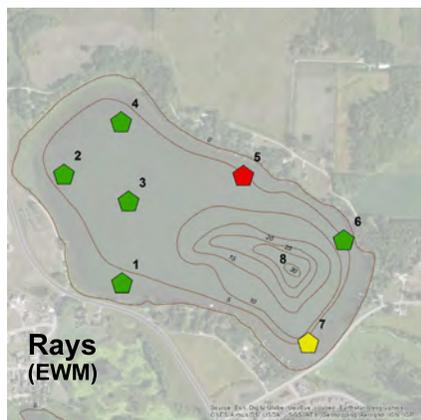
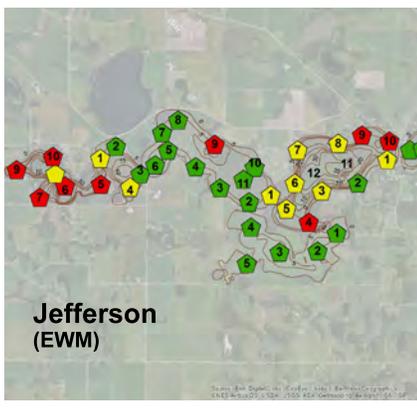
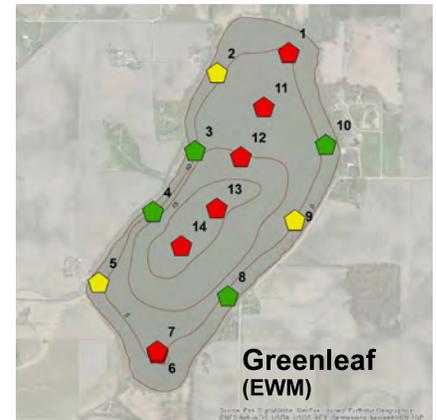
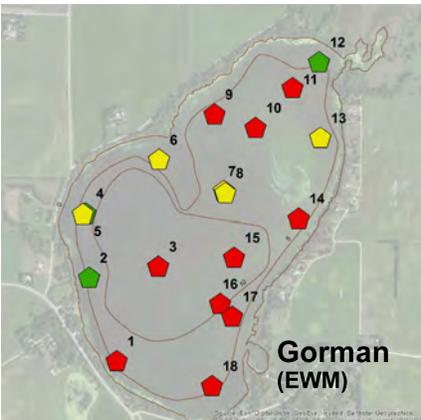
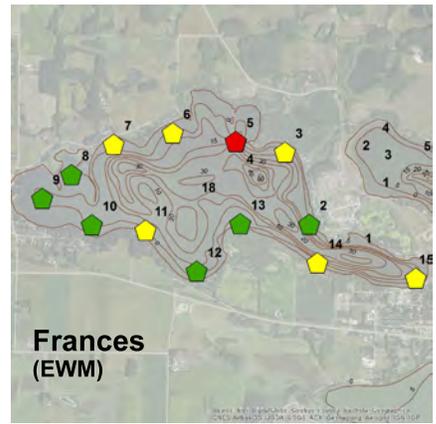
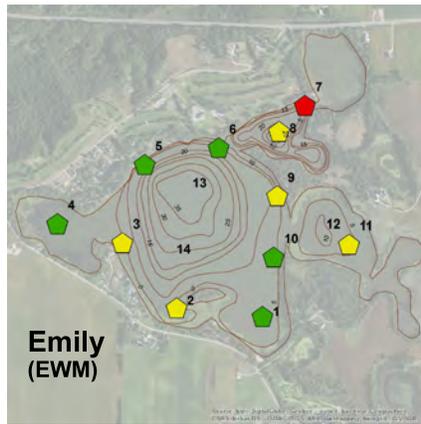
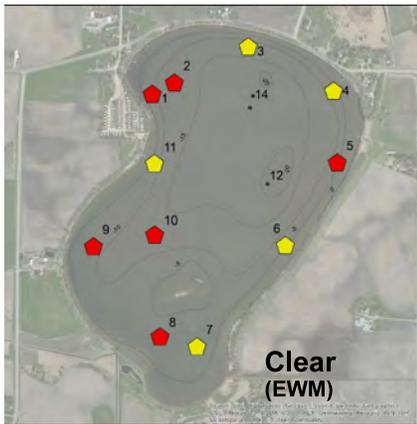
Sediment Phosphorus Release Potential Maps (may contribute to excessive blue-green algal growth including *Cylindro*) (key: green = low, yellow = moderate, and red = high)



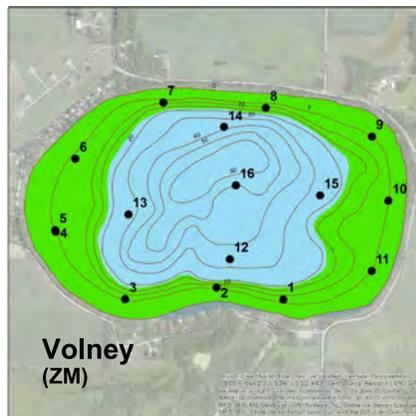
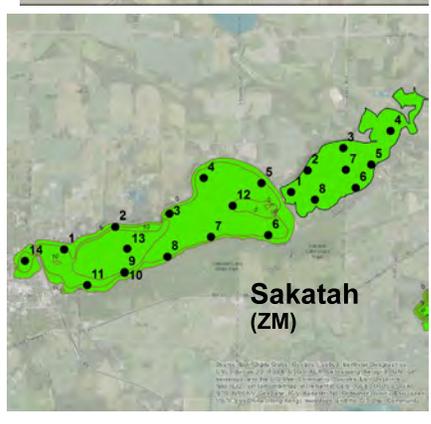
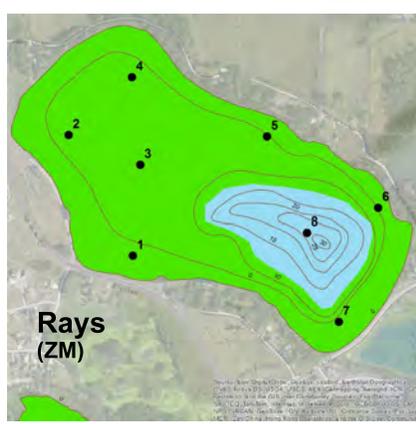
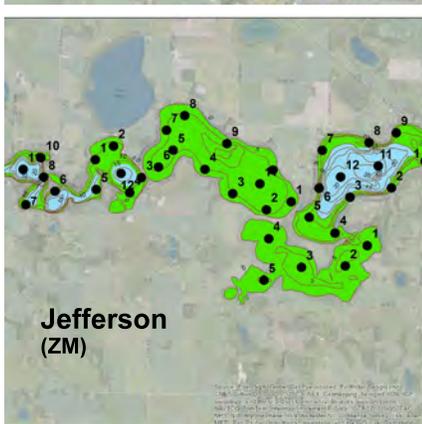
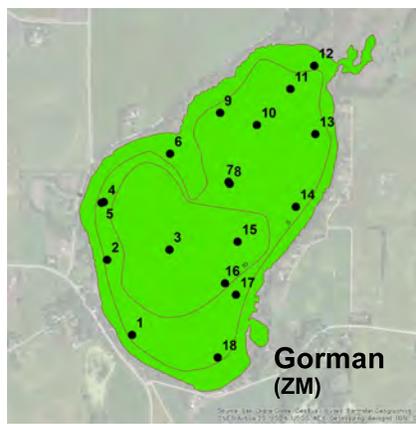
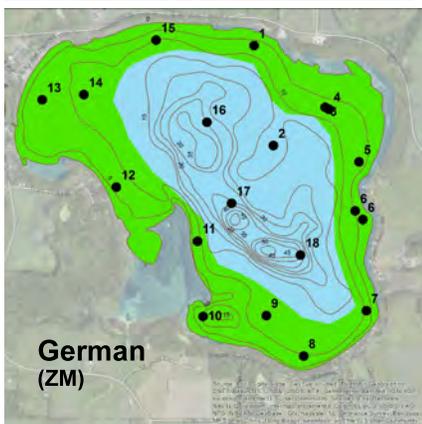
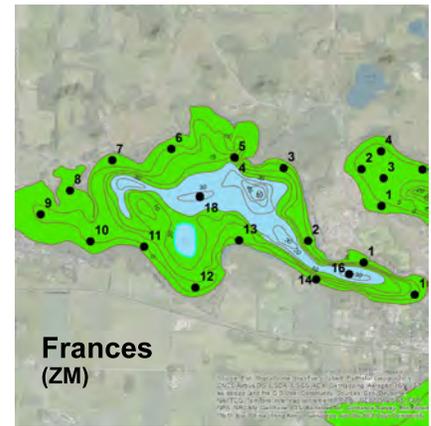
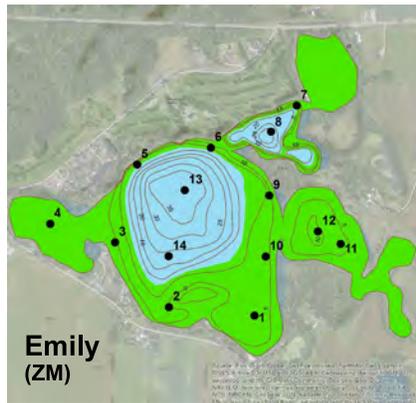
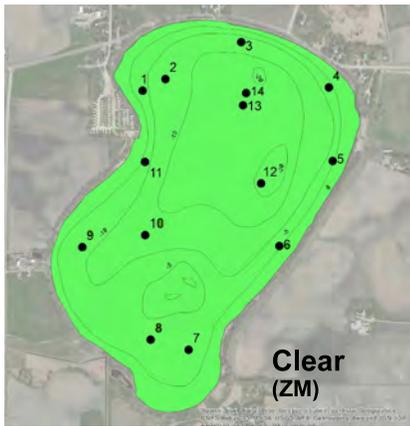
Curlyleaf Pondweed Potential Growth Maps (based on lake sediment characteristics) (key: green = light, yellow = moderate, and red = heavy)



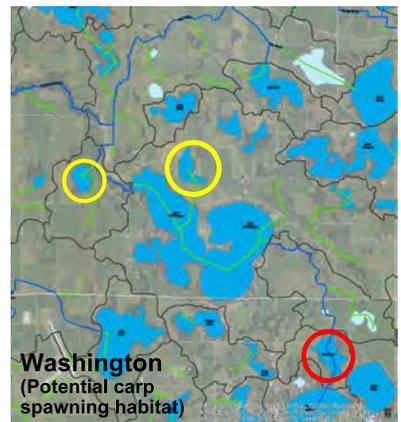
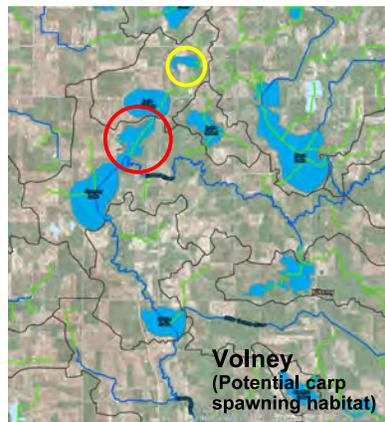
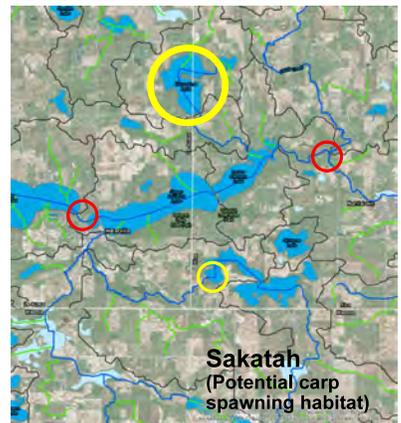
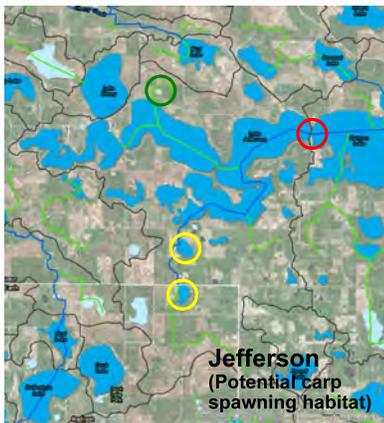
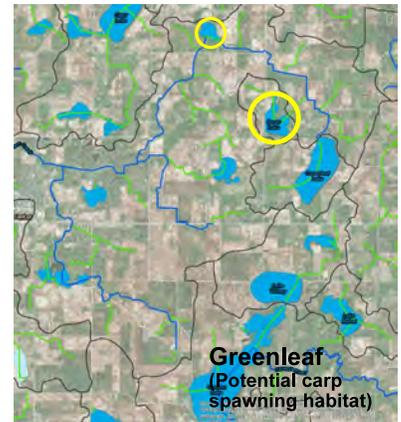
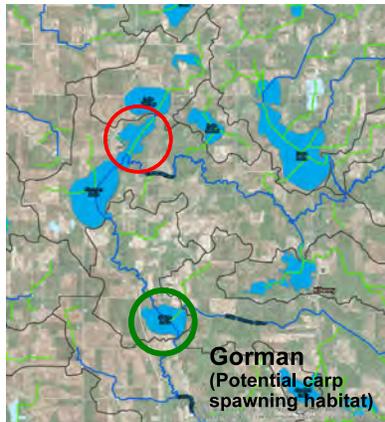
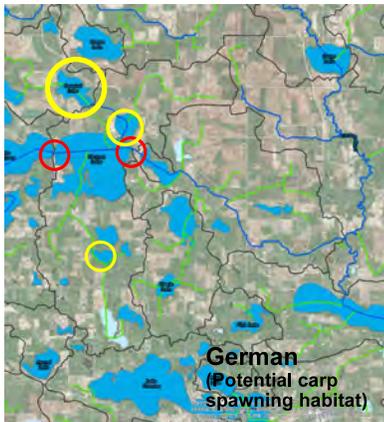
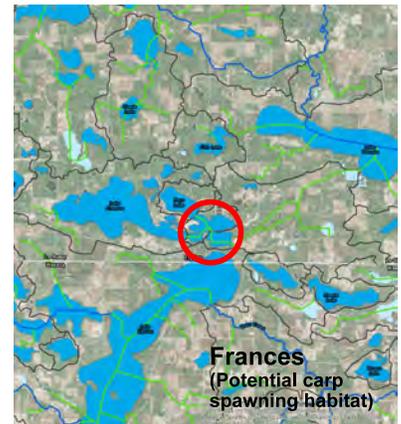
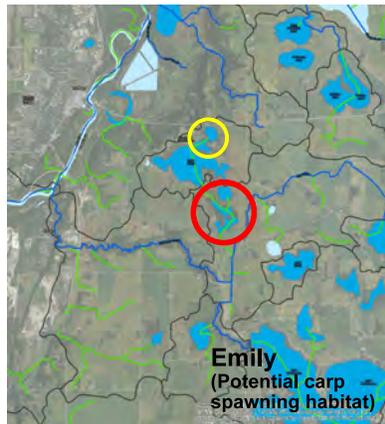
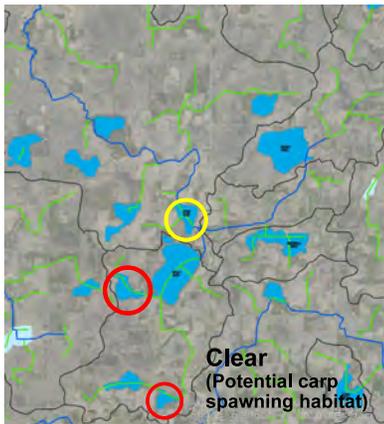
Eurasian Watermilfoil Potential Growth Maps (based on lake sediment characteristics) (key: green = light, yellow = moderate, and red = heavy)



Zebra Mussel Potential Growth Maps (based on water column and substrate characteristics) (key: blue = no growth due to low oxygen and green = light growth)

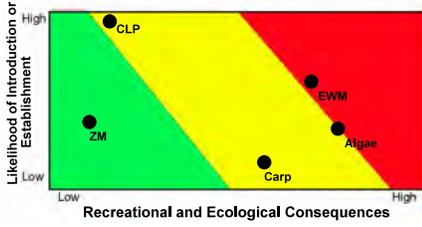


Potential Carp Spawning Habitat Maps (based on availability of suitable off-lake spawning sites and refuge areas) (key: green = low, yellow = moderate, and red = high)

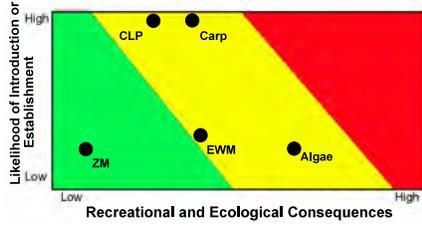


Environmental Risk Assessment

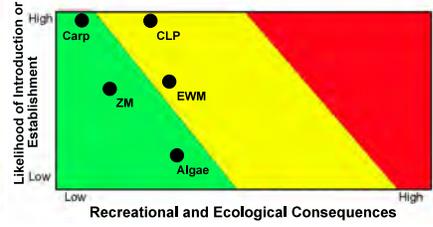
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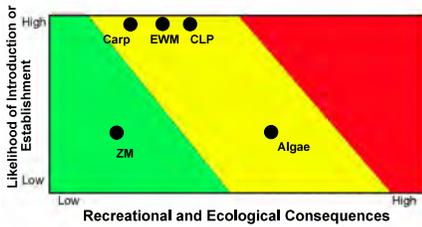
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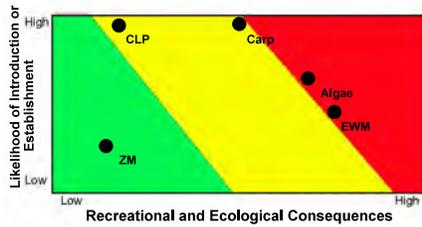
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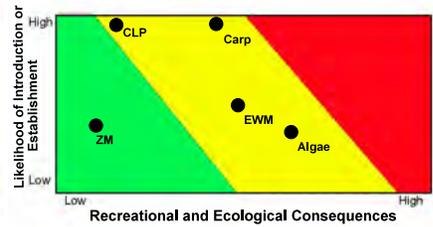
GERMAN



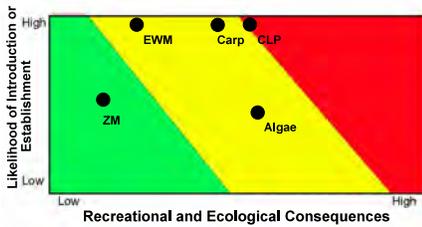
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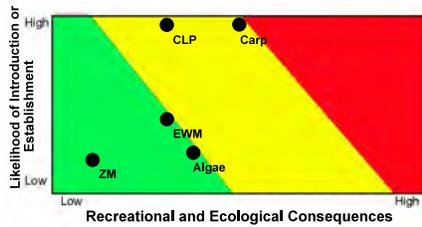
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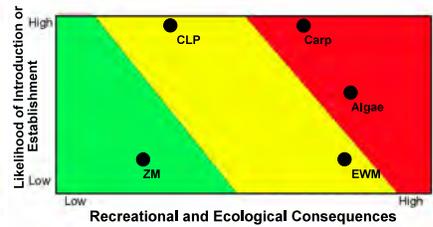
JEFFERSON



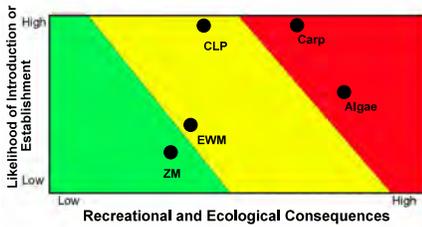
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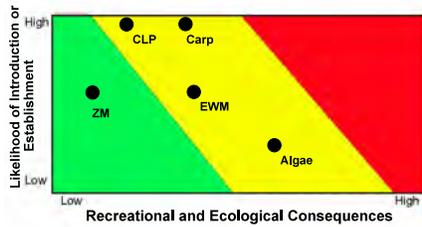
SAKATAH



TETONKA



VOLNEY



WASHINGTON

