Eagle River Chain of Lakes

Vilas County, Wisconsin

2025 EWM Management and Monitoring Report

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1.0 INTRODUCTION

The Eagle River Chain of Lakes is comprised of ten contiguous waterbodies that spans nearly 4,000 acres. The Lower Eagle River Chain is managed by two entities: the Eagle River Chain of Lakes Association (ERCLA) and the Unified Lower Eagle River Chain of Lakes Commission (ULERCLC). ERCLA offers educational initiatives focused on topics relevant to the chain and its associated rivers while the ULERCLC largely focuses on the management of Aquatic Invasive Species (AIS). Although each organization has distinct responsibilities, they collaborate closely to protect and enhance the chain.

The ULERCLC has been the successful recipient of several Wisconsin Department of Natural Resources (WDNR) AIS Control Grants since 2007. These grants have been used to assist with monitoring and managing the Eurasian watermilfoil (*Myriophyllum spicatum*; EWM) population in the Eagle River Chain of Lakes (Figure 1.0-1) since its discovery in 2004. This report specifically discusses the monitoring and control activities conducted during 2025. The chain-wide results will be presented first, followed by results from each lake individually. Additional information regarding the management and monitoring actions completed from 2008-2024 can be found in their respective annual reports.

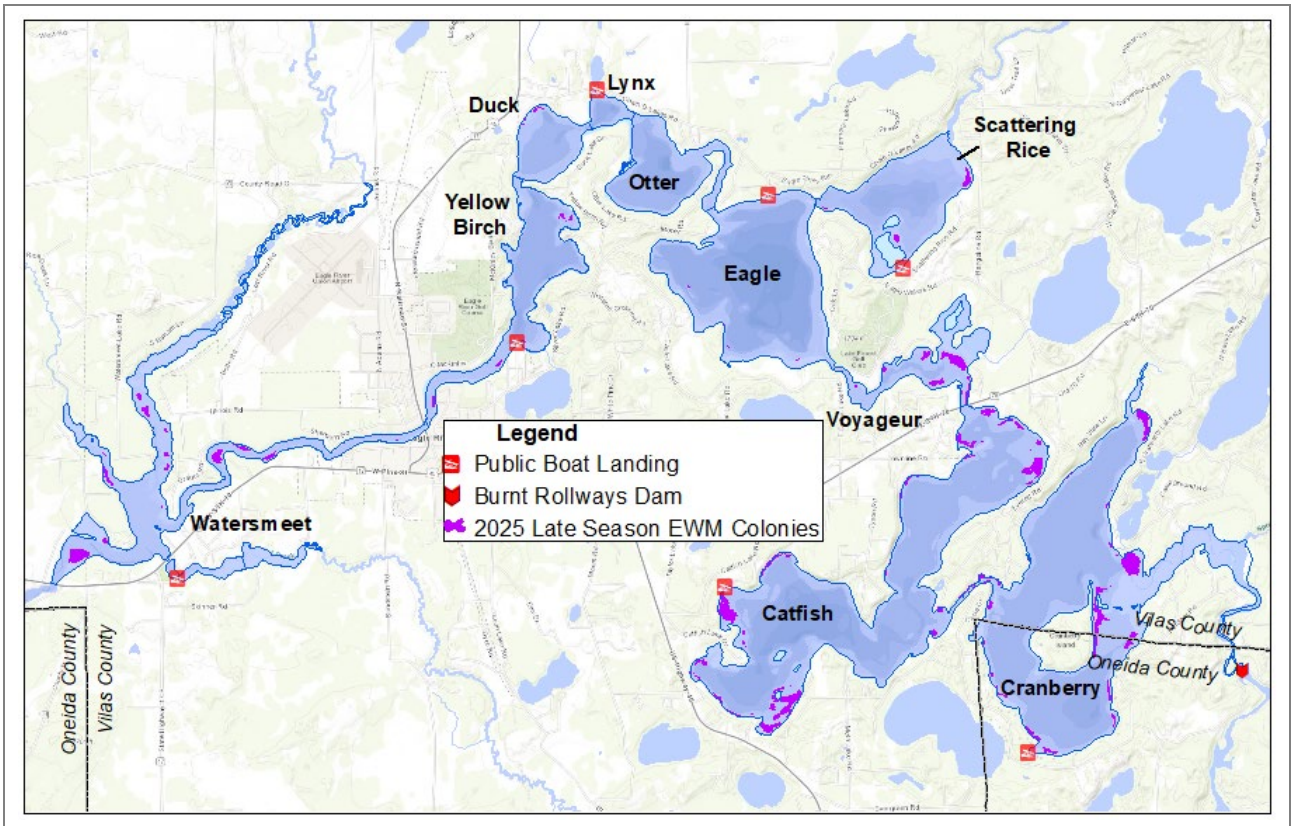


Figure 1.0-1 Lower Eagle River Chain of Lakes, Vilas-Oneida Counties. 2025 Late season EWM Colonies (>40 ft wide) are displayed.

1.1 Chain-wide EWM Management & Monitoring History

EWM mapping surveys are typically completed at two main intervals in a given year, early season (June) and late season (late-August to the end of September). These surveys consist of a complete meander survey of the system's littoral zone by professional ecologists (Photograph 1.1-1). Under the program carried out by Onterra, EWM populations encountered are mapped using sub-meter GPS technology by using either 1) point-based or 2) area-based methodologies. Large colonies >40 feet in diameter are mapped using polygons (areas) and are qualitatively attributed a density rating based upon a five-tiered scale from *highly scattered* to *surface matting*. Point-based techniques are applied to EWM locations that were considered as *small plant colonies* (<40 feet in diameter), *clumps of plants*, or *single or few plants*.

Photograph 1.1-1. EWM mapping survey on a Wisconsin lake. Photo credit Onterra.

Early Season EWM Mapping Survey results are most commonly used to prioritize the upcoming summer's manual removal program. This provides the lake group with the most up-to-date and accurate information regarding locations of EWM within the lake. These data help the lake organization prioritize the manual removal efforts, especially when the lake-wide EWM population is relatively low and identifying even small/isolated occurrences is important. When EWM populations are larger on a given lake, the utility of this survey diminishes as the previous year's Late Season EWM Mapping Survey is typically sufficient to drive management decisions and priorities.

As the name implies, the Late Season EWM Mapping Survey is a professionally contracted survey completed towards the end of the growing season when EWM is at its anticipated peak growth stage. However, on some lakes, complicated dynamics over the summer may result in EWM population declines compared to the beginning of the season. Regardless, the late season survey documents the EWM population that the system has going into winter and will be emerging in spring of next year. So these data are important for driving management decisions for next year. They are also the most important for making annual comparisons.

The ULERCLC has relied on a combination of Early Season and Late Season EWM Mapping Surveys to direct management on the Eagle River Chain. Since 2007, annual late season EWM mapping surveys have occurred and are used as the most important comparative metric for understanding the population over time. Figure 1.1-1 displays a breakdown of acreages and densities of EWM mapped using area-based methodologies (i.e. polygons). This figure excludes EWM mapped with point-based methodologies (*single or few plants, clumps of plants,* or *small plant colonies*). In other words, EWM marked with point-based mapping methods do not contribute to the colonized acreage shown in Figure 1.1-1.

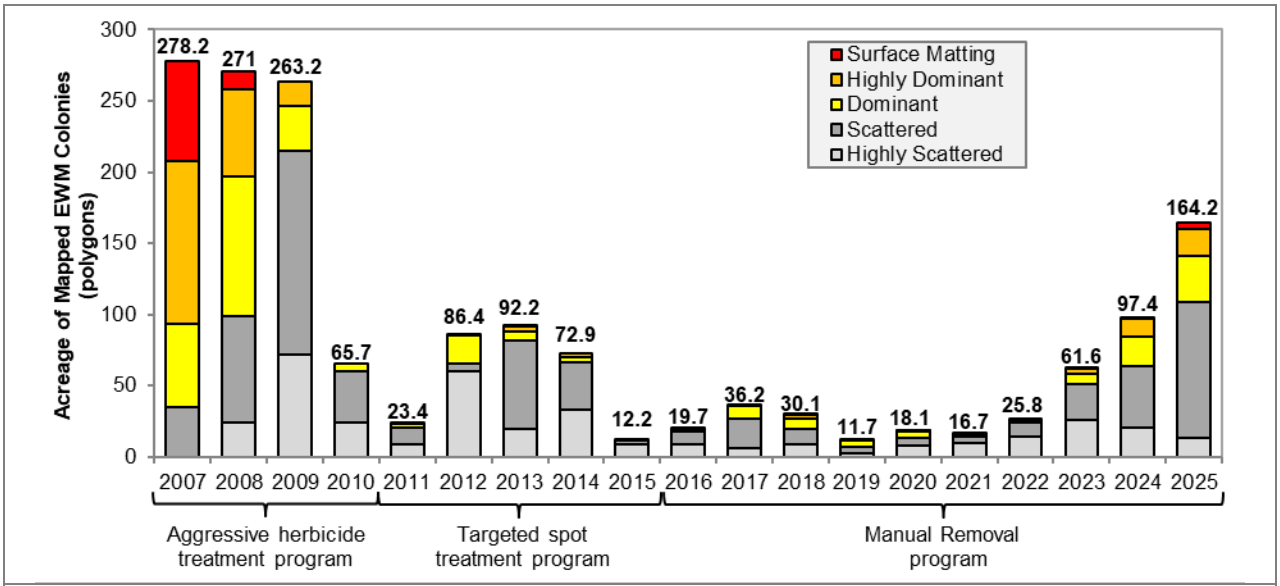


Figure 1.1-1. Chain-wide acreage of mapped EWM colonies on the Lower Eagle River Chain of Lakes from 2007-2025.

On a lake by lake basis, EWM has shown changes differently. Figure 1.1-2 shows total acreage of colonized EWM in each of the Eagle River Chain Lakes. In recent years, EWM polygon acreage has greatly increased in Catfish and Cranberry Lakes. In 2025, both lakes saw the highest acreage since Late-season mapping surveys began in 2007. When comparing the 2024 and 2025 Late Season EWM Mapping data, Cranberry, Catfish, Voyageur, Scattering Rice, Duck and Watersmeet Lakes all saw increasing in colonized EWM, while Eagle and Yellow Birch both saw reductions in colonized EWM.

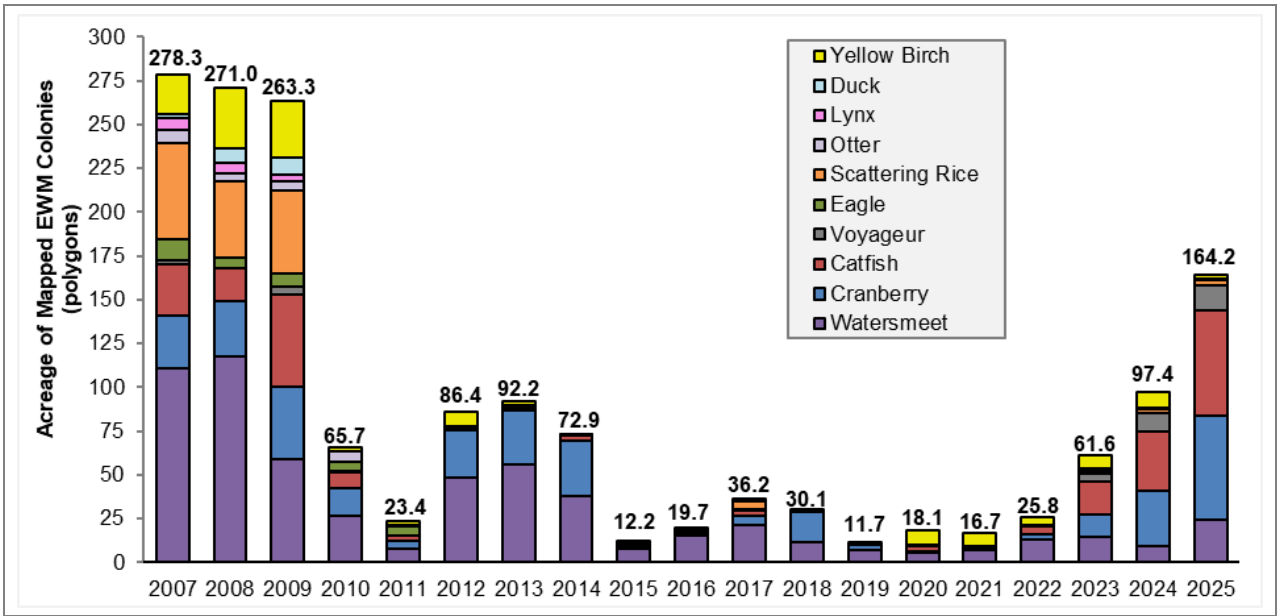


Figure 1.1-2. Total acreage of mapped EWM colonies per lake in the Lower Eagle River Chain of Lakes from 2007-2025.

In 2015, the ULERCLC developed a working treatment strategy where consideration for herbicide application would be given to areas of EWM if they met a specific threshold (i.e., trigger). This trigger was further revised as part of the *Eagle River Chain of Lakes Comprehensive Management Plan (Dec 2019)*. If the following trigger is met, the ULERCLC would consider initiating preliminary discussions, including consultation with WDNR staff, regarding conducting herbicide spot treatments:

> Colonized (polygons) areas of EWM, with preference to areas of *dominant* or greater densities, that have a size/shape/location where management is anticipated to be effective.

Starting in 2024, a few locations within the Eagle River Chain met the trigger outlined above. The ULERCLC is pleased to not have had to use herbicides since 2015, and has aspirations to continue managing EWM without herbicides moving forward. As will be subsequently discussed, an updated aquatic plant management planning project is underway that will investigate risk assessment and alternatives analysis as it pertains to the next five years of EWM management on the chain.

Manual Removal Program (2016-current)

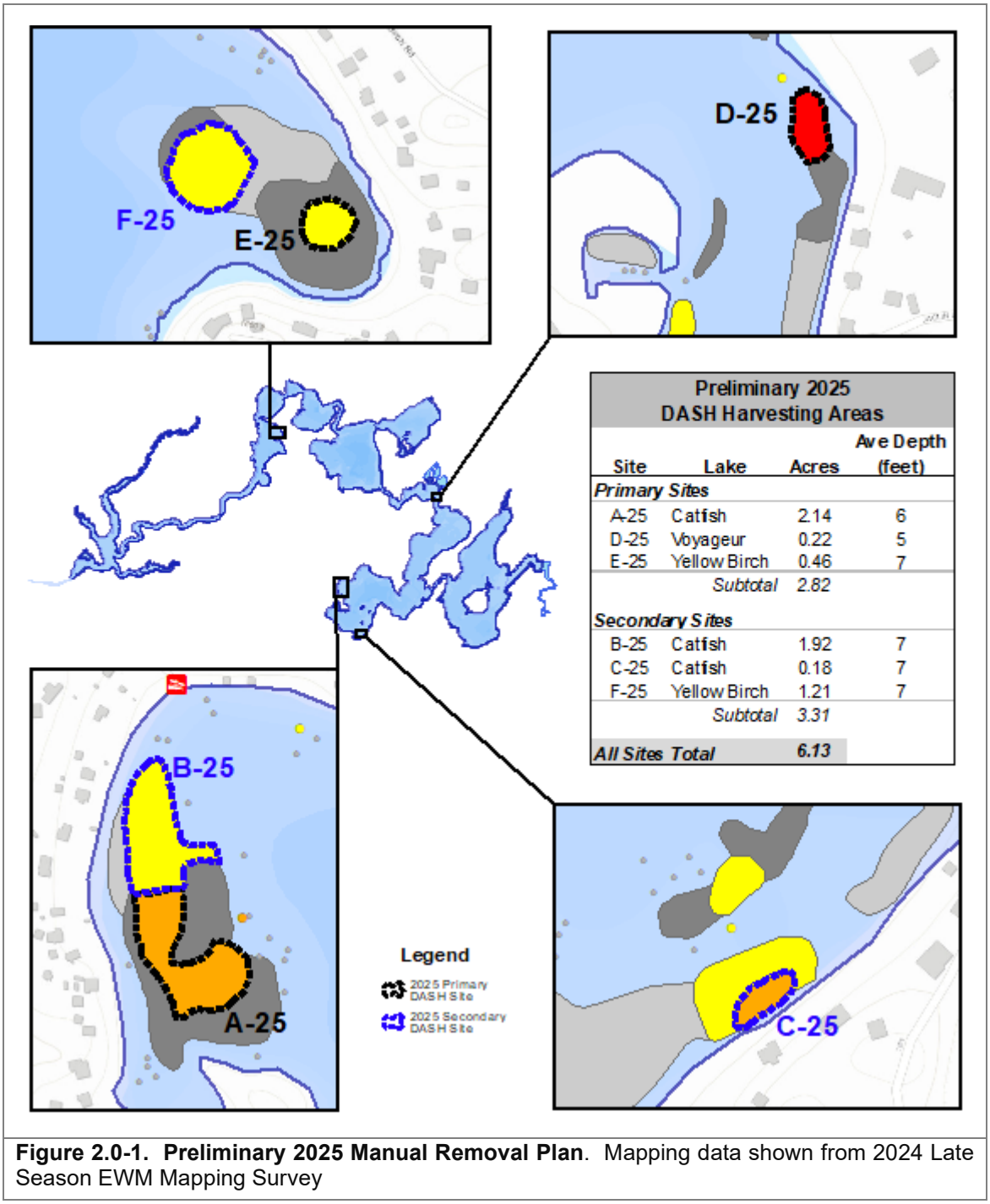
Following the herbicide management period, the EWM managed areas within the chain had diminished to the extent that herbicide spot treatment methods were no longer warranted. The ULERCLC recognized the necessity of maintaining active management instead of discontinuing and waiting for EWM populations to return to a level suitable for herbicide control. The ULERCLC enacted a strategy that balanced a level of EWM population tolerance while targeting other locations with a coordinated manual removal approach.

A series of EWM mapping surveys are used to coordinate and monitor the manual removal efforts. A preliminary hand harvesting strategy is developed over the fall/winter based on the results of the previous year's Late-Summer EWM Mapping Survey. In late-spring/early summer, an Early Season EWM Mapping Survey is completed from which the manual removal strategy is finalized. After the professional manual removal activities are completed, Onterra completes a focused Late-Summer EWM Mapping Survey supplemented with volunteer surveillance monitoring, the results of which serve as a post-harvesting assessment of the manual removal efforts. The manual removal program would be considered successful if the EWM population within the targeted areas was found to have been reduced and inhibited from expanding between the year before and year after Late-Summer EWM Mapping Surveys.

Diver Assisted Suction Harvest (DASH) is a form of manual removal which involves divers removing target plants (i.e., EWM) and feeding them into a suctioned hose for delivery to the deck of the harvesting vessel. The DASH system is thought to be more efficient than manual removal alone as the diver does not have to go to the surface to deliver the pulled plants to someone on a boat. The DASH system also is believed to cause less fragmentation, as the plants are immediately transported to the surface using the pumping mechanism. The ULERCLC utilizes contracted professional DASH services to carry out their manual removal EWM management strategy.

2.0 2025 EWM MONITORING & MANAGEMENT ACTIVITIES

Based on the results of the 2024 Late Season EWM Mapping Survey, a preliminary manual removal strategy was designed for areas of Catfish, Voyageur, and Yellow Birch lakes for 2025 (Figure 2.0-1). These areas would receive added focus during the 2025 Early Season EWM Mapping Survey, allowing additional refinement and prioritization of the manual removal plan.



Preliminary 2025 DASH Harvesting Areas

Site	Lake	Acres	Ave Depth (feet)
Primary Sites			
A-25	Catfish	2.14	6
D-25	Voyageur	0.22	5
E-25	Yellow Birch	0.46	7
	Subtotal	*2.82*	
Secondary Sites			
B-25	Catfish	1.92	7
C-25	Catfish	0.18	7
F-25	Yellow Birch	1.21	7
	Subtotal	*3.31*	
All Sites Total		***6.13***	

Figure 2.0-1. Preliminary 2025 Manual Removal Plan. Mapping data shown from 2024 Late Season EWM Mapping Survey

2.1 Chain-wide Professional Manual Removal Activities

The ULERCLC EWM Committee created a site prioritization methodology that considered EWM density from the 2025 Early Season EWM Mapping Survey, high-use areas, and other factors. While there were initially five proposed harvesting sites for 2025, four sites were narrowed down to be the subject of the 2025 manual removal efforts (Figure 2.1-1). Onterra provided the contracted professional manual removal firm with the spatial data from the Early Season EWM Mapping Survey and the targeted manual removal sites to coordinate the removal efforts.

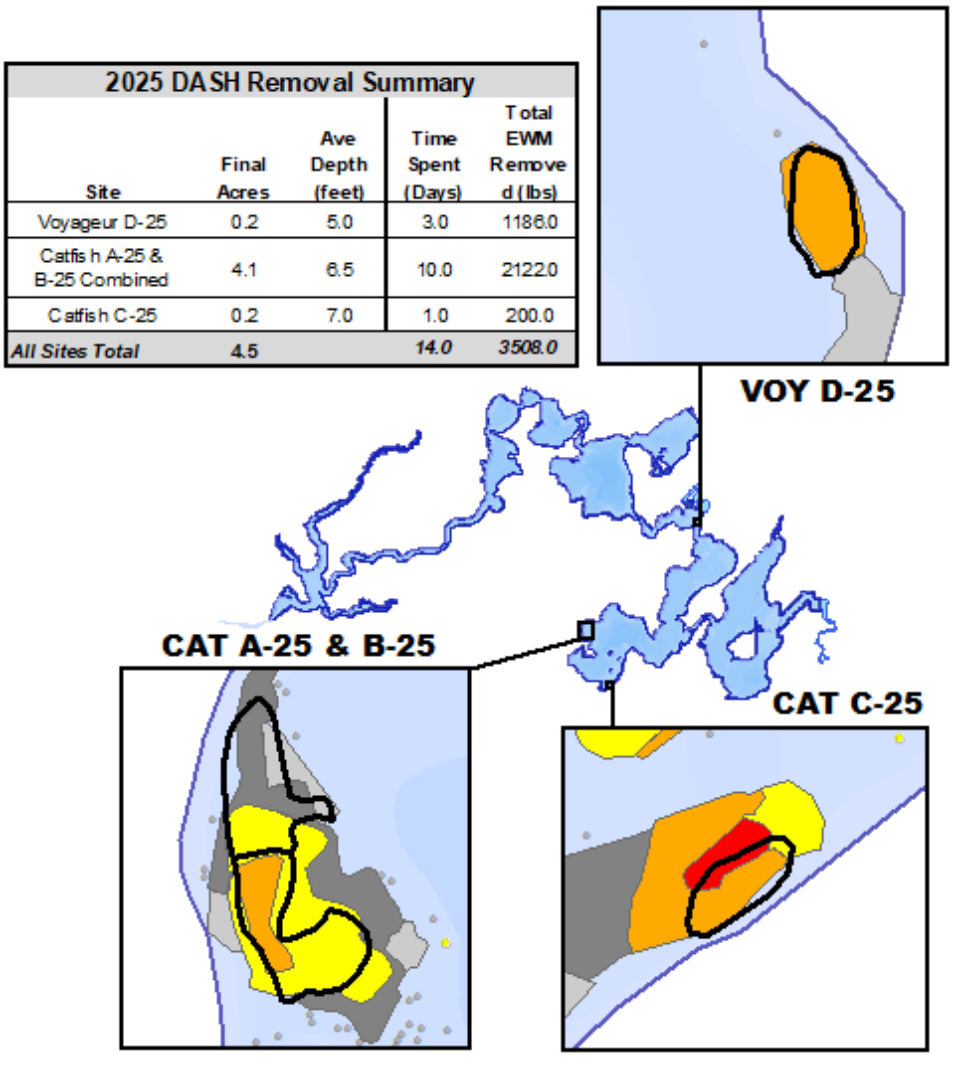


Figure 2.1-1 2025 Hand-harvest summary. 2025 DASH removal sites outlined in black outline. Mapping data shown from 2025 Early Season EWM Mapping Survey

The ULERCLC contracted with DASH Aquatic Services, LLC in 2025 to provide professional manual removal services using DASH methods. Over the course of about 14 days, approximately 3,508 lbs of EWM were removed from the Eagle River Chain in 2025. Further details of manual removal efforts and amount of EWM removed on a site-by-site basis is discussed within the Individual Lake Sections (4.0) below.

2.2 2025 Late Season EWM Mapping Survey

During mid-September 2025, multiple Onterra crews conducted the Late Season EWM Mapping Survey on the Eagle River Chain. The crews noted good survey conditions for the duration of survey, including only a light breeze and partially cloudy skies each day. During this survey, crews focused on systematically meandering areas of the littoral zone where EWM was found during the Early Season EWM Mapping Survey and mapped all EWM encountered.

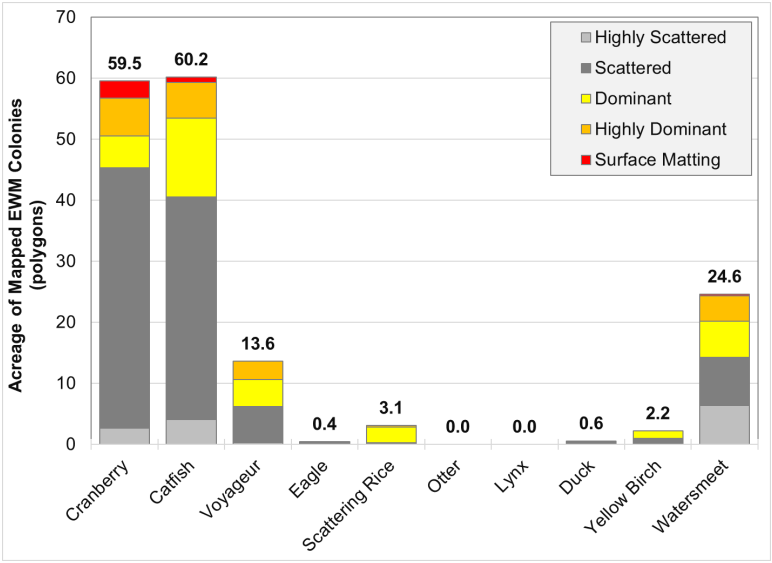


Figure 2.2-1. Distribution of acreage & density of mapped EWM colonies by lake in 2025.

As shown on Figure 2.2-1, just shy of 165 acres of colonized EWM was located during the 2025 Late Season EWM Mapping Survey on the Chain. In 2025, the lakes with the most EWM mapped were Catfish and Cranberry Lakes. All lakes except Otter and Lynx contained colonized acreage of EWM.

3.0 CHAIN-WIDE CONCLUSIONS & DISCUSSIONS

Overall, there has been a significant reduction of EWM in the Eagle River Chain since the start of the management program in 2007. It is clear that the management program has resulted in a lowered EWM population compared to if it was left unmanaged.

But it is also important to note the role of the reduced water clarity in the system this past decade. On the Eagle River Chain, water clarity has been tied to precipitation. As precipitation increases, water clarity decreases. The increase in precipitation brings in more nutrients from the watershed which increases algal production. The increased precipitation also brings in more organic compounds which give the system its brown *stained* appearance. When EWM is treated and also has the added environmental stress of low water clarity, it is more difficult for the plants to rebound following the management action. The darker water has likely helped the treatments

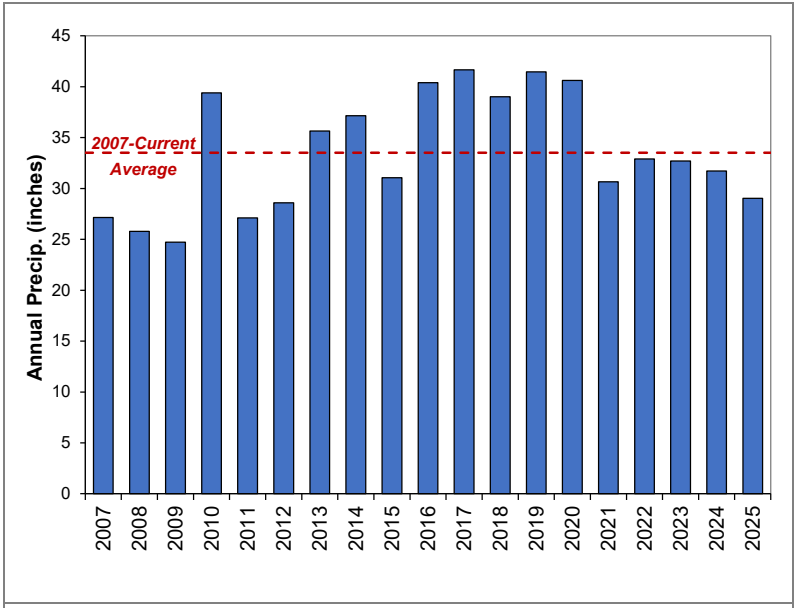


Figure 3.0-1. Eagle River station average annual precipitation. https://mrcc.purdue.edu/

be more effective and last longer. Said another way, if the chain had clearer water during the years of treatment, the results may not have been as positive. The slightly below average precipitation levels observed since 2021, and the corresponding increase in water clarity, may also be a driver in the increased EWM population observed on the chain in that timeframe (Figure 3.0-1). If low precipitations levels persist, Onterra predicts larger and denser EWM populations within the Eagle River Chain regardless of management intervention.

3.1 Preliminary 2026 Manual Removal Strategy

Using the 2025 Late Season EWM Mapping Surveys, a preliminary professional manual removal EWM control strategy for 2026 was developed targeting five sites in Catfish Lake (two primary and three secondary) and one secondary site in Cranberry Lake (Figure 3.1-1). Based upon the results of the 2026 Early Season AIS Survey, areas could potentially be added, omitted, or revised. Post manual removal assessments will be made from a 2026 Late Season EWM Mapping Survey.

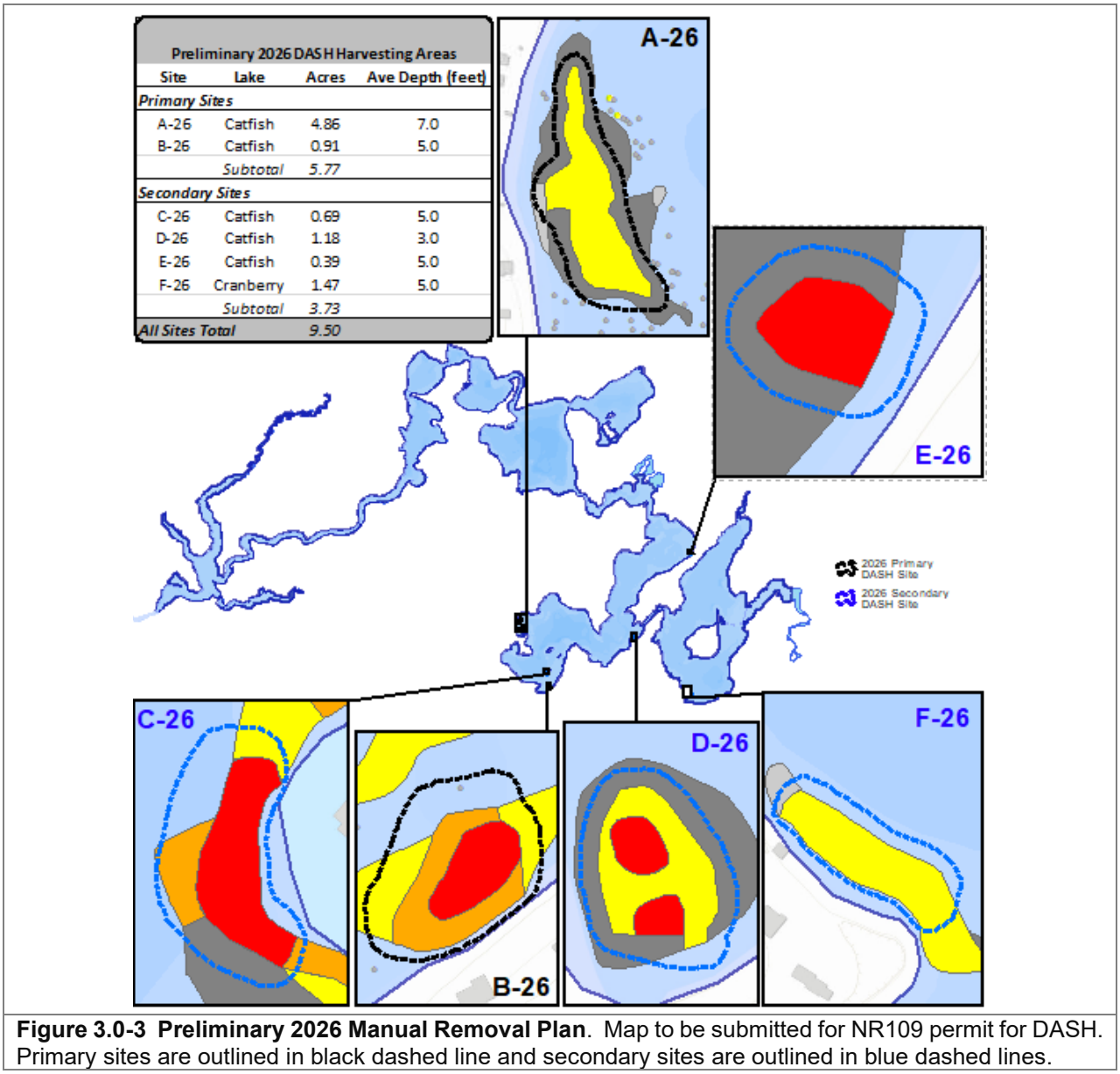


Figure 3.0-3 Preliminary 2026 Manual Removal Plan. Map to be submitted for NR109 permit for DASH. Primary sites are outlined in black dashed line and secondary sites are outlined in blue dashed lines.

It is also important to note that each riparian owner can legally harvest EWM and native plant species in a 30-foot-wide area of one's frontage directly adjacent to one's pier without a permit. A permit is only required if an area larger than the 30-foot corridor is being harvested or if a mechanical assistance mechanism, like DASH, is being used. Simply wading into the lake and removing EWM by hand with or without the aid of snorkeling accessories can be helpful in managing EWM on a small and individual property-based scale.

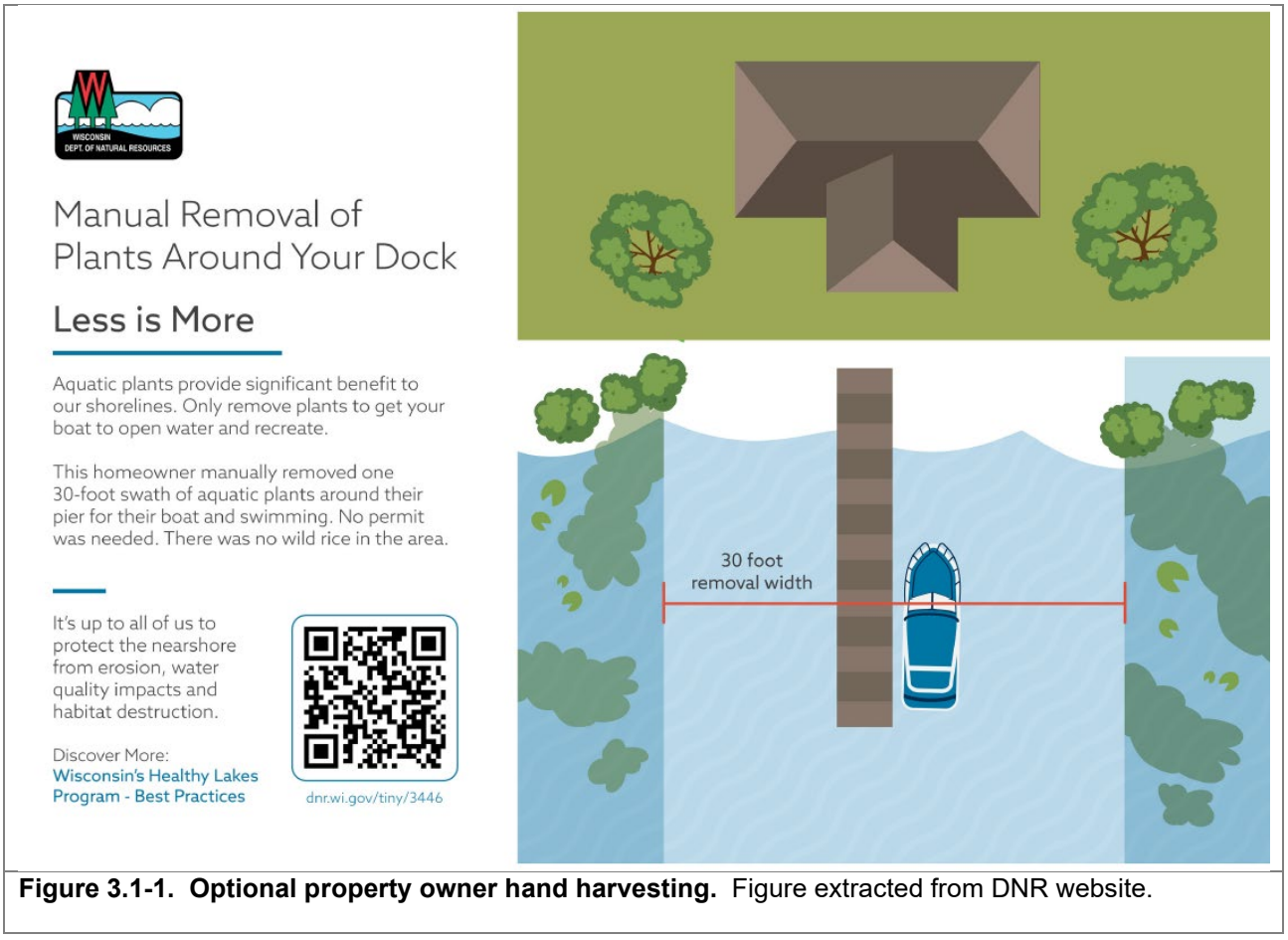


Figure 3.1-1. Optional property owner hand harvesting. Figure extracted from DNR website.

3.2 2026-2027 APM Planning Project

In the past decade, there have been large changes in EWM management philosophies, techniques, and risk management. For this reason, the WDNR now requires that *Aquatic Plant Management (APM) Plans* need to be periodically updated at a minimum of five-year intervals to maintain eligibility for certain grants and permits.

With the last Aquatic Plant Management Plan (APM) being completed as a part of the *2019 Comprehensive Management Plan*, the ULERCLC recently applied for and was awarded a series of WDNR Surface Water Planning Grants to fund studies and planning activities during 2026-2027 that will ultimately lead to an updated APM Plan for the ULERCLC.

The APM Planning project would have an obvious focus on the aquatic plant component of the Eagle River Chain, with the main survey component being mid-summer point-intercept aquatic plant surveys on the 10 lake chain. The APM Plan would also include a trophic water quality assessment

using current and historic volunteer-collected data, a general stakeholder survey open to all lake users, and a series of meetings that would create realistic management goals and associated actions for the ULERCLC to carry out over the next five-year period. The ULERCLC is particularly interested in revisiting aquatic plant management goals for EWM (manual removal and herbicide) based upon current philosophies, risk assessments, and Best Management Practices. The resulting APM Plan would satisfy requirements under NR193, NR107, and NR109.

During the summer of 2025, continued project design and grant application development occurred to start an APM Planning Project in 2026-2027. Therefore, the planning project would be completed at the same time the 3-year AIS Control Grant will be completed and the ULERCLC would be again eligible to apply for a grant for 2028 and beyond (Figure 3.2-2).

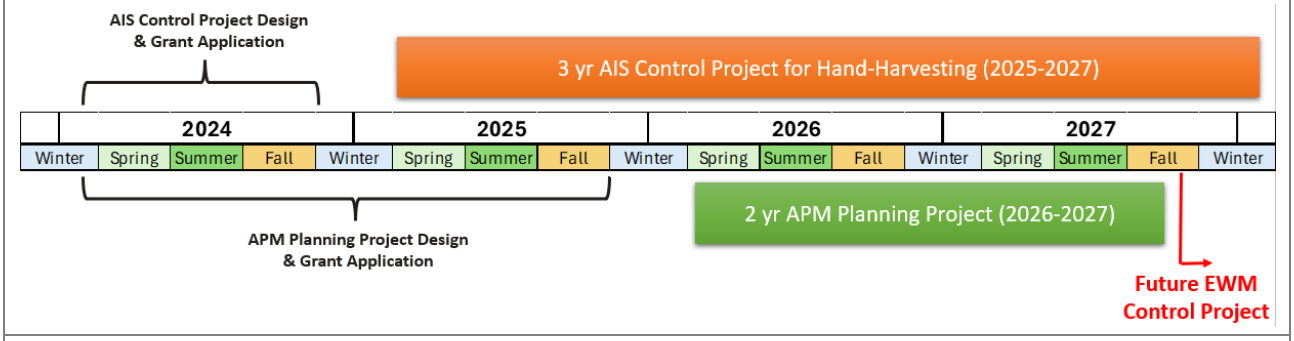


Figure 3.2-1. Eagle River Chain EWM Management & APM Planning Timeline. Presented at November 2024 EWM Information Meeting

4.0 INDIVIDUAL LAKE SECTIONS

The remainder of this report will focus on the 2025 EWM monitoring and management activities on a lake-by-lake basis. Some of the text will seem redundant if one reads each lake section. However, this is intentional to ensure the information is portrayed to those who only read the chain-wide sections and their individual lake-specific section.

Early Season EWM Mapping Survey were completed on June 25-26, June 30 and July 1-2. 2025. During the Early Season EWM Mapping Survey, the entire littoral zone of the Eagle River Chain of Lakes was searched for EWM by Onterra field staff. Completion of an Early Season EWM Mapping Survey presents numerous advantages. Typically, the water is clearer during the early summer allowing for more effective viewing of submersed plants. While not at their peak growth stage (peak biomass), EWM plants are higher in the water column than most native plants during this time of year which increases the chances that even low-density and isolated EWM occurrences would be located.

The Late Season EWM Mapping Survey was completed on September 16-18, 2025. During the Late Season EWM Mapping Survey, Onterra ecologists revisited and refined areas of EWM mapped during the Early Season EWM Mapping Survey as well as any areas marked by volunteers. The following individual lake sections will focus on the results of the 2025 Late Season EWM Mapping Survey in the context of manual removal efforts that may have taken place. The 2025 Late Season EWM Mapping Survey results map for each lake is provided after the respective individual lake section. Stand alone maps for both EWM survey maps can be found at:

https://eagleriverchaincommission.org/reports/

4.2 Catfish Lake

The ULERCLC contracted with DASH Aquatic Services, LLC to conduct professional DASH harvesting of EWM in three sites in Catfish Lake in 2025. Over a period of 11 days in 2025, a total of approximately 2,322 pounds of EWM were harvested from sites within Catfish Lake (Table 4.2-1).

Table 4.2-1. 2025 Hand-harvest summary.

2025 DASH Removal Summary		
Site	Time Spent (Days)	Total EWM Removed (lbs)
Catfish A-25 & B-25 Combined	10.0	2122.0
Catfish C-25	1.0	200.0
All Sites Total	***11.0***	***2322.0***

Site Cat A-25 & B-25 had the greatest amount of professional harvesting efforts in 2025 with approximately 2,122 pounds of EWM removed over ten days. Monitoring shows no *highly dominant* EWM colonies after the removal took place; however, *highly scattered*, *scattered* and *dominant* colonies still remained in this site (Figure 4.2-1, top frames). The mapping data illustrates a reduction in the densest portion of the targeted area as a result of the harvesting efforts.

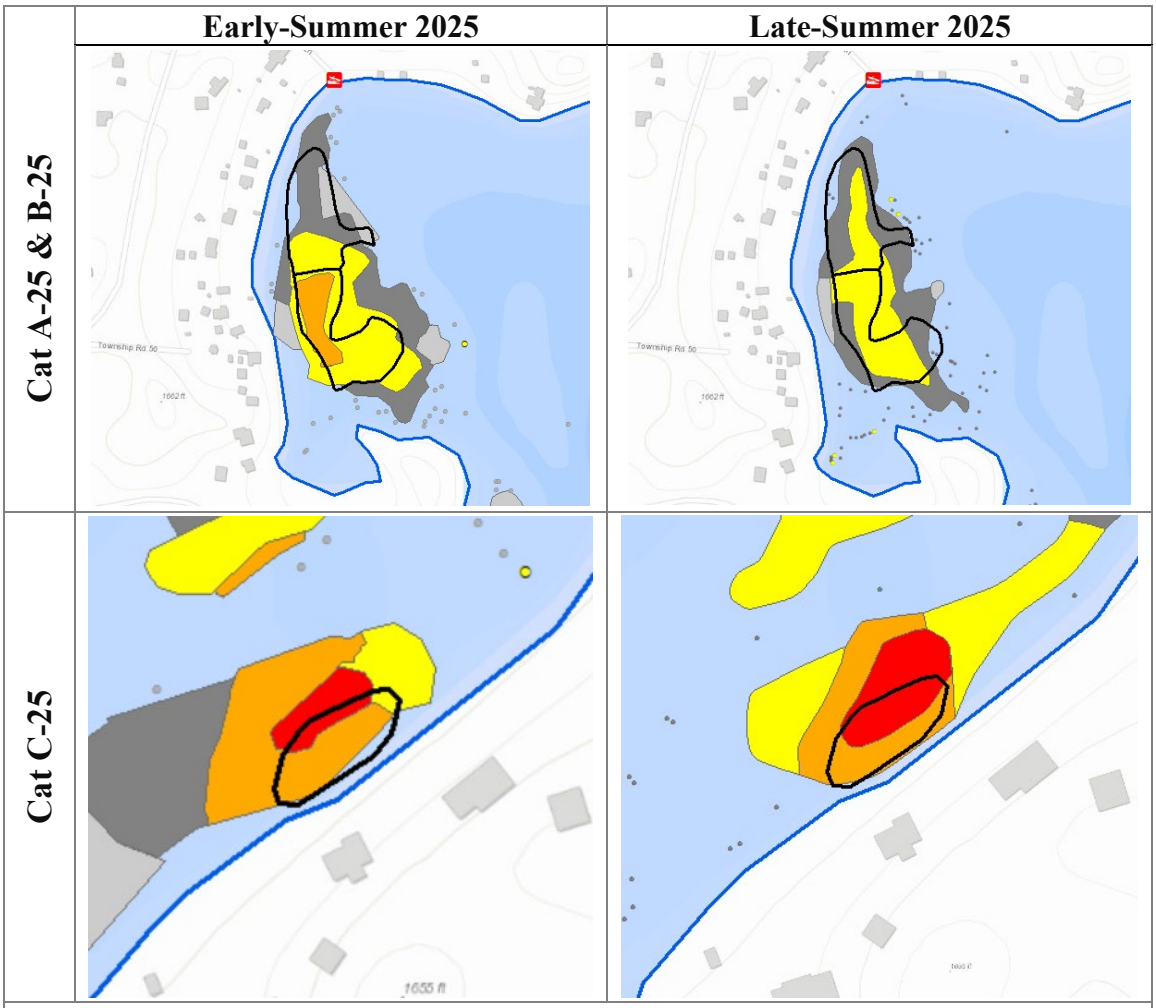


Figure 4.2-1. Before (early 2025) and after (late 2025) professional manual removal at sites within Catfish Lake. 2025 DASH removal sites outlined in black outline.

Site Cat C-25 had approximately 200 pounds of EWM removed over one day. While short-term EWM reductions likely occurred, the rate of EWM rebound over the summer resulted in this site

containing a relatively similar EWM population by the time the September Late Season EWM Mapping Survey took place (Figure 4.2-1, bottom frames). More harvesting efforts beyond one day would have been needed in order to achieve a reduction in EWM density in this site.

The 2025 Late Season EWM Mapping Survey located EWM in most of the littoral zone of the lake, much of which was mapped with point-based mapping methods (Map 3). Colonized EWM was located in a few of the more protected bays of the lake that are generally more conducive to aquatic plant growth, with the largest and densest EWM colonies located in the bay near the Braywood boat landing and along the northeast shoreline of the lake near the Hwy 70 bridge. The total acreage of EWM colonies mapped during the 2025 Late Season EWM Mapping Survey was 60.2 acres, the most observed since herbicide management ceased (Figure 4.2-2).

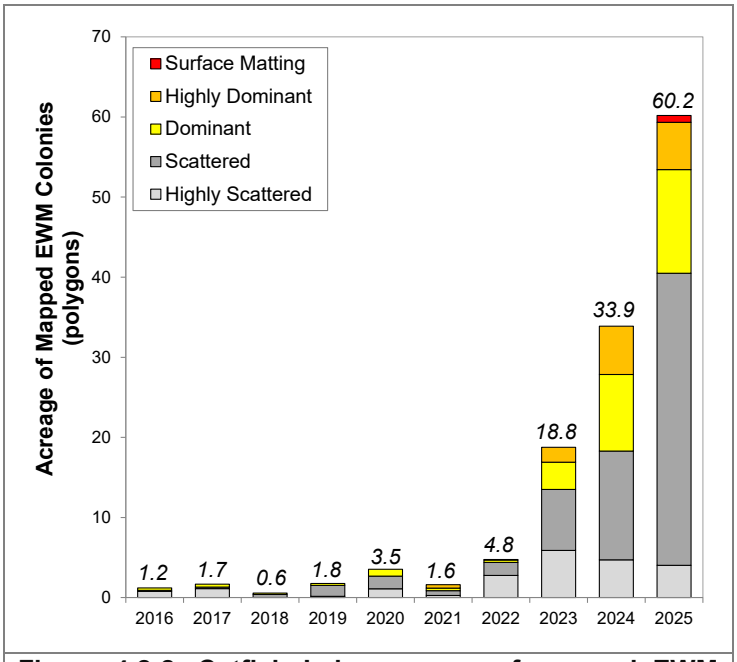


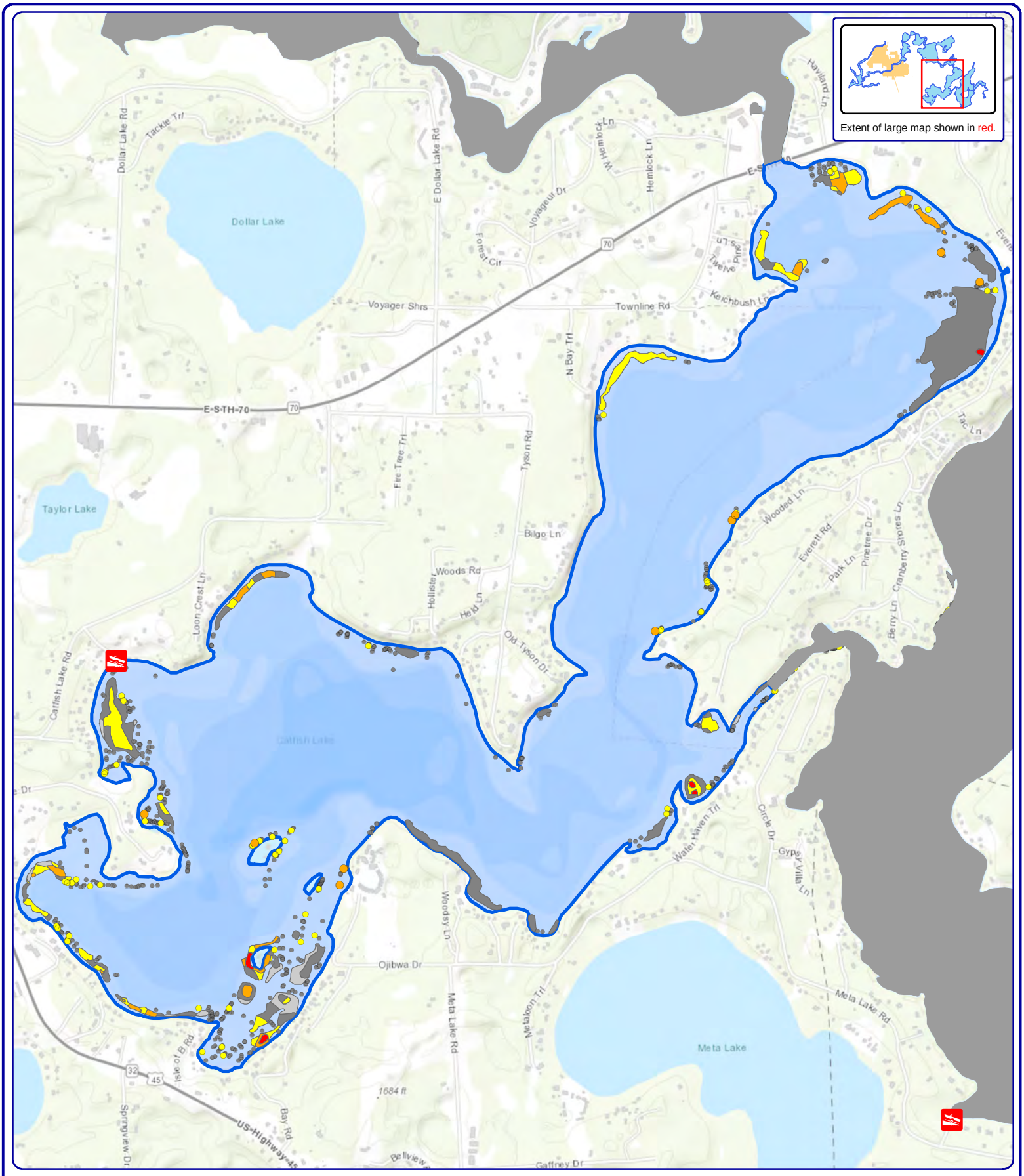
Figure 4.2-2. Catfish Lake acreage of mapped EWM colonies during 2016-2025 Late Season EWM Mapping Surveys.

Approximately two-thirds of the mapped EWM colonies consisted of *highly scattered* or *scattered* densities, likely not impeding recreational opportunities at the current time.

The ULERCLC will again use manual removal efforts in Catfish Lake in 2026. Five (5) sites in Catfish Lake are being preliminarily considered for manual removal in 2026 (Figure 4.0-3). Based upon the 2026 Early Season EWM Mapping Survey, a refined and final strategy will be devised.

Early Season and Late Season Mapping Survey data were overlaid to analyze the colonization (>40 ft wide colonies) of EWM and how its distribution changed from early to late season in 2025. In Map 4, green areas indicate locations where EWM was detected only during the Early-Season Survey and represent areas that retracted during the 2025 growing season. Yellow areas are locations where EWM was observed only during the late-season survey and represent areas where EWM colonies expanded in 2025. Pink areas highlight where EWM colonization was present in both surveys, indicating the areas of most prevalent colonization during the 2025 growing season. It is important to note that point-based mapping is not included in this map.

Map 4 shows several EWM colonies expanded and retracted from early to late season. Several of these areas transitioned from point-based occurrences in early season to polygon-sized colonies by the end of the season. The most notable expansions occurred along the northeastern bay and the shoreline near Woodsy Lane in the central southern shoreline of the lake. In contrast, a few areas showed reductions from early to late season but were limited to change from low-density polygons to point-based occurrences including the very southern bay of the lake and the colony near the boat launch on the western part of the lake.



1,750
Feet

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Sources:
Basemap: ESRI AGOL
Bathymetry: WDNR, Onterra digitized
Aquatic Plant Survey: Onterra, 2025

Map Date: October 24, 2025 - EJH

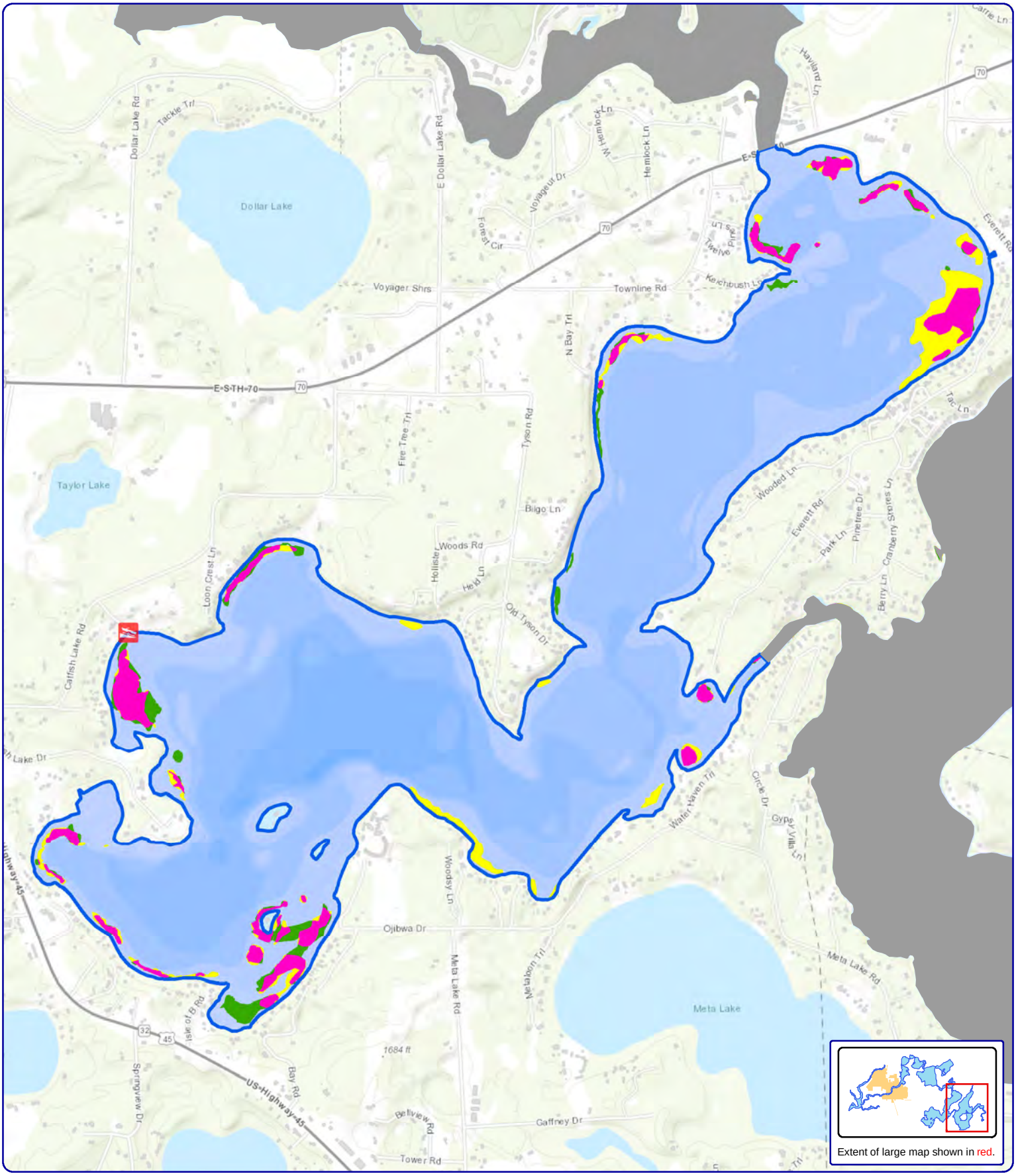
Legend

EWM Survey Results (September 16-18, 2025)

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony

Map 3
Catfish Lake
Vilas County, Wisconsin

Late-Season 2025 EWM Survey Results



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Feet

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Sources:
Basemap: ESRI AGOL
Bathymetry: WDNR, Onterra digitized
Aquatic Plant Surveys: Onterra, 2025
Map Date: April 7, 2026 - RMF

Legend

Colonized EWM in 2025 (>40 ft in diameter)

- Early Season Only
- Late Season Only
- Both Early and Late Season

Map 4
Catfish Lake
Vilas County, Wisconsin

2025 Colonized EWM Early to Late Season