



2527 Lake Ottawa Road

Iron River, MI 49935

906.284.2198

Summary of Diver Assisted Suction Harvesting Efforts

Lac Vieux Desert – Vilas County, WI & Gogebic County, MI

2018 WDNR Mechanical Harvesting Permit Annual Report

Permit ID: NO-2018-64-0154M

Submitted To:

Lac Vieux Desert Lake Association
and
Wisconsin Department of Natural Resources

Submitted By:

Many Waters, LLC
2527 Lake Ottawa Road
Iron River, MI 49935

Contact:

Bill Artwich: billartwich@gmail.com, 906.367.3206
Barb Gajewski: skih2o@hotmail.com, 715.617.4688

Introduction

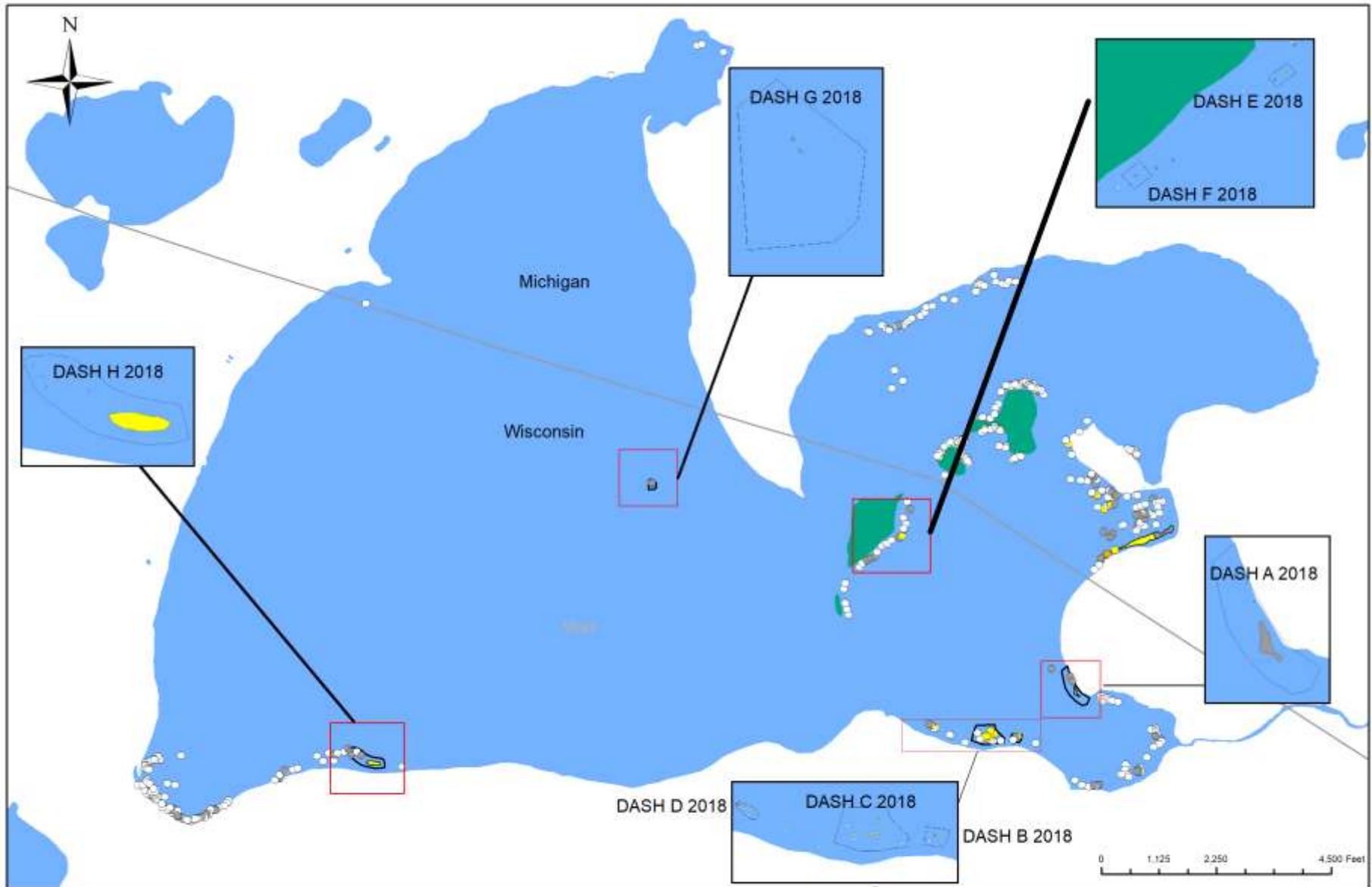
The Lac Vieux Desert Lake Association solicited the services of Many Waters, LLC to use Diver Assisted Suction Harvesting (DASH) to manage for Eurasian watermilfoil (EWM) on Lac Vieux Desert, located in Vilas County Wisconsin and Gogebic County Michigan. DASH is a mechanical process and requires a mechanical harvesting permit (Form 3200-113 (R 3/04)) from the Wisconsin Department of Natural Resources (WDNR). 2018 WDNR Permit ID number is NO-2018-64-0154M.

Dive Methods

While using DASH, a diver typically will begin by locating the invasive plant such as Eurasian watermilfoil plant from the surface, and then descend next to the plant while simultaneously lowering the nozzle. Divers work along the bottom by using fin pivots, kneeling on the bottom or hovering above the bottom at a distance where the root mass of the plant is within hands reach. The diver will either feed the top of the plant into the hose first and then uproot the plant or uproot the plant and feed its rootwad first into the hose. It is very important that the diver shake as much sediment from the rootwad before getting the rootwad near the nozzle. Shaking the rootwad away from the nozzle helps maintain visibility for the diver and minimizes debris and sediment in the holding bins. As plants are fed into the nozzle, the diver carefully observes for possible fragments. Fragments are caught by hand and fed into the nozzle.

Work sites that have dense monotypic beds of EWM, the initial DASH efforts are quite simple. The diver will descend adjacent to the bed and begin hand pulling or harvesting systematically across the bed to dismantle the bed. Once the majority of the bed is removed, a more systematic approach follows to target remaining clustered, scattered or outlier plants in the work site. As part of our method for covering a work area while using DASH (or divers alone), a grid pattern is used. A diver will start at either the port or starboard side of the boat and work to and from the boat perpendicular to the direction the boat is facing. For example, with the boat facing north and the diver starting on the port side, the diver begins by heading west. The diver will continue to work perpendicular to the boat until reaching the end of the suction hose. The diver then works back to the boat on a new transect line. Distance between each transect is dictated by visibility, density of EWM, and obstructions. This process is repeated on the opposite side and in front of the boat. Depending on the site, once the diver has adequately covered the area, which the suction hose can reach, they will signal the deckhand to let out more anchor line or determine that the boat needs re-positioning.

Once plants reach the surface, a hose dispenses the plant material into a series of screened bins located on the deck of the boat. These bins capture plants and allow water to drain out back into the lake. Plants on deck are sorted into two categories: the targeted invasive plant and native vegetation. A wet weight of both the invasive plant and all native species combined is taken. Plants are placed in sealable containers or bags for transport to the dumping site. The dumping site is a pre-determined site upland, away from any water body.



Lake: Lac Vieux Desert - Vilas Co, WI & Gogebic Co, MI
 Map Date & Creator: 7.22.2018, Many Waters, LLC
 Source: MiGDLake_polygons_200403, WI Hydro, Wild Rice-GLIFWC
 File: WDNR_DASH_LVD_2018

EWM Relative Abundance

- Very Sparse
- Sparse
- Moderate
- Moderate-Dense
- Dense

Site ID	Size
DASH A 2018	3.5
DASH B 2018	0.7
DASH C 2018	4.3
DASH D 2018	0.4
DASH E 2018	0.2
DASH F 2018	0.2
DASH G 2018	0.6
DASH H 2018	3.7
TOTAL	13.6

**Lac Vieux Desert - Vilas County, WI
 Final DASH Locations
 2018**



Lake: Lac Vieux Desert - Vilas, Co, WI & Gogebic Co, MI
 Map Date & Creator: 8.24.2018, Many Waters, LLC
 Source: MiGDLake_polygons_200403, WI Hydro, Wild Rice-GLIFWC
 File: WDNR_DASH_LVD_2018

EWM Relative Abundance

- Very Sparse
- Sparse
- Moderate
- Moderate-Dense
- Dense

DASH-I-2018 = 1.8 acres

**Lac Vieux Desert - Vilas County, WI
 Proposed Additional Location
 2018**

Summary

Table 1: Daily Summary of DASH Efforts

Date	Location	Size (acres)	DASH Boat Location		Dive Time (hrs)	EWM (lbs*)	Native (lbs*)	% Incidental Native Species Harvest (lbs*)	Total (lbs*)
			Lat (NAD 83)	Long (NAD 83)					
9/11/2018	DASH D	0.4	46.12527	89.09127	4.25	29.0	2.0	7%	31.0
			46.12519	89.09069		98.0	2.0	2%	100.0
9/12/2018	DASH C	4.3	46.12493	89.08786	4.00	74.0	1.5	2%	75.5
9/13/2018	DASH C	4.3	46.12499	89.08744	3.00	157.0	4.0	3%	161.0
					7.00	358.0	9.5	(ave) 3%	367.5

* wet weight

Daily Log

September 11th 2018

Weather- sunny, 75° F, SW winds 5-15 mph

DASH efforts focused on DASH-D. Four and a quarter dive hours removed 127 pounds of EWM. Dive visibility ranged from 2 to 3 feet. Incidental harvest of native plant species included water celery (*V. americana*), coontail (*C. demersum*), southern naiad (*N. guadalupensis*), elodea sp., flatstem pondweed (*P. zosteriformis*) and Northern watermilfoil (*M. sibericum*), with coontail being the most abundance species harvested.

September 12th 2018

Weather- sunny, 68° F SW winds 5-15 mph

DASH efforts focused on DASH-C. Four dive hours removed 74 pounds of EWM. Dive visibility remained poor, hindering DASH efficiency. Incidental harvest of native species remained similar to the previous day's efforts.

September 13th 2018

Weather- sunny, 65° F degrees, light west winds

DASH efforts continued on DASH-C. Three dive hours removed 157 pounds of EWM. Incidental harvest of native species remained similar to previous efforts.