

## Little Traverse Lake Early Detection Rapid Response Survey for Rooted Aquatic Invasive Species 2025

### Task

ZeroGravity Aerial, LLC performed an aerial survey of Little Traverse Lake, Leelanau County, to rule out the presence of Aquatic Invasive Species (AIS). The emphasis was on, but not limited to, Eurasian Watermilfoil (EWM) that has been introduced into neighboring lakes in recent years.

The field work for data gathering and reviewing sites of interest was performed on July 18, 2025, August 29, 2025 and September 2, 2025.

### Methods

The first step of the survey was to gather high resolution video recordings of the total surface area of the lake. A grid pattern of parallel paths was flown that allowed for visual overlap to assure complete coverage of the total surface area of the lake (Figure 1). The video was processed with telemetry data embedded and RTK/GPS was used to give centimeter accuracy when determining any locations of interest.

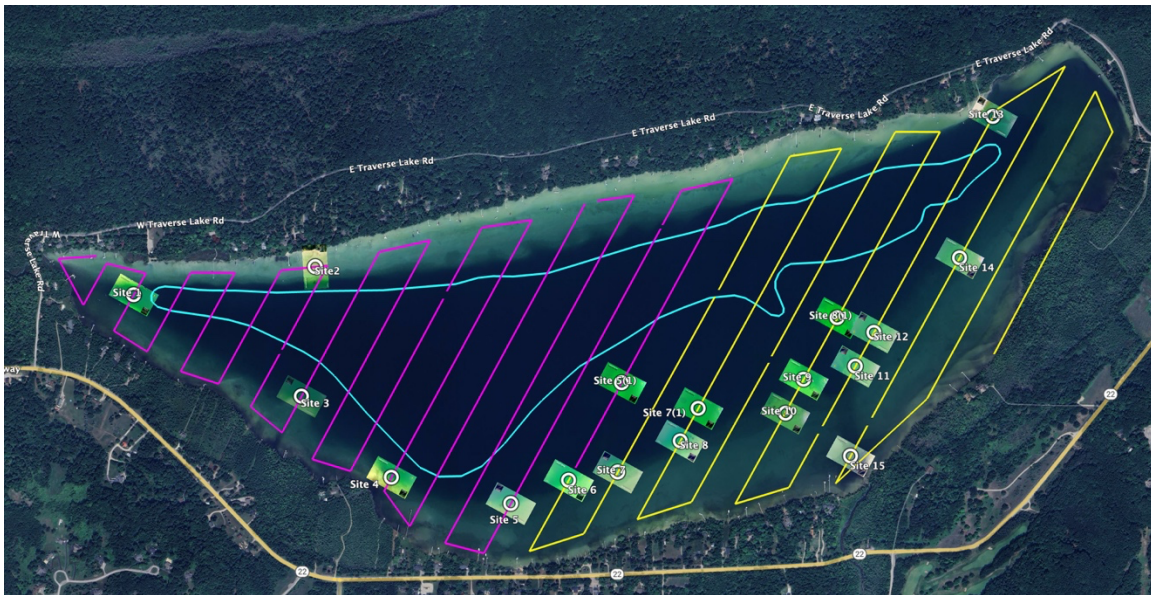


Figure 1. Grid Pattern of Flights, 18 Sites of Interest, 30Ft. Depth Contour

The video was reviewed on 27 inch, high resolution monitors to determine areas of interest that required ground-truthing. Computer image enhancement was used to pull greater detail from recordings in deeper areas as needed (Figures 2 and 3). Still images of 18 areas of interest were extracted from the processed video and entered into a mapping program on a tablet which was used to guide us to the precise locations to be ground-truthed. An RTK receiver mounted on the bow of the boat allowed us to position ourselves within 2 feet of each location to be reviewed.



Figure 2. Image as captured



Figure 3. Image enhanced

The ground truthing was conducted primarily with an underwater ROV with live video feed to a 24 inch, high resolution monitor on the boat. The guidance of the underwater ROV was assisted by an aerial drone when needed depending on the complexity and size of the area being ground-truthed. The ROV deployments were recorded in 4K HD video for further review in the computer lab.

## **Conclusion**

Although there is no perfect method for aquatic vegetation surveys, we have leveraged newer and improving technology far more advanced than the Aquatic Vegetation Assessment Survey (AVAS) method known as the “rake toss”. The newer approaches with the aerial drone and underwater cameras have increased coverage and effectiveness of surveys literally in the thousands of percent.

The survey performed by ZeroGravity Aerial, LLC did not find EWM or other AIS in Little Traverse Lake. It is possible a new strand introduced to the lake may not have been detected and it is still possible EWM will be brought to the lake in the future. Monitoring a lake for AIS is like screening the human body for cancer. The question is how often to screen the lake going forward. Little Traverse Lake Association is building a community-based monitoring program training volunteers to watch the shore and identify strands and fragments of EWM that may wash up. Consult with the lake biologist to determine how to integrate surveys with the ongoing monitoring program.

The largest of the four EWM infestations found in late 2024 in Little Glen Lake may have been present for as many as 5 years before they were discovered. Because they were detected early, complete eradication is a high probability. Surveying Little Traverse Lake at regular intervals may be the responsible approach for monitoring AIS. Many lakes that were not monitored for early detection are now burdened with significant annual costs to manage EWM.

Even though EWM was not discovered in this survey, other interesting observations were made. A compiled list of the native plants observed at the 18 sites and additional findings is in the attached spreadsheet.

Walleye were detected and are not known to be native to the lake (Figure 4).



Figure 4. Walleye

It appears there are freshwater sponges at several locations in the lake (Figure 5). This is significant as freshwater sponges are considered a bellwether of good water quality.

Some of the commonly encountered native plants are pictured (Figures 6, 7, 8 and 9). Image of an Underwater ROV for gathering data in plant colonies (Figure 10).



Figure 5. Freshwater sponge mixed among pondweed and chara



Figure 6. Chara



Figure 7. Common Bladderwort and Chara



Figure 8. Sago Pondweed Foreground, Whorled Milfoil Background



Figure 9. Steel Drum in Colony of Water Celery

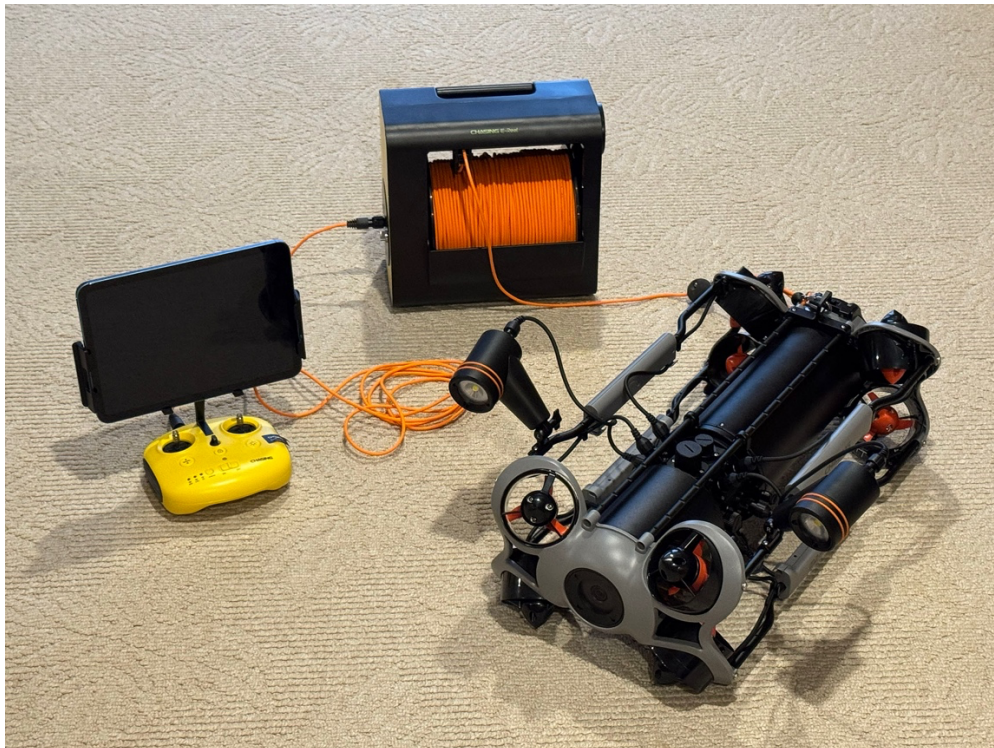


Figure 10. Underwater ROV System

Site	Point Centroid	Aquatic Plants	Observations
LTL-1	44.923780 -85.860495	Sago Pondweed Whorled Milfoil Slender Pondweed Northern Milfoil Chara Common Bladderwort	
LTL-2	44.924547 -85.853487	Chara Whorled Milfoil Alga Bloom Northern Milfoil	
LTL-3	44.921013 -85.854020	Water Celery Chara	Steel Drums Wood Posts
LTL-4	44.918799 -85.850549	Water Celery Sago Pondweed Slender Pondweed Chara Illinois Pondweed	Wood Post
LTL-5	44.918085 -85.845942	Water Celery Chara Sago Pondweed Slender Naiad	
LTL-5.1	44.921380 -85.841665	Chara	Thick Chara Monocultures 22ft deep Possible Freshwater Sponges 10:48:37
LTL-6	44.918719 -85.843712	Whorled Milfoil Water Celery	

Slender Naiad Chara Northern Milfoil
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<b>LTL-7</b>	44.918942 -85.841817	Chara Common Bladderwort Sago Pondweed Northern Milfoil Slender Naiad	Wood Post Alga Bloom Freshwater Sponge 13:19:12 Freshwater Sponge 13:20:24
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<b>LTL-7.1</b>	44.920681 -85.838710	Chara
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<b>LTL-8</b>	44.919792 -85.839402	Whorled Milfoil Chara Slender Pondweed Sago Pondweed	Alga Bloom
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<b>LTL-8.1</b>	44.923155 -85.833335	Chara	> 20ft Deep
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<b>LTL-9</b>	44.921474 -85.834643	Chara Slender Naiad	Walleye
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<b>LTL-10</b>	44.920584 -85.835337	Chara Whorled Milfoil
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<b>LTL-11</b>	44.921831 -85.832649	Whorled Milfoil Chara Northern Milfoil	Freshwater Sponge 1:34:52
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<b>LTL-12</b>	44.922752 -85.831929	Chara Sago Pondweed Slender Pondweed	Wood Post Freshwater Sponge 11:48:11
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Whorled Milfoil

<b>LTL-13</b>	44.928644 -85.827337	Chara	Wood Post
		Common Bladderwort	Freshwater Sponge 12:06:06
		Illinois Pondweed	Freshwater Sponge 12:06:16
		Water Celery	Freshwater Sponge 12:06:40
		Whorled Milfoil	Freshwater Sponge 12:07:26
			Freshwater Sponge 12:07:42
			Freshwater Sponge 12:08:10
			Freshwater Sponge 12:08:32
	Freshwater Sponge 12:08:54		

<b>LTL-14</b>	44.924787 -85.828623	Chara
		Whorled Milfoil

<b>LTL-15</b>	44.919379 -85.832832	Illinois Pondweed
		Water Celery
		Bull Rush
		Sago Pondweed
		Northern Naiad