Chinese Mystery Snail with Zebra Mussels Attached in Clearwater Lake on July 10, 2020

Starry Stonewort Searches for Clearwater Lake, Wright County, Minnesota, 2020

Survey Dates: July 10 and September 30, 2020

Prepared for:
Clearwater Lake Property Owners

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Starry Stonewort Searches for Clearwater Lake, Wright County, Minnesota, 2020

Summary of the 2020 searches: Two staff from Blue Water Science, surveyed 4 boat accesses on July 10, 2020 (Figure 1). A combination of rake sampling (205 rake samples) and scuba diving (a total of 3.2 search hours) were conducted (Table 1). No starry stonewort was observed at any location.

On September 30, 2020 three staff from Blue Water Science surveyed 4 boat accesses. A combination of rake sampling (164 rake samples) and scuba diving (a total of 3.3 search hours) were conducted (Table 1). No starry stonewort was observed at any location.

At the conclusion of 2020 growing season, no starry stonewort at major lake access areas had been observed.

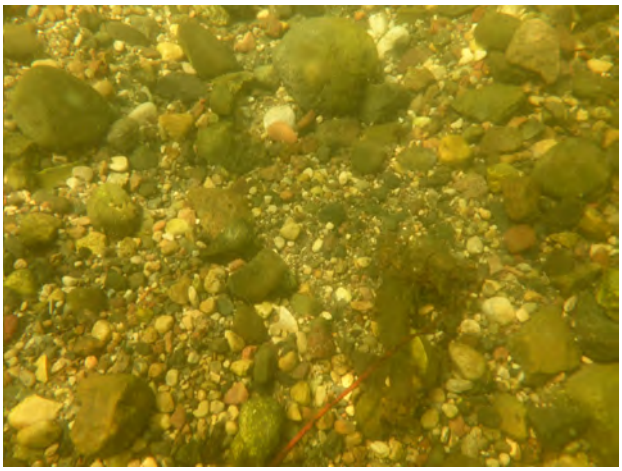
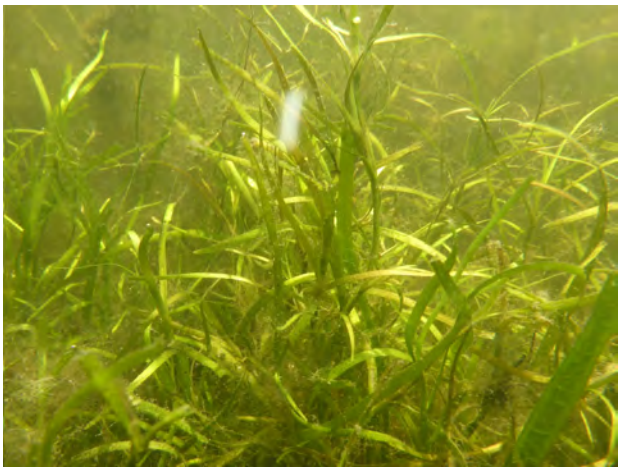
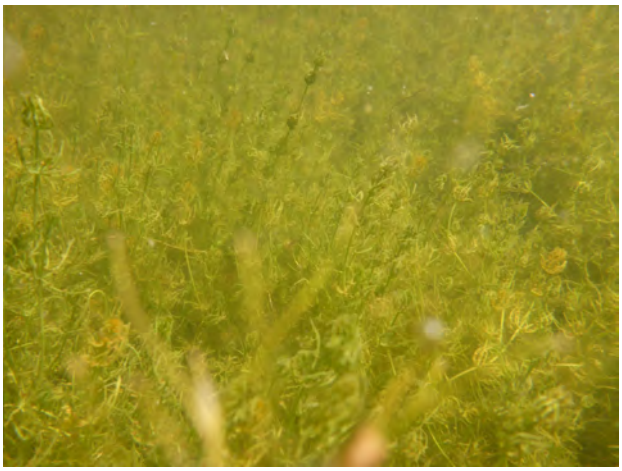
Table 1. Individual site data for the starry stonewort searches in 2020.

	Representative Rake Sampling and Diving	Starry Stonewort (SSW)	Aquatic Plant Notes	Bottom Conditions
July 10, 2020				
1. Black Pool Access	42 rake samples 45 minutes of diving	No SSW found	Wild rice present	Mostly silty sand
2. Bob's Bay Access	64 rake samples 60 minutes of diving	No SSW found	Coontail dominant out to 16 feet	Organic sediments and silty sand
3. Highway 24 Private Access	35 rake samples 30 minutes of diving	No SSW found	Buttercup at the surface	Mostly sand with some gravel
4. Clearwater Forest Access	64 rake samples 55 minutes of diving	No SSW found	Fries pondweed and string pondweed are abundant.	Organic sediments with some silty sand
September 30, 2020				
1. Black Pool Access	42 rake samples 30 minutes of diving	No SSW found	Water celery common	Organic sediments and sand
2. Bob's Bay Access	52 rake samples 90 minutes of diving	No SSW found	Coontail abundant	Organic sediments with some sand
3. Highway 24 Private Access	24 rake samples 30 minutes of diving	No SSW found	Chara present at moderate density	Mostly sand with some gravel
4. Clearwater Forest Access	46 rake samples 45 minutes of diving	No SSW found	Water lilies abundant	Organic sediments with some silty sand

Search Locations in 2020

Figure 1. Location of the access search sites.

2020 Representative Conditions in Clearwater Lake

Survey Areas for July 10, 2020

Figure 2. Survey areas for July 10, 2020 (dots on maps 1, 2, 3, and 4 indicate rake sample locations).

Survey Areas for September 30, 2020

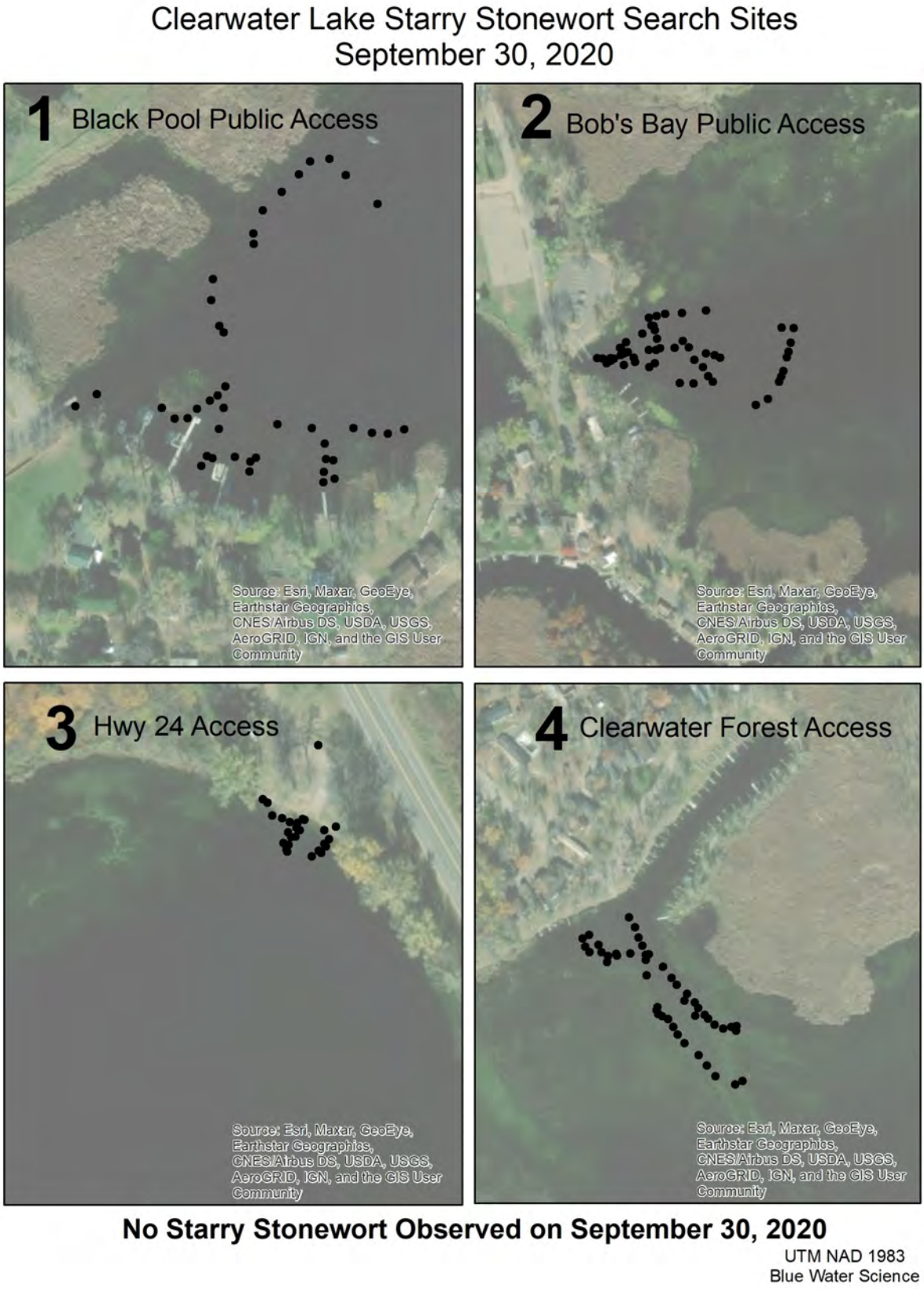


Figure 3. Survey areas for September 30, 2020 (dots on maps 1, 2, 3, and 4 indicate rake sample locations).

Starry Stonewort Identification Tips

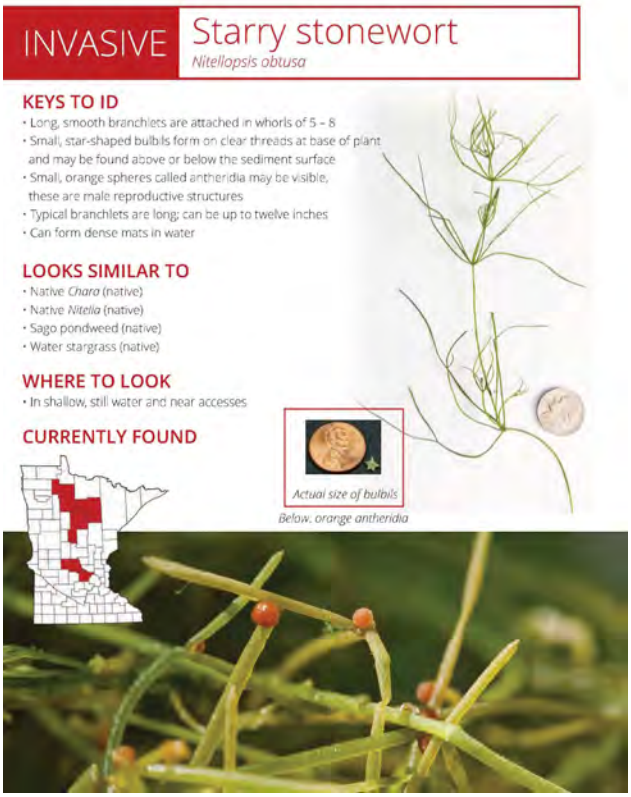


Figure 4. [left] Starry stonewort identification page from the University of Minnesota Aquatic Invasive Species Research Center (MAISRC). [left] Starry stonewort from Lake Koronis on July 31, 2017.

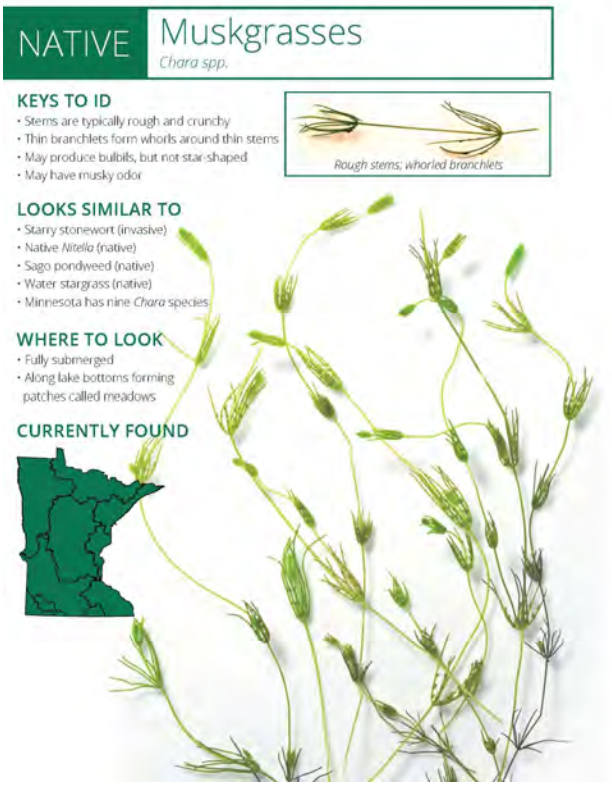


Figure 5. [left] Chara identification page from the MAISRC.
[right] Starry stonewort looks a lot like some growth forms of chara. Starry stonewort was not observed in Clearwater Lake in 2020. The photo is chara from Clearwater Lake.

Rapid Response Plan for Starry Stonewort

Starry stonewort (SSW) has not been found in Clearwater Lake at the end of 2020. If SSW is found a rapid response plan has a number of steps (Table 2).

Table 2. Tasks and assignments for an early detection and rapid response program for Clearwater Lake, Wright County, Minnesota.

	Clearwater Lake Property Owners	Volunteers	Wright County	MnDNR	Others	Treatment Contractor	BWS
1. Early Detection							
1.1. Create website information.	X						
1.2. Designate contact person.	X						
1.3. Conduct training session for volunteer searchers.	Jun	Jun					Jun
1.4. Conduct monthly targeted searches (Apr-Oct).	X						X
1.5. Press release if SSW is found.	X			X			
2. Rapid Response Assessment							
2.1. Conduct an initial exploratory search after the first report of a starry stonewort observation.				X			X
2.2. Organize and train lake resident searchers for a full search effort.	X						X
2.3. Conduct an expanded targeted search with diving (if needed).	X	X		X			X
3. Rapid Response Action							
3.1. Meet to determine treatment options.	X		X	X	X	X	X
3.2. Close public access, if necessary.	X		X	X	X		
3.3. Treat area with copper sulfate.						X	
3.4. Evaluate treatment.				X			X
3.5. Report all findings and results.	X			X			X

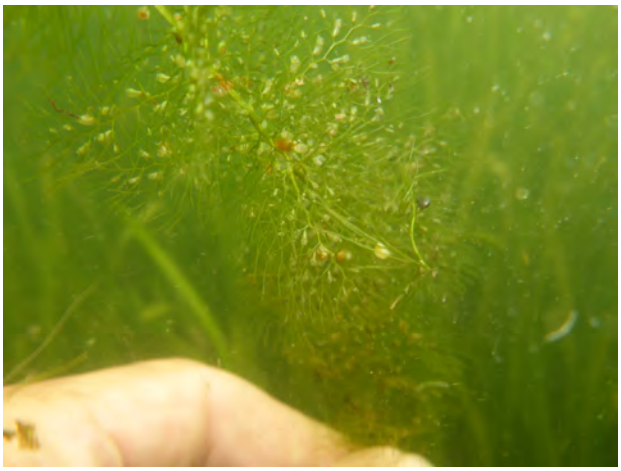
Figure 6. Rapid response assessment for zebra mussels in Christmas Lake in 2014. Some of the same approaches are used for starry stonewort.

Zebra Mussel Conditions in Clearwater Lake

July Conditions: Adult zebra mussels were found growing on aquatic plants at the access areas.

September Conditions: Zebra mussels were found attached to aquatic plants and also growing on submerged substrate in Clearwater Lake in 2020.

Representative Aquatic Plants in Clearwater Lake

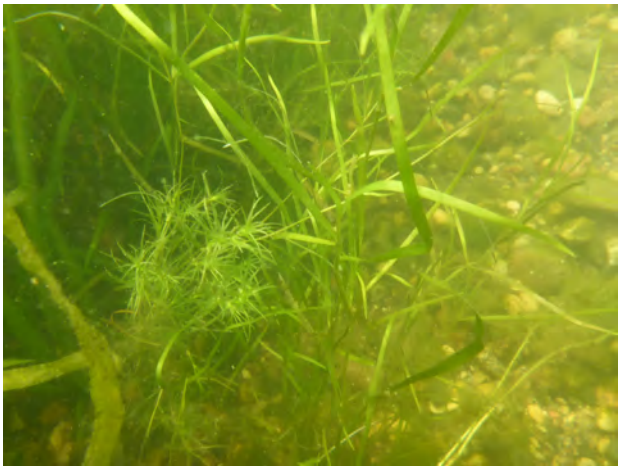


Bladderwort

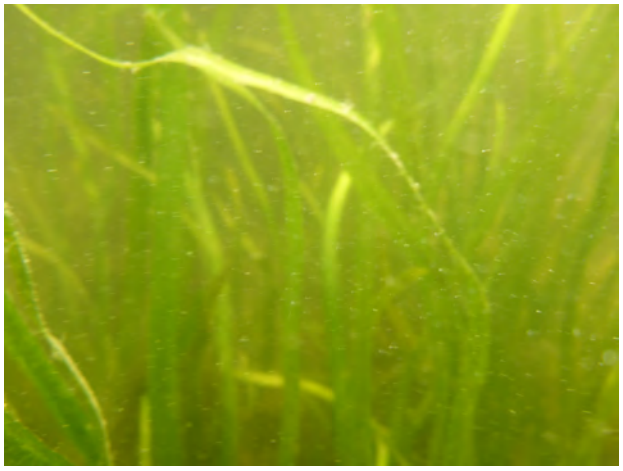
Chara

Coontail

Elodea



Naiads and water celery



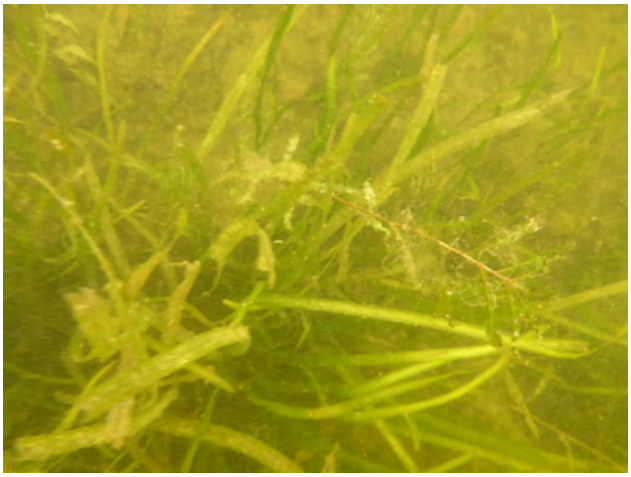
Water celery

Representative Aquatic Plants in Clearwater Lake

Water lilies

Coontail

Northern watermilfoil



Water celery