

Starry Stonewort vs Chara Algae

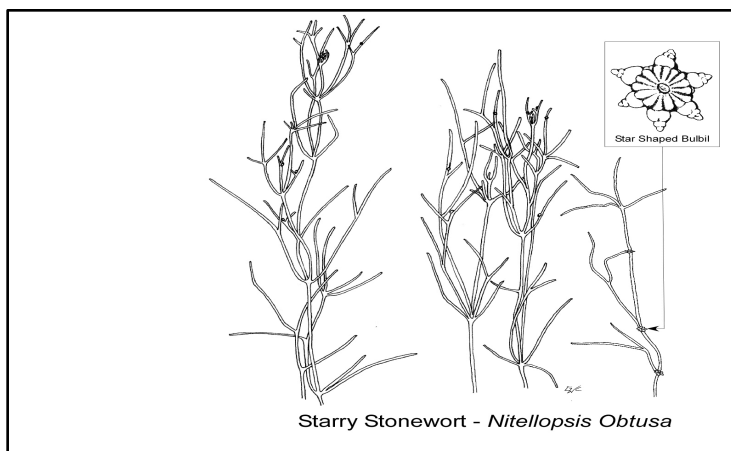
Introduction

Starry stonewort (*Nitellopsis obtusa*, (Desv.) J.Grove) as opposed to native Chara/Nitella is considered to be an exotic charoid species in North America. Both Starry stonewort and Chara are in the charoid algae family. Starry stonewort is thought to be native to Europe and is classified as endangered in the U.K. It has reportedly been present in Lake St. Clair since 1986 (Schloesser, 1986). In stark contrast to other invasive species such as the zebra mussel, starry stonewort has apparently taken nearly 30 years for it to become conspicuous in Michigan inland lakes.

Anecdotal observations suggest that it may have been present in several southeastern Michigan lakes as early as 1999, but was thought to be a “super weedy chara”. Reflection also suggests that it may have been present in some lakes where fluridone had been used to manage milfoil populations and where successful milfoil control resulted in a “chara” bloom. Unfortunately, samples were not preserved from any of these lakes. Starry stonewort was first positively identified on February 06, 2006 by G. Douglas Pullman in Lobdell Lake, Genesee County, Michigan. Since that time it has been found in Michigan lakes in the lower peninsula, ranging from Mason County to Wayne County. It is probably present in nearly every county in the Michigan lower peninsula, although this is still conjecture.

Identification

The starry rhizoids are definitive for identification of starry stonewort. They have been observed to be present on all parts of the plant at all times of the year in Michigan Lakes, but are particularly common on the plant parts that are closest to the sediments in the late fall and early spring. It also produces conspicuous, orange colored oocytes that are easily detected by the naked eye. Starry stonewort is a light green color compared to other charoid species in Michigan when it is actively growing. Chara/Nitella are typically a darker green (or bright lime green) in coloration compared to stonewort. Compared to other charoid algae in Michigan, the branching pattern of starry stonewort is more irregular giving the plant a characteristic “disheveled” look.



Unlike other Michigan charoid algae, starry stonewort can grow to remarkable heights and depths. This characteristic can also aid in identification. It has been observed growing 2 meters (7') tall at 9 m (27') water depth in Williams Lake, Oakland County. And, it is probably capable of taller growth at even greater depths. Starry stonewort forms dense mats of vegetation that completely cover the lake bottom. Chara is typically much less aggressive in its growth pattern with much less biomass.

When stonewort becomes dense and overcomes most of the other vegetation in an area, it is said to “pillow” or form irregularly spaced “pillows” of dense vegetation of various heights rather than a mat of uniform height. When the growth slows or the plants decline (usually in the summer) circular openings may appear in the dense pillowed mats imparting a “swiss cheese” pattern in the pillowed mats.

Most charoid algae, particularly Chara Algae, have a musky or garlic odor. This odor is not nearly as pronounced in starry stonewort. However, caution must be taken here because some chara species appear to be capable of co-mingling in the dense starry stonewort mats and may contribute more odor to samples that contain both plants.

Starry Stonewort Management

Starry stonewort, as well as Chara Algae, appears to be highly sensitive to common copper and endothall based algacides and appears to be even more susceptible than most common Michigan charoid species. The application rates recommended for chara control on the US EPA Approved Pesticide labels appear to be sufficient to control low-growing starry stonewort. Problems can arise when starry stonewort mats become tall. The algacide application rates that are normally used in Chara control operations usually cause impacts on only the upper surface of the starry stonewort mats. It seems logical that the higher levels of biomass found in dense starry stonewort communities require higher concentrations of active ingredients and repeated applications, and it appears that the active ingredients are sequestered in the upper portions of the starry stonewort mats and the lower portions of the mats are not injured.

The ability to control only the upper biomass of starry stonewort mats presents some interesting aquatic plant management opportunities. Many of the lakes where starry stonewort has been found have historically been challenged by the spread, proliferation, and domination of milfoil species and hybrids. Starry stonewort is a superior competitor and will eliminate nuisance milfoil growth from the deeper parts of some lakes. And, if the water is clear starry stonewort will not grow as tall in the water column. Riparian property owners, recreational water users, and some lake managers have been very pleased with this outcome. If starry stonewort grows taller, the height of the starry stonewort can be reduced with low level algacide treatments. This is referred to as a “hair cut treatment” and is used to suppress plants like milfoil and still keep boat lanes open. The wisdom of such a treatment strategy may be debatable, but the utility of the approach has been very effective.

The timing of starry stonewort treatment is also worthy of consideration. Early treatments and repeated treatments may be necessary. However, early treatment may open large areas of the lake bottom to colonization by early growing season species such as milfoil, milfoil hybrids, curly leaf pondweed, fanwort, or other highly undesirable invasive species in Michigan. If treatment is delayed to late June, the adverse impacts on these early growing invasive species may be exaggerated. Presumably, some of the more desirable pondweed species may benefit from the suppression of these vascular invasive species and then creation of habitat when the starry stonewort is removed late in June. This strategy is only one of several that is being considered and evaluated in Michigan.

In general, because of the dense matting created by mid to late season stonewort growth, repeated copper applications are required. Regarding Chara/Nitella Algae, less copper treatments are typically required.



Figure 1 Chara Algae (more regular growth pattern)

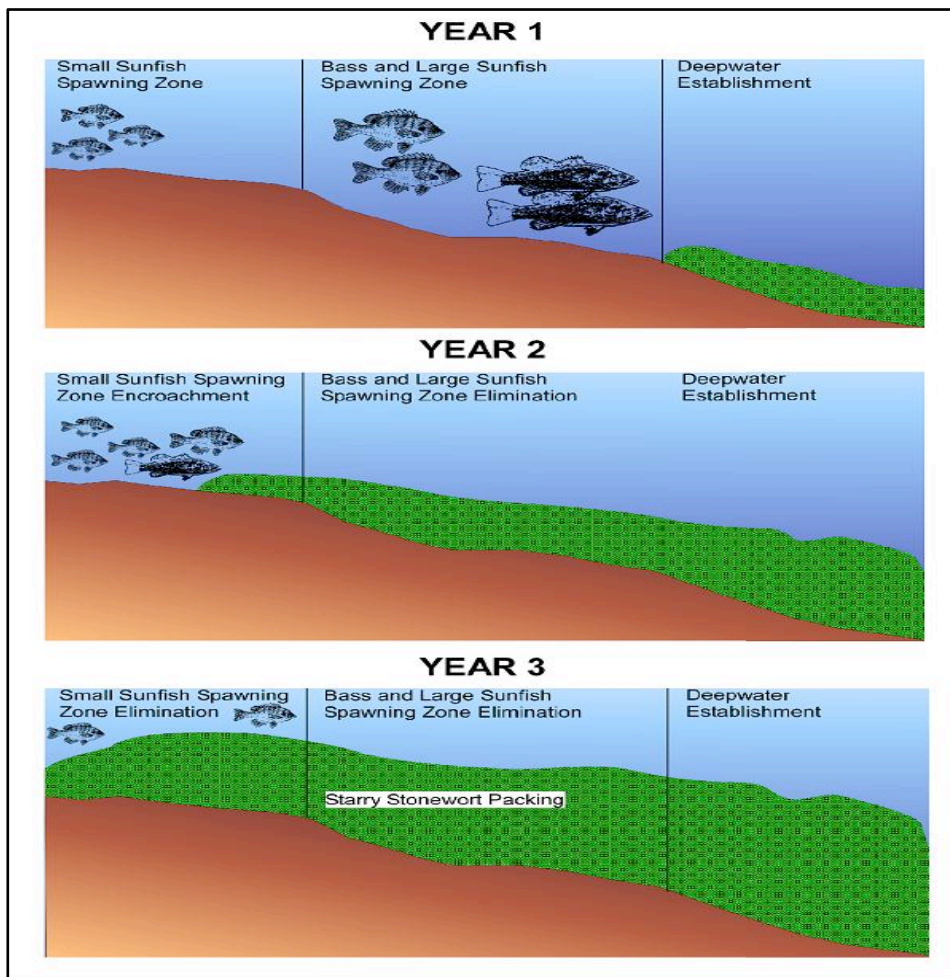




Figure 2 Starry Stonewort (“beehive” looking growth pattern)