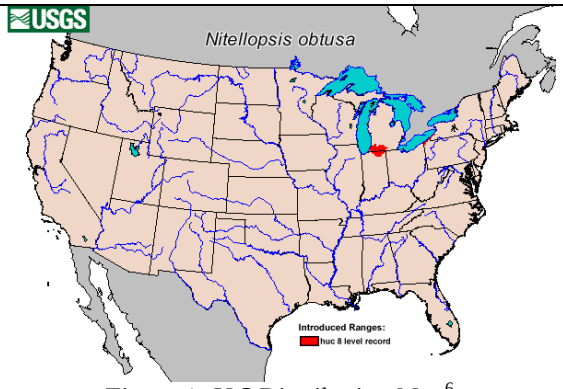
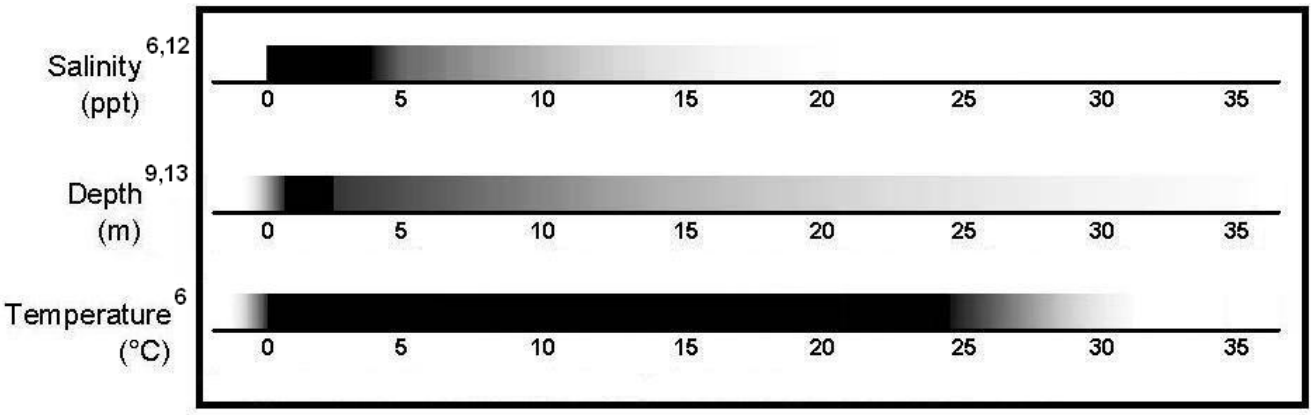
Macroalga	Starry Stonewort
I. Current Status and Distribution	***Nitellopsis obtusa***

a. Range	**Global/Continental**	**Wisconsin**
Native Range Eurasia[1,2,3,4,5]	 *Figure 1: U.S Distribution Map*[6]	Not recorded in Wisconsin
Abundance/Range Widespread: Locally Abundant: Sparse:	 Lake Ontario, Michigan and New York[7] Lake Oneida, New York[8] Endangered in the United Kingdom[9] and Japan[10]	 Not applicable Not applicable Not applicable
Range Expansion Date Introduced: Rate of Spread:	 St. Lawrence River, 1978[11] Introduction to widespread in 13 years in Lake Ontario[11]; Lake Oneida – more biomass by weight than any native[8]	 Not applicable Not applicable
Density Risk of Monoculture: Facilitated By:	 Likely; often colonizes deep water that naturally hosts few species Undocumented	 Unknown Unknown
b. Habitat	Deep lakes and slow-running water at low altitudes[9]	
Tolerance	Chart of tolerances: Increasingly dark color indicates increasingly optimal range	



Preferences	Calcareous water near coasts (brackish conditions)[9]; cold, oligotrophic and alkaline lakes[4]; low nutrient levels[9]; areas sheltered from wave action[13]; soft substrate[6]; deeper habitats with low light transmittance[6]

c. Regulation	
Noxious/Regulated:	*Not regulated*
Minnesota Regulations:	*Not regulated*
Michigan Regulations:	*Not regulated*
Washington Regulations:	*Not regulated*
II. Establishment Potential and Life History Traits	
a. Life History	Green benthic floating macroalga[7]
Fecundity	Undocumented
Reproduction	Spores, bulbils[13]
Importance of Spores:	Rarely produces spores; usually from July-September in UK[13]
Vegetative:	Primarily with star-shaped bulbils which stay viable for several years[13]
Hybridization	Undocumented
Overwintering	
Winter Tolerance:	Generally a summer annual in the United Kingdom, may not die back completely in mild winters[9]; dominant plant under the ice in St. Lawrence River[14]
Phenology:	In Sweden, starts to grow in April, peak biomass at end of June and dies off in late autumn[15]; in Detroit River first appears in July with peak biomass in September, and declines beginning in November[14]
b. Establishment	
Climate	
Weather:	Less tolerant of turbulent conditions[13]
Wisconsin-Adapted:	Likely
Climate Change:	Undocumented
Taxonomic Similarity	
Wisconsin Natives:	Medium; family Characeae
Other US Exotics:	Unknown
Competition	
Natural Predators:	Various grazers
Natural Pathogens:	Undocumented
Competitive Strategy:	Charophytes typically grow as monocultures; tolerant of low light intensity[9]; present for 2-3 months longer than other species[14]
Known Interactions:	Undocumented
Reproduction	
Rate of Spread:	Introduction to widespread in 13 years in Lake Ontario[11]
Adaptive Strategies:	Undocumented
Timeframe	Undocumented
c. Dispersal	
Intentional:	Unlikely
Unintentional:	Ballast water[7,8]
Propagule Pressure:	Undocumented


Figure 2: Courtesy of Kristian Peters, Wikimedia Commons[16]
Figure 3: Courtesy of Progressive AE, Michigan Lake Info[17]

III. Damage Potential	
a. Ecosystem Impacts	
Composition	Effects of the invasive algae *Nitellopsis* are not well known[11]; accounts for fluctuations in red-crested pochard (*Netta rufina*) numbers in Netherlands[18]; abundance of invertebrates in *N. obtusa* stands lower than *Chara tomentosa* due to winter death[15]; about 1000 individuals/m^2 of zebra mussels (*Dreissena polymorpha*) found on *N. obtusa*[19]
Structure	Thick mats blanket lake bottom, prevent growth of other plants[8] and covers panfish spawning habitat[20]
Function	Strongly inhibits cyanobacteria[21]
Allelopathic Effects	Undocumented
Keystone Species	Undocumented
Ecosystem Engineer	Undocumented
Sustainability	Undocumented
Biodiversity	Undocumented
Biotic Effects	Undocumented
Abiotic Effects	Winter die-off may affect systems if *Chara* species are displaced
Benefits	Food source; temporary habitat[14,15]
b. Socio-Economic Effects	
Benefits Caveats	Undocumented Not applicable
Impacts of Restriction	Increase in monitoring, education, and research costs
Negatives	Undocumented
Expectations	Undocumented
Cost of Impacts	Decreased recreational and aesthetic value; decline in ecological integrity; increased research expenses
"Eradication" Cost	Undocumented
IV. Control and Prevention	
a. Detection	
Crypsis: Benefits of Early Response:	Extremely high Undocumented

b. Control	
Management Goal 1	Nuisance control
Tool:	Endothall, diquat dibromide, peroxide algaecides, acrolein, copper algaecides[22]
Caveat:	Non-target plant species are negatively impacted[22]
Cost:	Undocumented
Efficacy, Time Frame:	Undocumented
Tool:	Rakes and filters[22]
Caveat:	Mechanical disturbance, non-target species may be negatively impacted
Cost:	Undocumented
Efficacy, Time Frame:	Undocumented

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