Potamogeton spp. - Ceratophyllum spp. Midwest Herbaceous Vegetation (Midwest Pondweed Submerged Aquatic Wetland)

COMMON NAME	Pondweed species - Coontail species Midwest Herbaceous Vegetation
SYNONYM	Midwest Pondweed Submerged Aquatic Wetland
PHYSIOGNOMIC CLASS	Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS	Hydromorphic rooted vegetation (V.C)
PHYSIOGNOMIC GROUP	Temperate or subpolar hydromorphic rooted vegetation (V.C.2)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (V.C.2.N)
FORMATION	Permanently flooded temperate or subpolar hydromorphic rooted vegetation (V.C.2.N.a)
ALLIANCE	POTAMOGETON SPP. - CERATOPHYLLUM SPP. - ELODEA SPP. PERMANENTLY FLOODED HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM PALUSTRINE

RANGE

Voyageurs National Park

This community type is found throughout the park area, typically in fairly sheltered bays of the large lakes, in interior lakes or, rarely, in recent beaver floodings. It can also occur in more wave exposed sites on the large lakes.

Globally

This community is found in Iowa, Illinois, Indiana, Michigan, Minnesota, Ohio, North Dakota, South Dakota, Wisconsin, and possible Ontario.

ENVIRONMENTAL DESCRIPTION

Voyageurs National Park

This community type typically occurs in fairly sheltered bays of the large lakes, in interior lakes or, rarely, in recent beaver floodings. It can also occur in more wave exposed sites on the large lakes where water depth is not limiting. Water depth is typically 0.5-2 m. The substrate is most commonly clay, though occasionally sand or, in less exposed sites, muck over clay.

Globally

The major environmental controls on submerged aquatic vegetation, as noted by Curtis (1959), are water depth (as it relates to light intensity), water chemistry, water movement, and nature of the substrate. Various combinations of these factors can interact in a variety of ways to influence the local composition of the community. As a result, a single lake may contain a number of relatively homogeneous stands, each with a different species makeup, depending on depth, nature of adjoining shoreline, degree of protection from waves, etc. Water chemistry may be one of the few constants. Assessment of water conductivity and alkalinity are two measured parameters that can provide some understanding of the influence of water chemistry on species composition. Curtis (1959) also summarizes a study by Swindale and Curtis (1959).

MOST ABUNDANT SPECIES

Voyageurs National Park

Stratum	Species
Floating-leaved	*Potamogeton* spp., *Nymphaea odorata*
Submersed	*Valesneria americana, Myriophyllum sibiricum, Najas flexilis*

Globally

Stratum	Species
Submersed	*Potamogeton* spp., *Ceratophyllum* spp., *Myriophyllum* spp., *Utricularia* spp.

CHARACTERISTIC SPECIES

Voyageurs National Park

Potamogeton spp., *Nymphaea odorata, Valesneria americana, Myriophyllum sibiricum, Najas flexilis*

Globally

Potamogeton spp., *Ceratophyllum* spp., *Myriophyllum* spp., *Chara* spp., *Utricularia* spp.

VEGETATION DESCRIPTION

Voyageurs National Park

The Midwest Pondweed Submerged Aquatic Wetland consists primarily of submerged aquatic plants but can contain <10% cover of floating aquatics. Percent cover of submerged aquatic vegetation is highly variable and ranges from 10-90%. Species composition and diversity are, likewise, highly variable. The most common species are: *Valesneria americana, Potamogeton richardsonii, Potamogeton epihydrus, Potamogeton zosteriformis, Potamogeton friesii, Potamogeton gramineus, Ceratophyllum demersum, Potamogeton vaseyi, Sparganium fluctuans, Myriophyllum sibiricum, Najas flexilis, Nymphaea odorata,* and *Nuphar variegatum*. Examples of this type may be relatively species rich and contain nearly all of the above listed species or be species poor and contain only two or three species. *Valesneria americana*, in particular, can occasionally be found in nearly monotypic stands. Emergent species such as *Scirpus tabernaemontani, Scirpus acutus,* and *Zizania palustris* may be present at low cover, especially in the large lakes. In the infrequent case of this community existing in a recent beaver flooding, species composition is relatively low and commonly includes *Utricularia vulgaris* and *Brasenia schreberi.*

Globally

Based on information in the northern parts of the Midwest, several vegetation subgroups can be recognized that may be separate associations. Subgroup A is a shallow (<50 cm), sparsely vegetated, open water marsh found on sand, or organic and mineral material trapped in rocky bottoms. Stands are often exposed to wave action and found in oligotrophic lakes. Dominant plants often have basal rosettes that are resistant to wave action. Typical species include *Elatine minima, Eriocaulon aquaticum, Gratiola aurea, Isoetes echinospora, Isoetes macrospora, Juncus pelocarpus*, and *Lobelia dortmanna* (Curtis 1959, Harris *et al.* 1996). Subgroup B is a shallow (<50 cm) open water marsh with emergent cover <25% and floating-leaved aquatics >25%. Substrate is a mineral soil (often sand), boulders, or a mixture of sedimentary peat and fine mineral soil. Stands can be exposed to waves or are in stream channels. Stands may often be dominated by a single species. Typical dominants include *Eleocharis acicularis, Myriophyllum* spp., *Potamogeton amplifolius, Potamogeton gramineus, Potamogeton praelongus, Potamogeton robbinsii, Sparganium fluctuans*, and *Utricularia vulgaris*. Subgroup C includes open water marsh with emergent cover < 25% and floating leaved aquatics >25%. Substrate is sedimentary peat and stands are often found in sheltered bays of lakes and streams which do not have high wave energy. Stands may often be dominated by a single species. Typical dominants include *Ceratophyllum demersum, Lemna* spp., *Myriophyllum sibiricum, Myriophyllum verticillatum, Potamogeton natans, Potamogeton pectinatus, Potamogeton richardsonii, Potamogeton zosteriformis, Ranunculus aquatilis, Utricularia vulgaris*, and *Vallisneria americana* (Curtis 1959, Harris *et al.* 1996).

CONSERVATION RANK G5Q.

DATABASE CODE CEGL002282

COMMENTS

Voyageurs National Park

Diagnostic features of the type are floating leaf aquatics <10% cover, and dominance by submerged aquatics, mainly *Vallissneria americana, Potamogeton* spp., and *Myriophyllum sibiricum*. The type is analogous to Ontario's W1 and W3 (Harris *et al.* 1996). Where floating aquatics, especially *Nymphaea odorata* and *Nuphar variegatum*, increase in cover this community grades into the Northern Water Lily Aquatic Wetland. Beaver floodings most commonly have >10% cover of floating aquatics and are therefore usually colonized by the Northern Water Lily Aquatic Wetland. The stands at Voyageurs are most like subgroup C of the global description.

The natural and human caused fluctuation in water levels in the large lake of Voyageurs National Park can have a significant impact on the structure, composition and presence of this community. See Wilcox and Meeker (1991) for a discussion on the effects of annual water level fluctuations. Extreme wet or dry years may have an effect on the presence of the Midwest Pondweed Submerged Aquatic Wetland community by changing the dominance of floating, emergent and submerged vegetation.

REFERENCES

Curtis, J. T. 1959. The vegetation of Wisconsin: An ordination of plant communities. Univ. of Wisconsin Press, Madison. 657 p.

Harris, A. G., S. C. McMurray, P. W. C. Uhlig, J. K. Jeglum, R. F. Foster, and G. D. Racey. 1996. Field guide to the wetland ecosystem classification for northwestern Ontario. Ont. Minist. Nat. Resour., Northwest Sci. Tech. Field Guide FG-01.Thunder Bay, Ont. 74 p.

Swindale, Delle N. and Curtis, J. T. 1957. Phytosociology of the larger submergered plants in Wisconsin lakes. Ecology 38:397-407.

Wilcox,D.A. and J.E. Meeker. 1991. Disturbance effects on aquatic vegetation in regulated and unregulated lakes in northern Minnesota. Canadian Journal of Botany. 69:1542-1551.

Note:
This association is found in three different map classes:

1) Midwest Pondweed Submerged Aquatic Wetland
2) Deep Marsh Mosaic / Complex
3) Beaver Basin Break-up Mosaic