

Alien Invasive Aquatic and Wetland Plants



CURLY LEAF PONDWEED

An Invasive Plant heading towards Manitoba: *Potamogeton crispus*

Some suggest that curly-leaf pondweed was the most severe invasive aquatic plant in the Midwest USA until Eurasian watermilfoil established. Generally found in ponds, rivers, lakes, wetlands, streams and brackish waters.

BIOLOGY

Curly leaf pondweed is a submersed perennial aquatic plant native to Eurasia, Africa, and Australia introduced into North America about the mid 1800s. It has naturalized throughout most of North America however has not yet been reported or confirmed in Manitoba. It is identified by its reddish green curly leaves with finely toothed margins that are curly (see photo below source: Virginia Tech Weed Identification guide http://www.ppws.vt.edu/scott/weed_id/ptmcr.htm). It may grow in depths of 5 meters in freshwater lakes, ponds and wetlands. Leaves are submersed and 1-2 cm wide and 5-75 cm long and attached directly to the stem. They are alternate, submersed and oblong, fine toothed with 3 main veins. The stems may be up to 1 meter long and are somewhat flattened.



Spreads primarily by winter buds called turions. Turions are hard, dark green-brown, auger-shaped, about 2 cm long and 1 cm wide, produced at the tips of lateral branches. One plant may produce hundreds of turions that fall to the ground, over winter and germinate the next spring. Sprouting occurs in the fall in northern areas. Seeds play a small role in reproduction if any. Plants grow quickly in the spring

and die-back mid-July.

Curly leaf pondweed tolerates low light and temperatures and prefers nutrient-rich habitats. It has an advantage over our native plants in that it begins growing earlier than most native aquatic plants winning valuable resources. Flowers are whitish, tiny, and have 4-petal like lobes found on spikes raised above the water along the stalk. Roots are fibrous, white and unbranched.

ECOLOGICAL DAMAGE

Curly-leaf pondweed forms dense mats of vegetation displacing native plants and reducing overall biological diversity. Dense mats shade out native submerged species and impede recreational activities including boating and swimming. It forms dense mats impacting biological diversity and ecosystem functions (Photo Source: University of Madison Department of Botany website http://botit.botany.wisc.edu/images/veg/Wetlands_I_Plants/)



When curly-leaf pondweed dies back in mid summer, the dead plant materials gather along shorelines and often followed by an increase in phosphorus and undesirable algal blooms (Minnesota Invasive Species Program 2006).

ECONOMIC DAMAGE

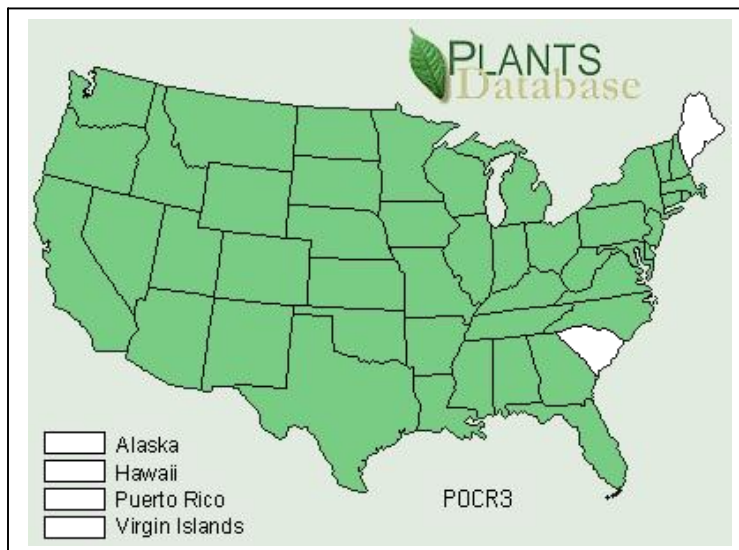
There have been no specific studies documenting the economics of curly leaf pondweed invasions. Economic costs would include control methods such as hand-pulling which are very costly. Herbicide treatments used in some areas will also have costs to society as well as to non-target vegetation. Weed harvesting equipment can be used however may cost as much as \$200,000. Damages to recreational fishing and boating also need to be quantified and may be large. Lakes subjected to dense mats of curly leaf pondweed will be avoided by tourists and hence impact local economies.

DISPERSAL MECHANISMS

Most likely spread overland by recreational boating as the plant wraps around propellers. Currently sold widely in pet shops and via the Internet as an aquarium plant. Individuals frequently discard aquarium plants into nearby retention ponds and rivers hence contributing to dispersal.

GEOGRAPHIC DISTRIBUTION

Can be found world-wide. Introduced into North America in the mid 1800s and is found throughout most of the United States. By 1950 it had invaded most of the United States. To the south of Manitoba, its known to occur in 729 Minnesota lakes (Minnesota Invasive Species Program 2006). Curly leaf pondweed has established in the northern Minnesota county of Roseau, which borders southeastern Manitoba. Occurs throughout North Dakota along the Manitoba border. Found in Lake Sakakawea in the mid 1990s to the southwest of Manitoba and has moved south of the Garrison dam since 2002, found in Bismark, North Dakota at the Southport Marina in 2005.



**Distribution Map for the United States
(Source: USDA Plant Data Base)**

MANAGEMENT

Management strategies have included herbicides, mechanical harvesting, hand pulling, and winter water drawdowns (McComas and Stuckert 2000). In Minnesota, management includes a multi-faceted public awareness effort with radio and newspaper advertising, boat washing programs, and invasive species displays (Minnesota Invasive Species Program 2006). Control methods have included whole-lake herbicide treatments - which would not be permitted in Canada (Minnesota Invasive Species Program 2006). Long-term management must control the production of turions.

Pulling and cutting can help reduce biomass however is not selective and is very time and labor intensive. Benthic barriers have been used in areas such as swimming beaches, boating lanes and around docks to restrict light and upward growth.

SPECIES INFORMATION LINKS

Kay, S.H. 2001. Invasive Aquatic and Wetland Plants Field Guide. Sea Grant North Carolina. NC State University. NC.

McComas, S. and J. Stuckert. 2000. Aquatic plant evaluation of Rice Lake drawdown project, Maple Grove, MN 1995-2000. Unpublished report prepared for the City of Maple Grove, MN by Blue Water Science, 550 Snelling Avenue South, Saint Paul, MN 55166. 14 pp.

Minnesota Invasive Species Program. 2006. Invasive Species of Aquatic Plants and Wild Animals in Minnesota: Annual Report for 2005. Minnesota Department of Natural Resources, St. Paul, MN.

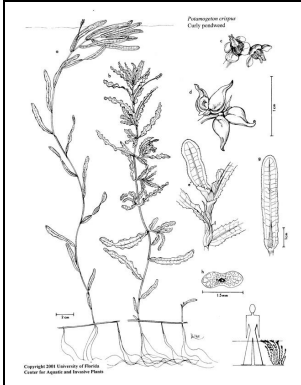
PICTURE GALLERIES



Organization: UW-Madison Department of Botany

Link:

http://botit.botany.wisc.edu/images/veg/Wetlands_I_Plants/



Organization: University of Florida, Center for Aquatic and Invasive Plants

Link: <http://aquat1.ifas.ufl.edu/potcri.html>

**Prepared by the Manitoba Purple Loosestrife Project
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Manitoba Purple Loosestrife Project
Box 1160, Stonewall
Manitoba, R0C 2Z0
Canada