

Curly-leaved Pondweed: An Invasive Aquatic Plant

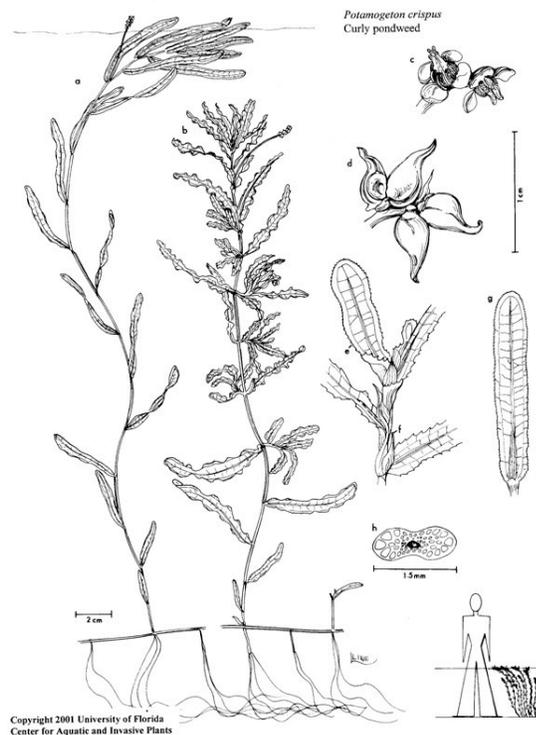
Potamogeton crispus



Description

- Curly-leaved Pondweed is a hardy, aggressive non-native invasive plant.
- The oblong light to dark green leaves are distinctly serrated, wavy, and typically 3" long.
- The hard leaves have rounded tips and a prominent, reddish midvein. Leaves are sessile (no petiole/attached directly to the stem) and are arranged alternately along the stem.
- The stems are lighter in color and generally flattened.
- Stolons, rhizomes, burr-like winter buds and small reddish/brown fruits are produced annually.
- *P. crispus* is usually the first macrophyte to emerge in the spring, but dies back by July.

Curly Leaf Pondweed



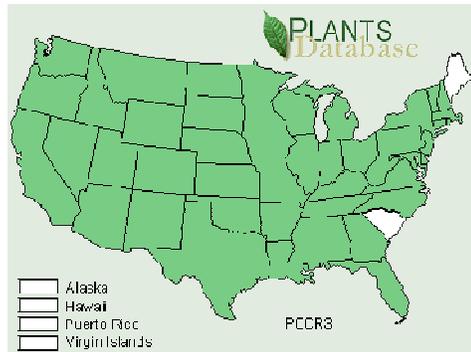
Habitat

P. crispus has become established in a wide range of habitats across the United States.

- *P. crispus* prefers alkaline, brackish and nutrient rich waters, however; it can tolerate a wide range of conditions including low light and low temperature.

Distribution Map

Potamogeton crispus



Reproduction

P. crispus reproduces mainly by turion production, but also reproduces from rhizome growth.

- *P. crispus* has a rather unusual life cycle. Fruits, turions and seeds are produced in late spring/early summer and by July, *P. crispus* has died back. The fruits and turions survive all summer and germinate in the fall. The new plants grow to a few centimeters tall and over-winter in a dormant stage, even under the ice. In spring the small plants have a head start on other native macrophytes and can quickly form dense stands.
- *P. crispus* forms seeds; however, the importance of seeds in the overall maintenance of the population is uncertain. *P. crispus* can also form new colonies from rhizome growth.

Impacts and Threats Posed by Curly Leafed Pondweed

P. crispus is a highly competitive plant that is capable of rapid growth and spread. *P. crispus* can displace native species, reduce biodiversity, impede recreational activities and alter water quality.

- *P. crispus* can form dense single species stands that may not provide ideal habitat or food for native wildlife, and these native wildlife populations are often forced to relocate or perish, ultimately resulting in a loss of biodiversity.
- *P. crispus* can impede boaters, fisherman, water skiers and swimmers, and these limitations on water use can negatively impact real estate values.
- *P. crispus* dies back in July, and when dense mats decay, the available oxygen in the water may be depleted. The resulting low oxygen conditions (anoxic) can lead to fish kills and harm other aquatic organisms. Nutrients released from the decaying plants may also contribute to algal blooms.

Management Methods

Management methods include mechanical removal, herbicides, drawdowns and physical barriers. No biological controls are known. Management of *P. crispus* is season specific and management needs to be completed prior to the formation and dropping of seeds.

- Pulling and cutting of *P. crispus* can help reduce the biomass, however most forms of mechanical harvesting are not species selective. Hand pulling *P. crispus* is very time and labor intensive and is a technique that is best applied to pioneer infestations.
- Treatment with Endothal, Diquat, and Fluridone has proven effective, especially when applied early, prior to the production of turions. Partial control has been obtained with 2,4-D. By law, aquatic herbicides can only be applied by a licensed applicator and permits are required.
- Drawdowns can be an effective mode of *P. crispus* control if the drawdown is extensive enough to prevent re-growth from seeds, however, drawdowns may affect reptiles, amphibians, other aquatic organisms and alter downstream conditions.
- Benthic barriers may be used in small areas including swimming beaches, boating lanes and around docks. The barriers restrict light and upward growth but can have a negative impact on benthic organisms trapped beneath the barrier, need to be properly anchored and routinely maintained.

Other Information

- Curly-leaved Pondweed is on the Massachusetts Prohibited Plant List (January 1, 2006)
- Informational websites:
 - <http://aquat1.ifas.ufl.edu/> (Center for Aquatic and Invasive Plants)
 - www.ProtectYourWaters.net (Aquatic Nuisance Species national web site)
 - <http://nas.er.usgs.gov/queries/plants/PlantState.html> (USGS- Exotic species by state)
- *P. crispus* was first introduced to the US during the 1800's and was a popular aquarium plant.
- Due to the conspicuous serrated and rippled leaf margins, *P. crispus* is not easily confused with many other species.



Undulating / rippled leaves, serrated leaf margins and distinct midvein.

References:

1) Literature:

- <http://www.mass.gov/dcr/waterSupply/lakepond/geir.htm> (Generic Environmental Impact Report)
- http://hua.huh.harvard.edu/cgi-bin/Flora/flora.pl?ACT=desc&FLORA_ID=12395&TAXON_ID=200024690 (Flora Online)
- http://www.ppws.vt.edu/scott/weed_id/ptmcr.htm (Virginia Tech Weed I.D.)
- <http://www.wes.army.mil/el/pmis/plants/html/potamooge.html> (Army Corps of Engineers)

2) Photographs were obtained from:

- http://botit.botany.wisc.edu:16080/images/veg/Wetlands_I_Plants/Potamogeton_crispus_I_VK.php?280,192 (cover photo of *P. crispus*)
- <http://plants.ifas.ufl.edu/egdepic.html> (line drawing and close up of *P. crispus*)
- http://www.ppws.vt.edu/scott/weed_id/ptmcr.htm (second close up of *P. crispus*)

3) The distribution map was taken from:

- http://plants.usda.gov/cgi_bin/plant_profile.cgi?symbol=POCR3 (USDA Plant Data Base)

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Or visit the Lake and Pond Web Site at: www.mass.gov/lakesandponds

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