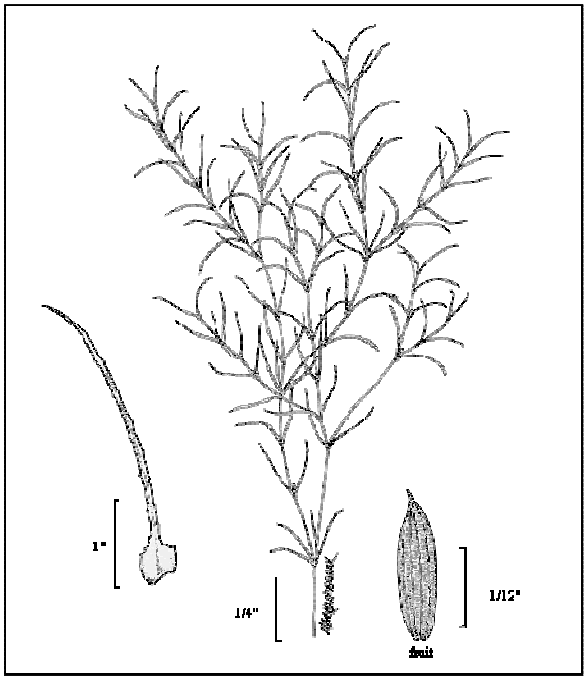
European Naiad: An Invasive Aquatic Plant

Najas minor

Description

- *Najas minor* is an annual, rooted, submerged exotic aquatic plant originally from Europe.
- Leaves are lime green, very slender and 1 ¾ inches long with 6-15 deep conspicuous teeth along the margin. Leaves are usually opposite each other with a wide base that tapers to a sharp tip.
- The brittle, re-curved leaves branch profusely at the apex, giving *N. minor* a bushy appearance.
- Small 1.5 – 3.0 mm fruits develop in the leaf axils. Fruits are slightly curved and have white ladder-like longitudinal rows.

European Naiad



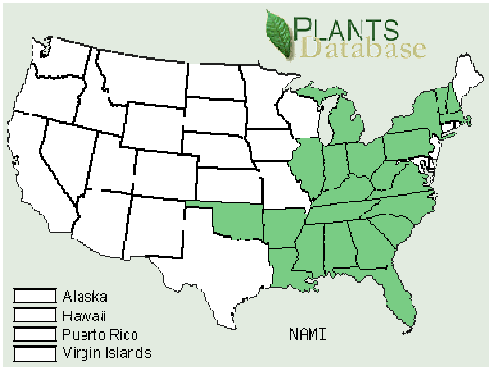
Habitat

European Naiad is a hardy species that is established in the alkaline waters of western Massachusetts.

- *N. minor* has greater tolerance for turbidity and eutrophic conditions than other native *Najas* species, often driving them out of an area.
- *N. minor* prefers slow moving waters including lakes and ponds but occasionally exists in rivers.

Distribution Map

Najas minor



Reproduction

European Naiad reproduces by both vegetative methods and from seed production.

- Vegetatively, *N. minor* reproduces by stem fragmentation. Fragments often attach to boats, gear, wildlife or may drift to new locations and form pioneer colonies.
- *N. minor* reproduces primarily from seeds. Small fruits develop in the leaf axils, and during late summer, the leaves become brittle and fragment.

Impacts and Threats Posed by European Naiad

European Naiad grows and reproduces rapidly, and often displaces native species, reduces biodiversity, hampers recreational uses, and reduces real estate and aesthetic values.

- Once established, European Naiad can out-compete native vegetation, especially native naiads, and drive out the animals that depend on the native vegetation for survival.
- *N. minor* can produce dense large mats of vegetation on the water surface, thus intercepting sunlight to the exclusion of other submerged plants.
- Sediment levels often increase with increasing European Naiad abundance.
- Dense stands of European Naiad may greatly hamper fishing, boating, swimming and other activities and the loss of recreational and aesthetic value can cause a decline in surrounding lake property value.
- When dense mats of European Naiad decay, the available oxygen in the water maybe significantly depleted. The resulting low oxygen conditions (anoxia) can lead to fish kills.

Management Methods

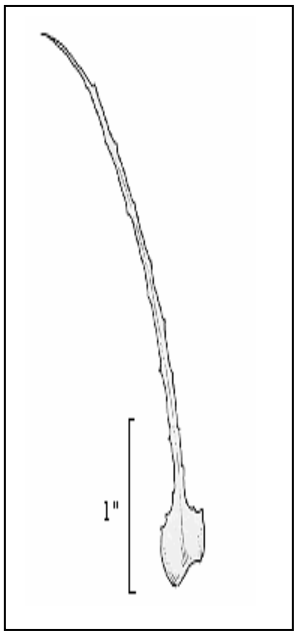
Management methods currently include mechanical removal, benthic barriers and herbicides.

- Although harvesting can greatly reduce the European Naiad biomass in a waterbody, harvesting causes fragmentation and some fragments are capable of producing new plants. Viable fragments may drift down stream or attach to boats and wildlife and create new infestations elsewhere.
- Several herbicides have been use to control European Naiad, including Diquat, Endothall and Fluridone.
- Benthic barriers maybe 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, and need to be properly anchored and maintained.

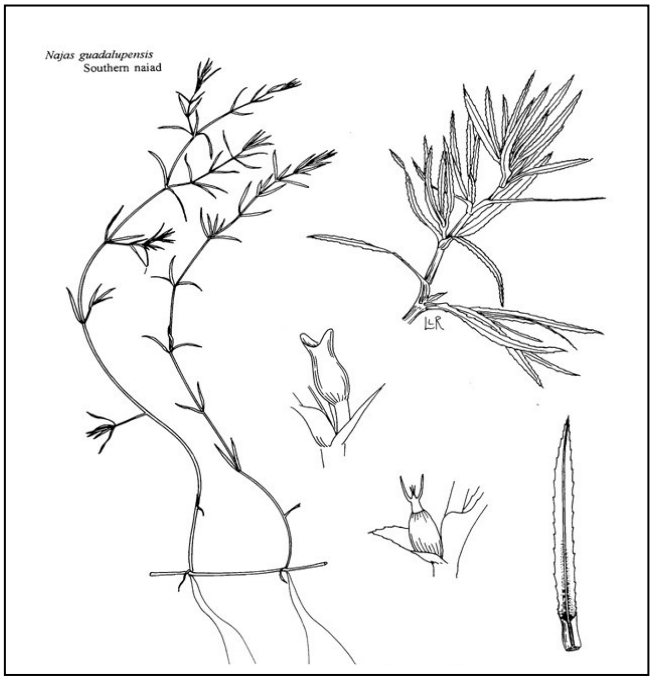
Other Information

- European Naiad (*Najas minor*) is on the Massachusetts Prohibited Plant list (January 1, 2006)
- There are seven other *Najas* species in the United States, however, identification beyond the genus level is frequently challenging. Four species occur in Massachusetts.
- European Naiad was first discovered in the United States in the 1930's.
- European Naiad is occasionally called Slender Naiad or Brittle Leaf Naiad.
- Informational websites:
  http://www.npwrc.usgs.gov/resource/1999/neflor/species/4/najamino.htm (USGS website)
  http://www.wes.army.mil/el/aqua/apis/plants/html/najas_mi.html
  www.ProtectYourWaters.net (Aquatic Nuisance Species national web site)
  http://aquat1.ifas.ufl.edu/ (Florida Center for Aquatic and Invasive Species)
- European Naiad is often confused with other native *Najas* species, however, *N. minor* has seeds with white ladder-like rows and leaves with 6-15 deep conspicuous teeth on the margins. The leaf lobe has a more square-like shape rather than a rounded shape. (See illustration below)

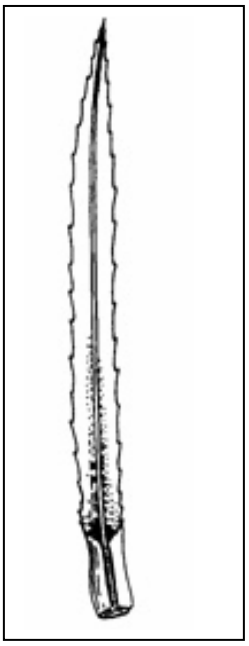
N. minor* compared to the Native *N. guadalupensis



N. minor leaf



Native *N. guadalupensis*



N. guadalupensis leaf

References:

1) Literature sources:
www.mass.gov/dcr/waterSupply/lakepond/geir.htm (Generic Environmental Impact Report)
USGS Website: http://www.npwrc.usgs.gov/resource/1999/neflor/species/4/najamino.htm
US Army http://www.wes.army.mil/el/aqua/apis/plants/html/najas_mi.html
2) Photograph was obtained from the USGS web site:
http://www.npwrc.usgs.gov/resource/1999/neflor/species/4/najamino.htm
3) Line drawings obtained from:
N. minor : http://www.npwrc.usgs.gov/resource/1999/neflor/species/4/najamino.htm
N. guadalupensis: http://plants.ifas.ufl.edu/nagupic.html
3) The distribution map was taken from:
USDA Plant Site: http://plants.usda.gov/cgi_bin/plant_profile.cgi?symbol=NAMI

For more information please contact:

D.C.R Office of Water Resources, Lakes and Ponds Program
Michelle Robinson at: michelle.robinson@state.ma.us

Or visit the Lakes and Ponds web site at: http://www.mass.gov/lakesandponds
Prepared by Michelle Robinson: January 2004