

Wayne County New York Quick Reference Invasive Plant Species Identification Guide



For more information call us at:

315.946.4136

10 Leach Road

Lyons, NY 14889

What is an Invasive Species?

Invasive species are aggressive, non-native (or alien) plants or animals that invade and out compete many native species. Humans are the primary method of spread of invasive species and many times we do this unknowingly. It is best to clean field equipment frequently before being transported to a new location for prevention of contamination of any plants or animals.



Who we are and what we do:

The Wayne County Soil and Water Conservation District's (SWCD) main focus is mitigating natural and human impacts on water quality, soil health and other abundant natural resources. The SWCD provides a team of workers to help manage the growing problem of nuisance and invasive plants that are invading the Wayne County waterbodies.

This guide was created by: Erin Strobl, District Educator Assistant at the Wayne County SWCD

2012

2

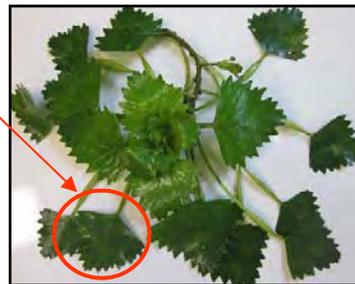
Table of Contents

Aquatic	Terrestrial Herbaceous
Water Chestnuts4-5	Japanese Knotweed31-32
European Frogbit6	Black Swallowwort32-33
Floating plant look-a-likes7	Giant Hogweed34-35
Hydrilla8-9	Garlic Mustard36
Brazilian Waterweed10	Spotted Knapweed37
Waterweed/Hydrilla look-a-likes11	Leafy Spurge38
Eurasian Milfoil12-13	Summary list of herbaceous plants39
Fanwort14	
Parrot-feather15	Vines
Feathery plant look-a-likes16-18	Oriental Bittersweet40
Curly Leaf Pondweed19-20	Summary of vine plants41
Starry Stonewort21	
Starry Stonewort look-a-likes22	Trees/Shrubs
Blue-green algae23	Common Buckthorn..... 42-43
Summary list of aquatic plants24	Honeysuckles44-45
	Mutliflora Rose46
Wetland	Japanese Barberry47-48
Common reed (<i>Phragmites</i>)25-26	Norway Maple49-50
Purple loosestrife27-28	Tree of Heaven51-52
Reed Canary-grass28-29	Autumn Olive52-53
Summary list of wetland plants30	Black Locust54-55
	Summary list of trees/shrubs56
	Stormwater & Water Conservation.....57-58
	References59-60

Water Chestnuts (*Trapa natans*) - Alien

AQUATIC

- Annual, aquatic, floating-leaf plant
- Bright green, triangular-shaped leaves that are toothed
- One rosette can produce up to 20 sharp, spiny seeds, viable up to 12 years!



[Above] Water chestnut rosette

- Can be controlled with manual removal



[Above] Dense mat of water chestnuts



[Above] Range of water chestnuts (green = present). From plants.usda.gov

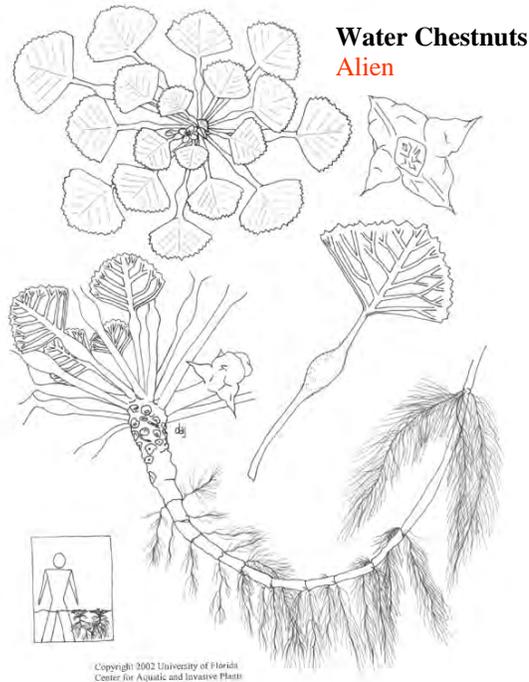
★ **Priority aquatic concern in Wayne County**

Water Chestnuts are native to Eurasia. They were intentionally introduced into the United States in the 1870s.

- Leaf stems are inflated and there is an air bladder at the base of the leaves to help the plant remain on the surface of the water
- Underwater leaves that are attached to the submerged stem may be feathery

★ **Priority aquatic concern in Wayne County**

AQUATIC

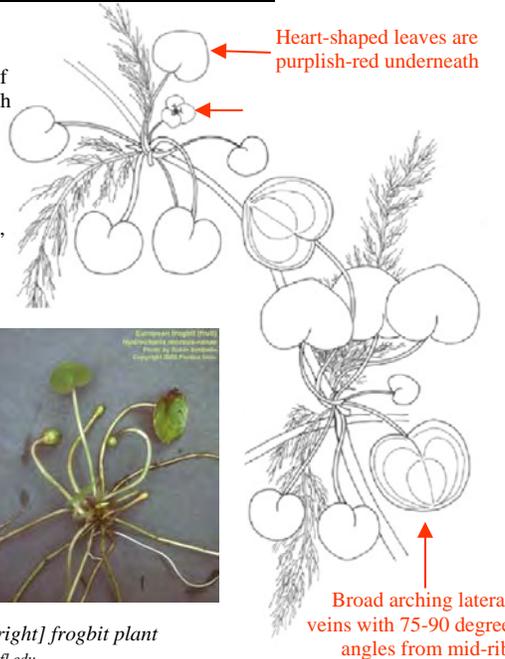


European Frogbit (*Hydrocharis morsus-ranae*)

AQUATIC

Alien

- Can look like a miniature water lily
- Thick, leathery leaves measure a half inch to 2¼ inches in length and width
- White, single, 3-petaled flower
- Inhabits quiet edges of rivers, lakes, and open marshes
- Can proliferate via stem fragmentation or by buds that sink, overwinter, and float to top in spring for new plants to grow
- Range: Northeastern US and eastern Canada

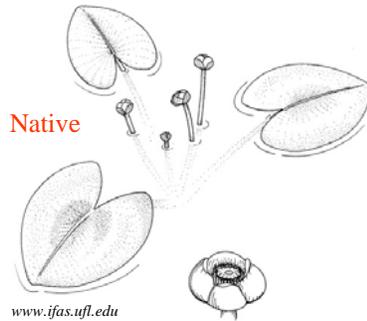


[Above left] Frogbit leaves and [Above right] frogbit plant with fruits. Both photos accessed from www.ifas.ufl.edu



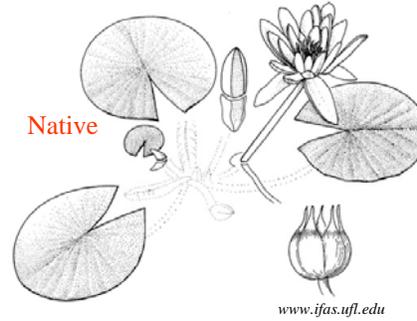
European Frogbit [left] and Water Chestnuts can commonly be confused with native Spatterdock and Water Lilies (see below).

Photo from: www.ifas.ufl.edu



Assume Spatterdock [above left] if:

- Heart-shaped leaves, up to 16 in. long
- Parallel or overlapping rounded lobes
- Yellow Flowers
- Large mid-rib
- Found in ponds or slow moving rivers



Assume Water lily [above right] if:

- Round leaves with pointed lobes, 6-8 in. long
- Multiple petals on white flowers that float on water surface
- Veins on leaf radiate out from where leaf and stem meet
- Found in quiet waters

7

Hydrilla (*Hydrilla verticillata*) - Alien

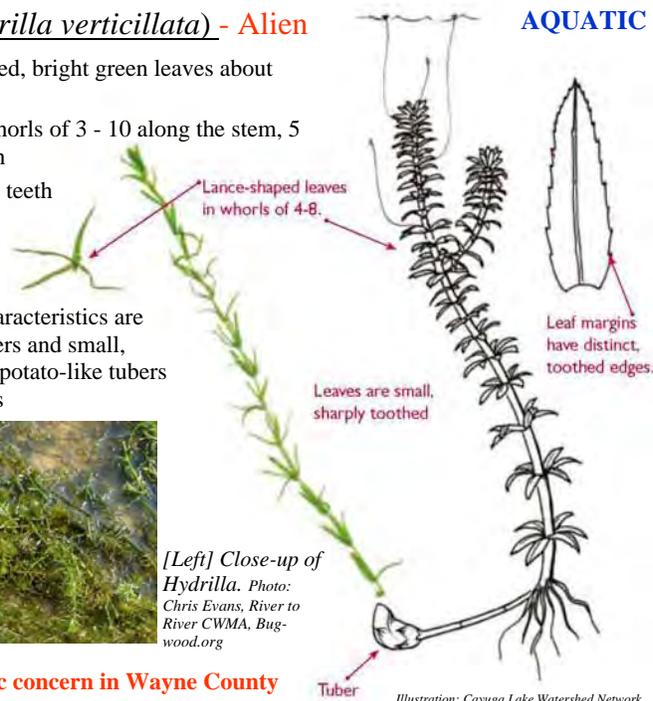
AQUATIC

- Hydrilla has pointed, bright green leaves about 5/8" long
- Leaves grow in whorls of 3 - 10 along the stem, 5 being most common
- Leaves have small teeth on the edges

- Distinguishing characteristics are floating white flowers and small, white to yellowish, potato-like tubers attached to the roots



[Left] Close-up of Hydrilla. Photo: Chris Evans, River to River CWMA, Bugwood.org



★ **Priority aquatic concern in Wayne County**

Illustration: Cayuga Lake Watershed Network

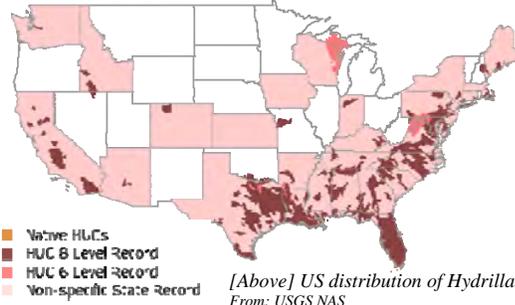
8

AQUATIC

- Careful not to confuse **Hydrilla** with the native, non-invasive American Elodea which has 3 whorled, smooth-edged leaves

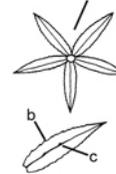


• [Right] Close-up of *H. verticillata* stem and leaves.
Photo: Robert Vidéki, Doronicum Kft., Bugwood.org

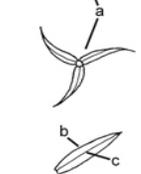


★ **Priority aquatic concern in Wayne County**

Alien HYDRILLA



Native AMERICAN ELODEA



Copyright 1990 University of Florida
Center for Aquatic and Invasive Plants

9

Brazilian waterweed (*Egeria densa*) - Alien

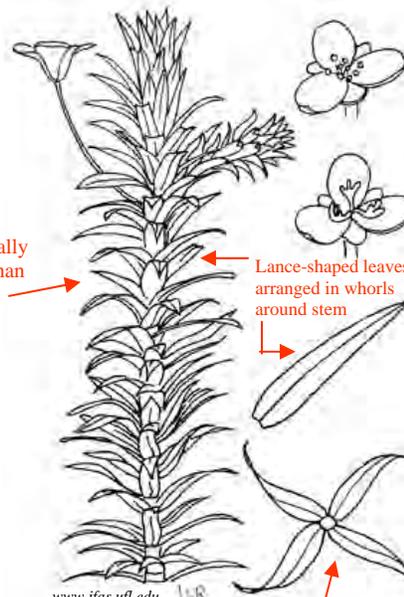
AQUATIC

- Leaves feel smooth
- Small serrations along the leaf margins are difficult to see with the naked eye
- Can be found in both still and flowing waters of lakes, ponds, small streams, and ditches



[Above] Brazilian waterweed:
www.ifas.ufl.edu

Whorls of leaves are typically closer together or denser than those of American elodea



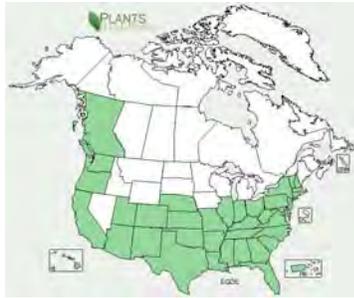
Lance-shaped leaves arranged in whorls around stem

4-6 leaves per whorl

10



[Above] Brazilian waterweed:
www.ifas.ufl.edu



[Above] Range of Brazilian waterweed
(green = present). From plants.usda.gov

Brazilian waterweed may be confused with some native look-a-likes, such as American elodea (see section on Hydrilla for picture) and Southern naiad

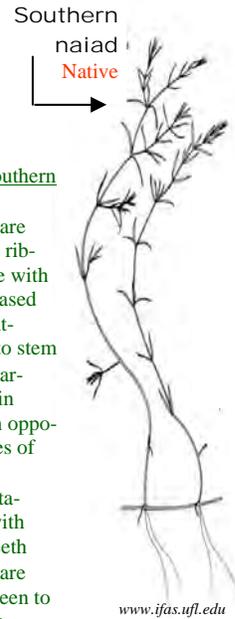
Assume American elodea if:

- Small, lance-shaped leaves in whorls of no more than three
- Leaves appear and feel smooth
- Lack of spines on mid-rib
- No tubers when pulled from sediment

Assume Southern naiad if:

- Leaves are narrow, ribbon-like with broad based where attached to stem
- Leaves arranged in pairs on opposite sides of stem
- Leaf is tapered with small teeth
- Leaves are deep-green to purplish-green

AQUATIC



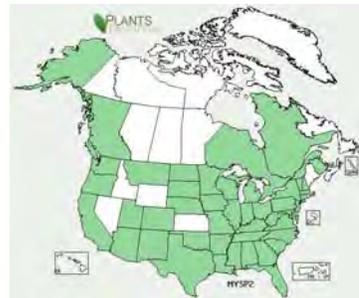
Eurasian Milfoil (*Myriophyllum spicatum*) - Alien AQUATIC

- Aquatic plant
- Green leaves whorled around stem with reddish-brown tip
- May be found in dense mats
- Can be manually removed, but proliferations via fragmentation, so chemical herbicides may be more effective



Photo by Alison Fox, University of Florida, available from Bugwood.org

★ **Priority aquatic concern in Wayne County**



[Above] Range of Eurasian milfoil
(green = present). Photo from plants.usda.gov



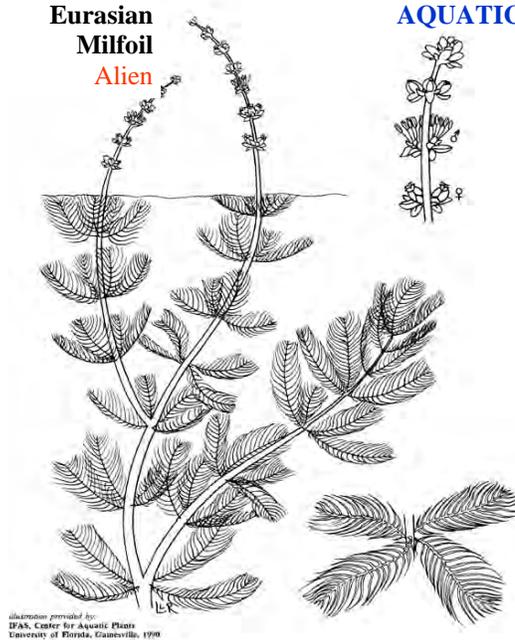
[Above] Dense mat of milfoil

Eurasian milfoil:

- Careful not to confuse with Northern water-milfoil (a native relative). The native version has 7-10 leaflet pairs on a green stem that does not branch near the surface, whereas the invasive plant has 12-21 pairs of leaflets on a stem that does branch near the surface. Also, if you take the plant out of the water, Eurasian milfoil leaflets will collapse and the native version's will be more rigid.
- (The picture to the right is the Eurasian milfoil)

Eurasian Milfoil
Alien

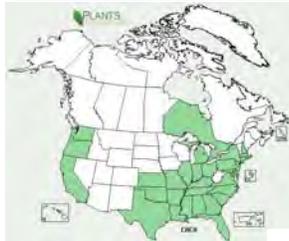
AQUATIC



★ **Priority aquatic concern in Wayne County**

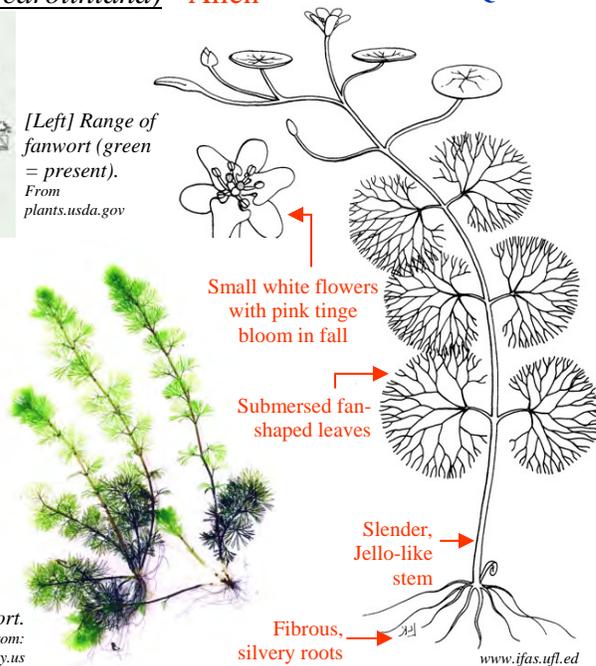
Fanwort (*Cabomba caroliniana*) - Alien

AQUATIC



- Fan-shaped leaves on short stalks arranged in opposite pairs
- Stems have a “tubular” appearance
- Small oval floating leaves are sometimes present
- Sometimes the plant looks reddish
- Found in lakes, ponds, and quiet streams

[Left] Fanwort. From: co.cayuga.ny.us



Parrot-feather (*Myriophyllum aquaticum*) - Alien **AQUATIC**

Emergent leaves are bright, blue-green and stiff in whorls of 4-6

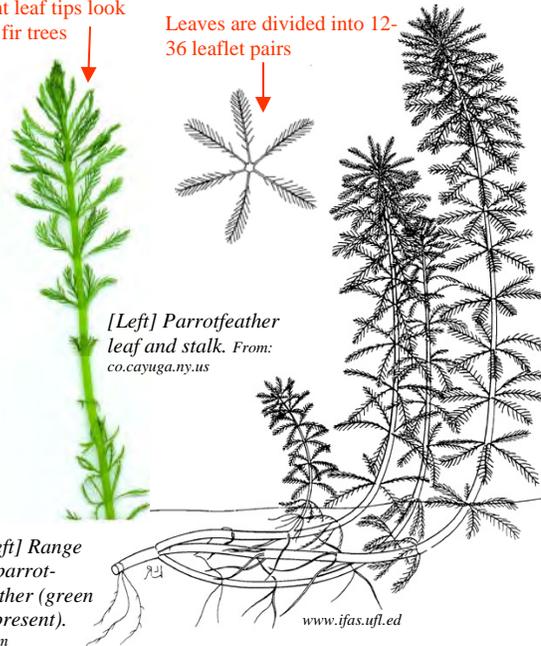
Emergent leaf tips look like tiny fir trees

Leaves are divided into 12-36 leaflet pairs

- Leaves are rigid, deeply serrated, and profuse
- Woody stems can grow over 5 feet long
- Prefers slow-moving waters of streams, rivers and ditches; also found in shallow lakes and ponds



[Left] Range of parrot-feather (green = present). From



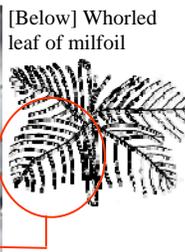
Native plants that look like Eurasian Milfoil, Fanwort or Parrot-feather

AQUATIC

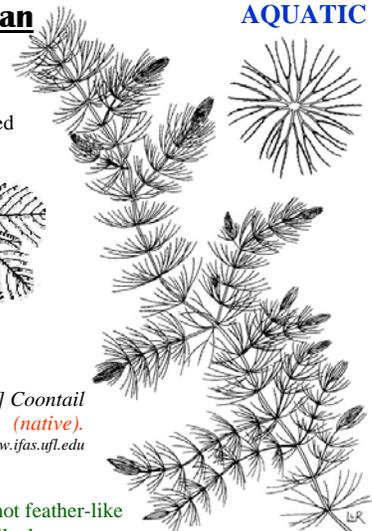
MILFOIL IDENTIFICATION



EURASIAN **NATIVE**
Northern water-milfoil (native) leaf
 [above right] compared to invasive Eurasian milfoil [above left]. Photo by: pcalr.org



[Below] Whorled leaf of milfoil



[Right] *Coontail (native)*.
 www.ifas.ufl.edu

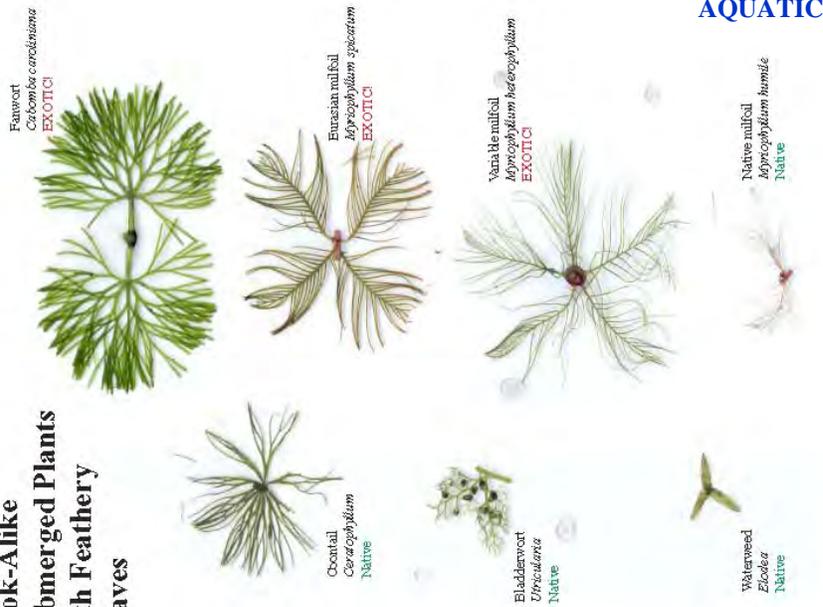
Native milfoil:

- Whorls of 4-5 feather-like leaves
- Leaves have 5-12 thread-like leaflets
- Leaves tend to be stiff when removed from water
- Leaf tip tapered
- Tips/shoots lack reddish-brown color
- Inhabits lakes, ponds and rivers

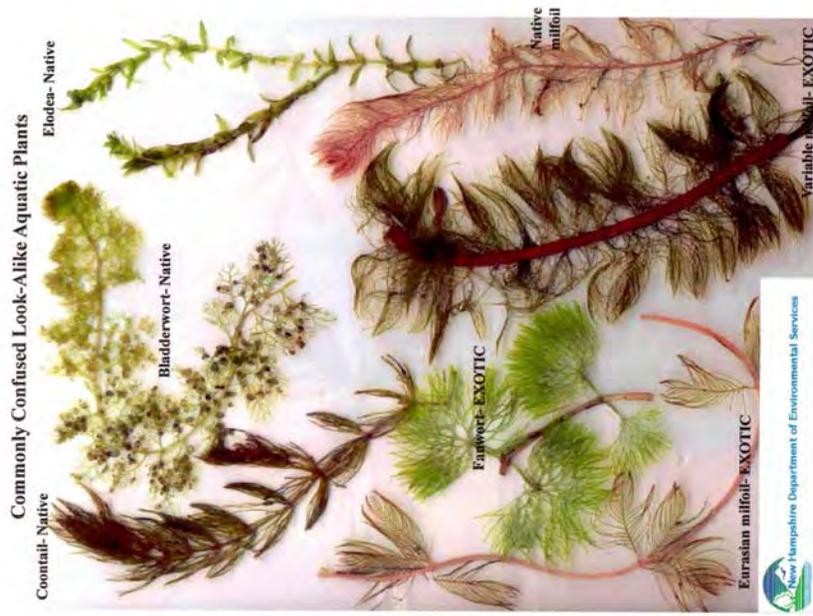
Coontail:

- Leaves not feather-like
- Bristle-like leaves are toothed and have fork-like division
- Whorls of leaves are tight at tips (resemble raccoon tail)
- Leaves keep shape out of water
- Inhabits slow moving waters of streams/rivers, as well as lakes and ponds

Look-Alike Submerged Plants with Feathery Leaves



AQUATIC



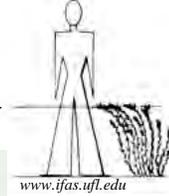
AQUATIC

Curly Leaf Pondweed (*Potamogeton crispus*)

AQUATIC

- Reddish stems with green, curly leaves
- Grows in clear to polluted waters
- May reproduce via overwintering buds, rhizomes, or fragmentation
- Peak growth is late spring/early summer
- Can be controlled with manual removal or permit mandated herbicides

Alien



www.ifas.ufl.edu



[Above] Range of curly leaf pondweed (green = present). Photo from plants.usda.gov

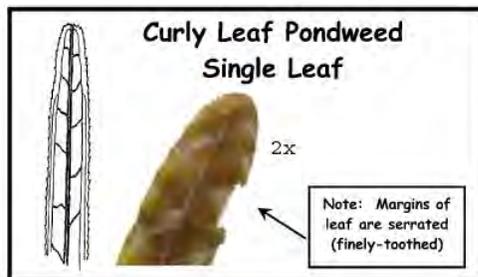
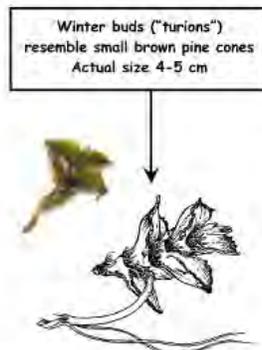


[Above] Curly Leaf Pondweed. plants.ifas.ufl.edu

AQUATIC

Curly Leaf Pondweed

[Right] Winter bud:
www.maclester.edu



[Above] Curly leaf pondweed Leaf:
www.maclester.edu



www.ifas.ufl.edu

Starry Stonewort (*Nitellopsis obtuse*) - Alien

AQUATIC

- Not a rooted plant, but a macro-algae
- Stem has giant cells with radiated whorled leaves
- Branches feel smooth and look like green gelatin
- Often found in a mass of plants including coontail, duckweed, etc..
- Sometimes found in deep, slow-moving water where other plants are scarce
- Best method of control is through mechanical harvesting before plant releases seeds



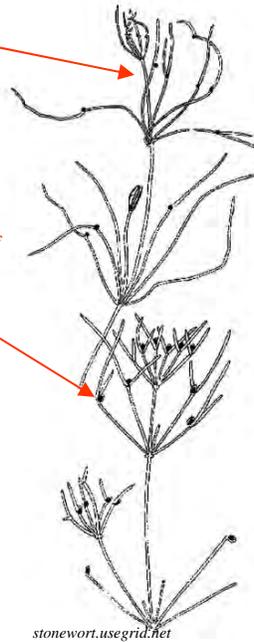
[Above] Cluster of starry stonewort. Photo by: michiganlakeinfo.com



Long, uneven-length branches that look angular at each joint

May have one cream-colored bulb at the base of each cluster of branches

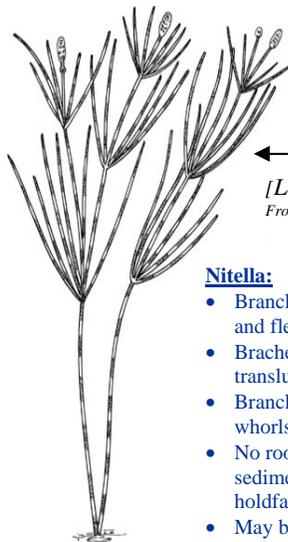
[Left] Starry stonewort
www.seagrant.su.nysb.edu



stonewort.usegrid.net

Native plants that look like starry stonewort

AQUATIC

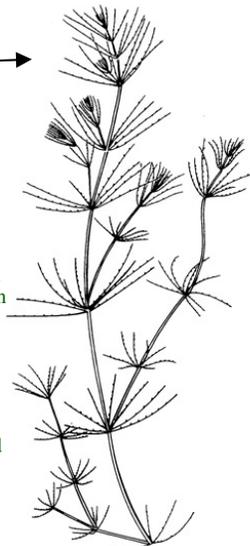


[Left] *Nitella* (Native)
From: www.ifas.ufl.edu

Nitella:

- Branches are smooth and flexible
- Branches/leaves a translucent green
- Branches arranged in whorls around stem
- No roots (attaches to sediments via a holdfast)
- May be free floating above sediments
- Inhabits shallow and deep waters of lakes and bogs

[Right] *Muskgrass* also known as *Chara* (Native). From: www.ifas.ufl.edu



Muskgrass (Chara):

- Plant is covered in a brittle, scaly coating
- Often smells "skunky" when squashed
- Branches are hard and ridged
- Feels gritty when crushed
- Inhabits fresh to brackish (salty) waters, both shallow and deep.

Blue-Green Algae (Cyanobacteria)

AQUATIC

★ **Priority aquatic concern in Wayne County**



- Extensive aquatic blooms that give the appearance of blue or green paint or scum
- **AVOID:** Toxic/ Harmful Algal Bloom
- If you come across blue-green algae, do not go in the water
- Report the occurrence to the Wayne County Soil and Water Conservation District (or any other local environmental agency that deals with aquatic issues if you are not in Wayne County)

23

List of priority invasive aquatic plants in New York State

From: The New York State Department of Environmental Conservation

Common Name - Scientific Name

Water Thyme - *Hydrilla verticillata*
Common Frogbit - *Hydrocharis morsus-ranae*
Floating Primrose - Willow *Ludwigia peploides*
Broadleaf Water-milfoil - *Myriophyllum heterophyllum*
Eurasian Water-milfoil - *Myriophyllum spicatum*
Water Chestnut - *Trapa natans*
Rock Snot (diatom) - *Didymosphenia geminate*
Carolina Fanwort - *Cabomba caroliniana*
Brazilian Waterweed - *Egeria densa*
Parrot-feather - *Myriophyllum aquaticum*
Yellow Floating Heart - *Nymphoides peltata*
Curly Pondweed - *Potamogeton crispus*

24

Common Reed (*Phragmites australis*) - Alien

WETLAND

Phragmites is a perennial grass that can reach 10-15 feet in height. The invasive form of *Phragmites* has hollow green stems with yellow nodes with blue-green to yellow-green long, thin leaves arranged along one side of the stem. Purple flowers bloom approximately in late July.



[Above] *Phragmites* towards fall. By: Jil Swearingen, USDI National Park Service, Bugwood.org

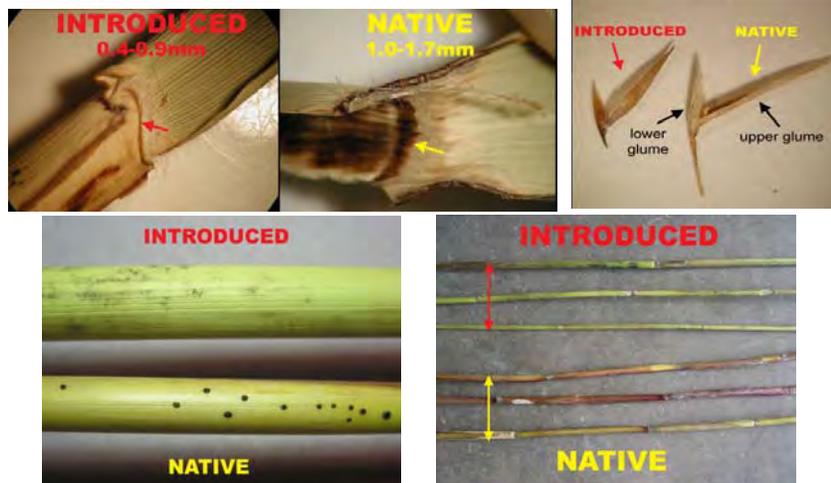


[Above] *Phragmites* is found in 48 states, and is considered invasive in the 18 states in red. www.nps.gov/plants/alien/fact/phau1.htm

[Above] (USDA-NRCS PLANTS Database / Hitchcock, A.S. (rev. A. Chase). 1950. Manual of the grasses of the United States.

How to tell the native *Phragmites* from the invasive *Phragmites*:

WETLAND



[Above top] Ligule width (left) and glume length of florets (right).
 [Above bottom] The native *Phragmites* may have fungal spots on the stem (left) and may have more green to maroon stems (right).

Photos from: www.nps.gov/plants/alien/fact/phau1.htm (Refer to this website for additional information and photos)

Purple Loosestrife (*Lythrum salicaria*) - Alien

WETLAND

- Tall, multi-stemmed, perennial forb
- Opposite or whorled leaves are dark-green, lance-shaped, 1.5-4 in. long and round or heart-shaped at the base
- Pink to purple-ish flowers have 5-7 petals and grow in 4-16 in. long spikes at the top of the stem (flowers occur in July to October)
- Habitat: serious invader of many types of wetlands
- Can spread very rapidly due to one plant producing as many as 2 million seeds per year



[Above] Purple loosestrife flower and full plant.
Photos by: John D. Byrd, Mississippi State University, Bugwood.org

USDA PLANTS Database, USDA NRCS PLANTS Database, Bugwood.org

Distribution map for Purple loosestrife and Reed canary-grass Alien

WETLAND



[Left] Purple loosestrife is found in most states and is considered invasive in the states colored in red. Map from: www.nps.gov

[Photo Below] Purple areas are purple loosestrife stands. Steve Dewey, Utah State University, Bugwood.org



Distribution map for Reed canary-grass (more info on next page) Alien

[Right] Reed Canary-grass distribution in the United States. Map from: plants.usda.gov



[Left] Reed Canary-grass (more info on next page). Photo from: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



Reed Canary-grass

Reed Canary-grass (*Phalaris arundinacea*)

WETLAND

Alien

- Perennial grass that grows up to 6 ft. tall
- Leaf blades are flat, 1-4 ft. long, up to 3/4 in. wide
- Sturdy hollow stems up to 1/2 inch wide, with reddish coloring near the top
- Flower/seed heads arise from hairless stems and can be green, purple, or brown in color and usually 3-6 in. in length (Flowers occur from May to July)
- Reed canary-grass is variable in morphology, so characteristics may depend upon the habitat

Notice how the leaf blades come off the stem at a 45° angle



[Above] USDA PLANTS Database, USDA NRCS PLANTS Database, Bugwood.org

[Above] Reed Canary-Grass. By: Richard Old, XID Services, Inc., Bugwood.org

29

List of priority invasive wetland and littoral plants in New York State

From: The New York State Department of Environmental Conservation

Common Name - Scientific Name

Uruguayan Primrose-willow - *Ludwigia grandiflora* spp.
Hexapetala

Floating Primrose-willow - *Ludwigia peploides* spp. *Glabrescens*

Purple Loosestrife - *Lythrum salicaria*

Common Reed Grass - *Phragmites australis*

Tall Glyceria - *Glyceria maxima*

Yellow Iris - *Iris pseudacorus*

Broad-leaf Pepper-grass - *Lepidium latifolium*

Marsh Dewflower - *Murdannia keisak*

Reed Canary-grass - *Phalaris arundinacea*

30

Japanese Knotweed (*Fallopia japonica*) -

**TERRESTRIAL/
HERBACEOUS**

- Alien**
- Grows up to 15 feet tall and has thick, hollow, bamboo-like stems that can be red to greenish
 - Leaves are broad, heart-shaped, and attached alternating on the stem
 - Flowers are small and greenish-white in branched sprays and bloom in late summer.
 - Knotweed has small winged fruits with small, shiny, triangular-shaped seeds



Broad heart-shaped alternating leaves

Greenish-white flowers



[Left] USDA PLANTS Database, USDA NRCS PLANTS Database, Bugwood.org, [Right bottom] Bugwood.org, [Right top] Steve Manning, Invasive Plant Control, Bugwood.org

Distribution maps for Japanese Knotweed and Black Swallowwort (More swallowwort info on next page) **Both Alien**

**TERRESTRIAL/
HERBACEOUS**



[Above] States where Japanese Knotweed (left) and Black Swallowwort (right) are considered invasive. (More info on Swallowwort on next page) Maps from www.nps.gov



[Left] Distribution of Japanese Knotweed in green.



[Right] Distribution of Black Swallowwort in green.

Maps from: plants.usda.gov

Black Swallowwort (*Cynanchum louiseae*) -

**TERRESTRIAL/
HERBACEOUS**

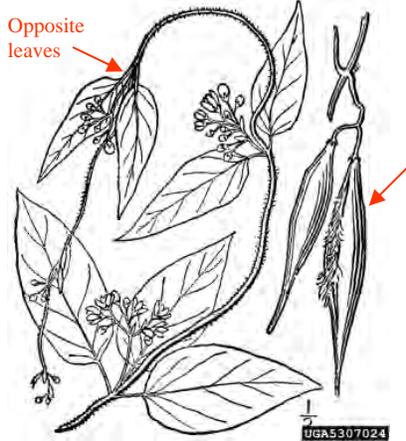
Alien

- Member of the milkweed family
- May be seen on the ground standing upright or intertwined like a climbing vine around other plants or trees
- One plant can be 3 to 6 ft long.
- Has a small 5-petaled, star-shaped, maroon to brown flower
- Towards the end of summer, will have light green, slender, floss-filled seed pods.
- Found in disturbed areas along roadsides, in fields or parks

Green seed pods



Opposite leaves



All photos on page by: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

[Above] USDA PLANTS Database, USDA NRCS PLANTS Database, Bugwood.org

Giant Hogweed (*Heracleum mantegazzianum*)

**TERRESTRIAL -
HERBACEOUS**

Alien

- Grows tall by June (up to 10-15 ft)
- Thick stem has dark purple blotches and raised bumps and may have some bristles
- Leaf stalks are spotted, hollow and covered with sturdy bristles
- Very large leaves are compound, lobed, and deeply indented (can be several feet in width)
- Numerous white flowers form a flat-topped, umbrella-shaped head that can be a foot or more in diameter
- **DO NOT TOUCH - SAP IS POISONOUS!**



*Note the large leaves and purple blotches on the stem. Stem is also very thick

**If you find giant hogweed, report it to the NYS Department of Environmental Conservation (DEC)

Removal: **DO NOT BURN! DO NOT COMPOST! Contact professionals or the DEC to ensure safe procedures are followed**

Giant Hogweed (*Heracleum mantegazzianum*)
Alien

**TERRESTRIAL/
 HERBACEOUS**

[Below] Exposure to Giant hogweed sap may cause severe rashes that are hyper-sensitive to sunlight. May persist for months. If you do need to remove hogweed, contact professionals and where proper protective clothing (including water-resistant gloves). Photo from: USDA APHIS PPQ Archive, USDA APHIS PPQ, Bugwood.org



[Above] Giant hogweed distribution.
 Plants.usda.gov

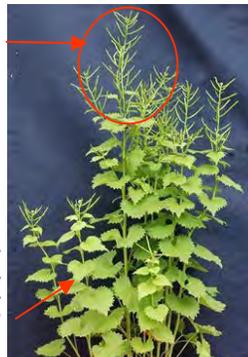
If exposed to the sap:

- Wash skin fully with soap and water
- Keep exposed areas away from sunlight for 48 hours
- If significant blisters develop consult physician
- If it gets in eyes, flush with lots of water and see doctor
- Where sunscreen on exposed areas in the following months

Garlic Mustard (*Alliaria petiolata*) **TERRESTRIAL/HERBACEOUS**

Alien

- **First year:** dark green, heart or kidney bean shaped leaves with round teeth that grow close to the ground
- **Second year:** plants stalked (up to 2') with alternating, triangular-shaped leaves with sharper teeth. Small, white flowers on the top of the stalk appear in the spring (die by June). Twig-like fruits appear at the top of plant and release seeds mid summer
- **Garlic odor when leaves are crushed**



[Right] Mature garlic mustard. Bruce Ackley, The Ohio State University, Bugwood.org



[Left] Garlic Mustard Flower. David Cappaert, Michigan State University, Bugwood.org



[Left] Young, first year garlic mustard. Jill Swearingen, USDI National Park Service, Bugwood.org



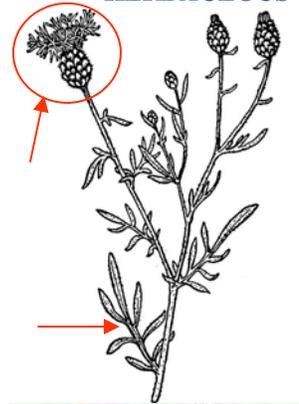
[Above] Range of garlic mustard in green.
 From plants.usda.gov

Spotted Knapweed (*Centaurea stoebe* ssp.)

Alien

**TERRESTRIAL/
HERBACEOUS**

- Thistle-like flower head
- Branched, wiry stem with leaves deeply cleft
- Flowers pink (sometimes purple or white) with outer florets simulating rays
- Plant does not have spines
- Low growing plant (up to about 1-2 feet in height)
- Typically found in fields or along roads



[Above left] Stand of Spotted knapweed. Photo from: www.upproject.org

[Above Right] Spotted knapweed buds/flowers. Photo by: Jim Story, Montana State University, www.invasive.org

[Right] Distribution of Spotted Knapweed (green = present). From plants.usda.gov.

Leafy Spurge (*Euphorbia esula*) **Alien**

**TERRESTRIAL/
HERBACEOUS**

- Flowers are yellow to greenish and in a small umbel (or umbrella shape)
- Flowers are small and are surrounded by a larger petal-like bract
- Juice of the plant is milky
- Leafy spurge has broader leaves than other spurges, but are still long and narrow when compared to other types of plants
- Plant grows up to 2 feet in height and invades dry soils and roadsides



[Above] Stand of leafy spurge. By: L.L. Berry, Bugwood.org



[Above] Leafy Spurge Flower. From: Norman E. Rees, USDA Agricultural Research Service - Retired, Bugwood.org

[Right] Full plant. By: Rob Routledge, Sault College, Bugwood.org

[Above] Distribution of Leafy Spurge (green = present) Plants.usda.gov

**List of priority invasive herbaceous terrestrial plants
in New York State**

From: The New York State Department of Environmental

Common Name - Scientific Name

Garlic Mustard - <i>Alliaria petiolata</i>	Canada Thistle - <i>Cirsium arvense</i>
Slender False Brome - <i>Brachypodium sylvaticum</i>	Chinese Yam - <i>Dioscorea polystachya</i>
Black Swallowwort - <i>Cynanchum louiseae</i>	Cut-leaf Teasel - <i>Dipsacus laciniatus</i>
Pale Swallowwort - <i>Cynanchum rossicum</i>	Winter Creeper - <i>Euonymus fortunei</i>
Japanese Knotweed - <i>Fallopia japonica</i>	Cypress Spurge - <i>Euphorbia cyparissias</i>
Japanese Stilt Grass - <i>Microstegium vimineum</i>	Leafy Spurge - <i>Euphorbia esula</i>
Lesser Celandine - <i>Ranunculus ficaria</i>	Giant Hogweed - <i>Heracleum mantegazzianum</i>
Wild Chervil - <i>Anthriscus sylvestris</i>	Japanese Hops - <i>Humulus japonicus</i>
Mugwort - <i>Artemisia vulgaris</i>	Cogon Grass - <i>Imperata cylindrica</i>
Small Cargrass - <i>Arthraxon hispidus</i>	Chinese Lespedeza - <i>Lespedeza cuneata</i>
Narrowleaf Bittercress - <i>Cardamine impatiens</i>	Garden Loosetrife - <i>Lysimachia vulgaris</i>
Spotted Knapweed - <i>Centaurea stoebe ssp. Micranthos</i>	Chinese Silver Grass - <i>Miscanthus sinensis</i>
	Wavyleaf Basketgrass - <i>Oplismenus hirtellus</i>
	Cup-plant - <i>Silphium perfoliatum</i>

Oriental Bittersweet (*Celastrus orbiculatus*)

Alien

- High-climbing vine (up to 60ft)
- Almost circular leaves are alternating on the stem and are finely toothed (leaves about 2-5" long)
- Has small buds that are pointed at set a right angle to the stem
- Stems are round, hairless, brown and thornless
- Flowers are small, greenish and clustered (May to June)
- Fruits are clustered and are red and circular. The fruits may have orange-colored seed pods. (Fruits begin to form in Sept.)

**TERRESTRIAL/
VINE**



[Above left] Leaves of oriental bittersweet. By: Linda Haugen, USDA Forest Service, Bugwood.org



[Above right] Oriental bittersweet engulfing trees. By: John M. Randall, The Nature Conservancy, Bugwood.org



[Above] Fruit of oriental bittersweet. By: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



[Above] Distribution in green. From: plants.usda.gov

List of priority invasive terrestrial vines in New York State

From: The New York State Department of Environmental Conservation

Common Name - Scientific Name

Oriental Bittersweet - *Celastrus orbiculatus*

Japanese Honeysuckle - *Lonicera japonica*

Mile-a-minute Weed - *Persicaria perfoliata*

Kudzu - *Pueraria montana*

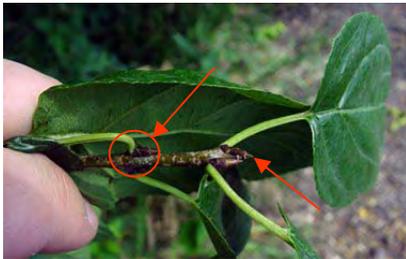
Porcelain Berry - *Ampelopsis brevipedunculata*

Japanese Virgin's-bower - *Clematis terniflora*

Common Buckthorn (*Rhamnus cathartica*)

Alien

- Medium to large shrub growing up to 16 feet tall
- Leaves are dark green, elliptic, hairless, and finely toothed (most leaves will be opposite, but some may look alternate). Average leaf size is approximately 1-2" long
- Twigs are dark and unlined
- Buds (where leaf attaches to stem) have many scales
- Inner bark yellow
- Small, greenish, clustered flowers form in May to June. After, fruits form that are dark, clustered near twigs and look berrylike



[Left] Bud location of common buckthorn.
Chris Evans, River to River CWMA, Bugwood.org

TERRESTRIAL SHRUB/TREE

[Right above] Berries of the buckthorn plant.



[Right below] Leaves of common buckthorn. Note how the veins curve.

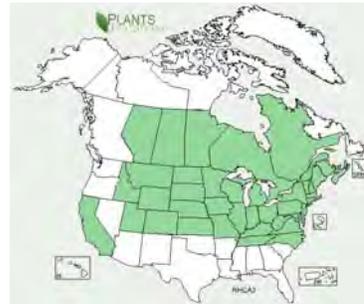
Both [right] photos: Paul Wray, Iowa State University, Bugwood.org



Common Buckthorn (*Rhamnus cathartica*)

Alien

**TERRESTRIAL
SHRUB/TREE**



[Above left] Common buckthorn shrub

[Above right] Small, greenish flowers of buckthorn located close to stem.

Photos: Chris Evans, River to River CWMA, Bugwood.org

[Right] Distribution of Common buckthorn in green.
Map: plants.usda.gov

43

Honeysuckle 4 species below are Alien

Amur Honeysuckle (*Lonicera maackii*)

Morrow's Honeysuckle (*Lonicera morrowii*)

Tartarian Honeysuckle (*Lonicera tartarica*)

(also Japanese Honeysuckle (*L. japonica*) which is a vine—not pictured)

**TERRESTRIAL
SHRUB/TREE**

- All of the above species of honeysuckles can grow in an array of habitats including pastures, forest understory and edges, and various disturbed areas
- All the above species are perennial shrubs except *L. japonica* (vine)
- Shrubs can grow up to 15 feet in height
- Green, egg-shaped leaves (1-3" in length) are arranged oppositely on the stem. *L. morrowii* tends to be gray-hairy beneath.
- Fragrant, small, tubular flowers that range from white to various shades of pink/crimson (May to June). *L. tartarica* tends to have pink flowers more than white flowers. *L. morrowii* and *maackii* tend to have yellow/white flowers
- *L. morrowii* and *L. tatarica* produce ¼ inch red berries (*L. tartarica* and *morrowii* may sometimes be yellow/orange ish) from mid-summer through early-fall; *L. maackii*'s dark-red berries don't ripen until late-fall; *L. japonica* produces dark-purple or black berries in the fall
- Stems of all four are hollow. Native species of honeysuckles can look very similar to invasive species. Typically, native species' stems will not be hollow



[Above] States where *L. morrowii* (top) and *L. tartarica* (bottom) are invasive. (www.nps.gov)

44

Honeysuckles

TERRESTRIAL
SHRUB/TREE

Alien
Tartarian Honeysuckle



Tartarian honeysuckle
Flower: Patrick Breen, Oregon State University, Bugwood.org
Fruit: Chris Evans, River to River CWMA, Bugwood.org

Alien
Morrow's Honeysuckle



Morrow's honeysuckle
Fruit: Stacey Leicht, University of Connecticut, Bugwood.org

Alien
Amur Honeysuckle



Amur honeysuckle:
Flower: Chuck Bargeron, University of Georgia, Bugwood.org
Fruit: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Multiflora Rose

(*Rosa multiflora*) **Alien**

- Alternating, compound leaves with 7-9 leaflets
- Distinct hairs/fringe at branch points extending up to halfway up the length of the leaf stalk
- Large thorns
- Twigs and stems mostly green or red
- White flowers that bloom in late May or June and then turn into clusters of red berries-like "hips" by September

TERRESTRIAL - SHRUB/TREE



[Above] Hairs at branch points of multiflora rose. Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



[Above] Flower of multiflora rose. James H. Miller, USDA Forest Service, Bug-



[Above] Range of multiflora rose (green = present). From plants.usda.org



[Left] Multiflora rose. From www.greatswamp.org

Japanese Barberry (*Berberis thunbergii*)

**TERRESTRIAL
SHRUB/TREE**

Alien

- Upright, thorny shrub with small wedge-shaped leaves that are not toothed. (leaves ½” to 1½” long) Leaves green to reddish or yellowish
- Twigs brown with inner bark/wood yellow. Twigs have thorns present
- Grows to a height of up to 5’
- Has yellow flowers in April to May with fruits appearing later (fruits may be present into winter). Fruits are red, oval and globular.
- Found in many gardens and yards as an ornamental shrub as well as pastures, open habitats and some forest understories



[Left] Red variety of Japanese barberry: By: Britt Slattery, US Fish and Wildlife Service, Bugwood.org
[Right] Yellow variety of Japanese barberry. By: John Ruter, University of Georgia, Bugwood.org

Japanese Barberry (*Berberis thunbergii*)

**TERRESTRIAL
SHRUB/TREE**

Alien



[Above left] Red berry-like fruit of barberry.



[Above right] Flowers of Japanese barberry.

Both photos by: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

[Right] Distribution of Japanese barberry in green.
From: plants.usda.gov



Norway Maple (*Acer platanoides*)

Alien

- Tree growing to heights of 40-70'
- Most closely resembles the native sugar maple, but has more leaf teeth
- Broken leaf stalks will produce a milky juice
- Buds are larger, green to reddish, and blunt
- Leaves can range from 2-8" in length and have an opposite arrangement
- Diameter of tree is approximately 1-2'
- Greenish flower in clusters and fruits are winged with wings spread out at a greater angle than the sugar maple (see next page)

TERRESTRIAL SHRUB/TREE

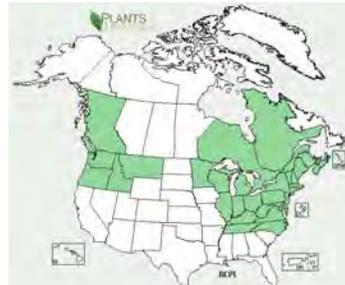


[Above] Flowers of the Norway maple. By: Jan Samanek, State Phytosanitary Administration, Bugwood.org



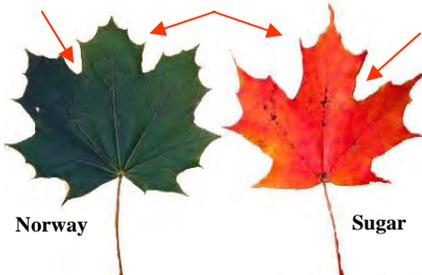
[Above] Norway maple leaf. By: Joseph O'Brien, USDA Forest Service, Bugwood.org

[Right] Norway maple distribution in green. From: plants.usda.gov

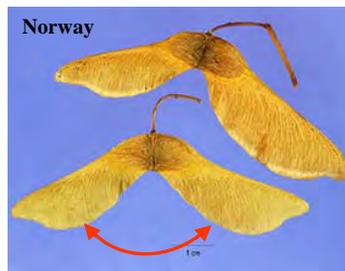


How to distinguish between the Norway maple (Alien) and Sugar maple (Native)

TERRESTRIAL SHRUB/TREE



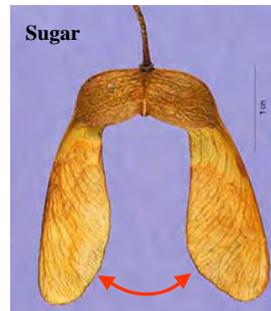
[Above] Norway maples have more teeth and have shallower lobes than the sugar maple
www.northshorewx.com/environment.asp



[Right] Wing angle of fruit for Norway maple (top) and Sugar maple (bottom) Both by: Steve Hurst @ USDA-NRCS PLANTS Database



[Left] Bud difference (at tip of twigs). By: Gary Fewless, botany.wisc.edu/herbarium/

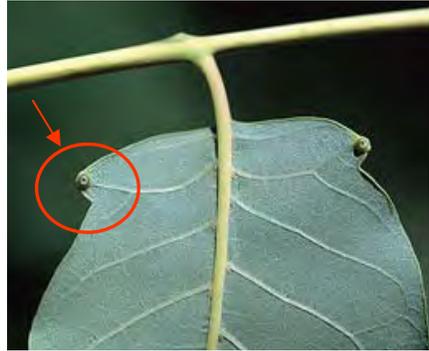


Tree of Heaven (*Ailanthus altissima*)

**TERRESTRIAL
SHRUB/TREE**

Alien

- Small to large tree
- Large leaves with 11-41 leaflets, full leaf (with all leaflets) is about 12-24" long and have an alternate arrangement
- Leaflets are not toothed except for a pair of distinctive gland-tipped teeth near the base
- Twigs are hairless, yellow-brown, with a yellow-ish pith (pith = stem center if you snap twig in half)
- Smooth, gray-brown bark with narrow, light-colored grooves
- Flowers are small, yellowish and clustered (male blossoms have foul odor) (June-July)
- Fruit is dry, narrow, winged and contains one seed (appears beginning in Sept.)



[Above] Teeth and gland on underside/bottom of each leaflet. By: James H. Miller, USDA Forest Service, Bugwood.org



[Left to Right] Tree of heaven leaves with leaflets and the seeds of tree of heaven.

Left photo by: Paul Wray, Iowa State University, Bugwood.org. Right photo by: Chuck Barger, University of Georgia, Bugwood.org

Distribution maps of Tree of heaven and Autumn Olive (more info on Autumn Olive on next page)

Alien

**TERRESTRIAL
SHRUB/TREE**



[Left] Tree of heaven distribution in green.

From: plants.usda.gov

[Above] Tree of heaven. Photo by: Jan Samanek, State Phytosanitary Administration, Bugwood.org



[Left] Autumn Olive distribution in green.

From: plants.usda.gov

[Right] Autumn Olive Shrub. Chris Evans, River to River CWMA, Bugwood.org



Autumn Olive (*Elaeagnus umbellata*)

Alien

- Deciduous shrub from 3-20 ft. in height
- Leaves are elliptic, green on top, and silvery and dotted underneath. Leaves have alternate arrangement and are about 1" wide
- Flowers are small and yellowish. They appear in clusters near the stem around May to June
- Fruits are reddish and juicy (Sept to Nov.)
- Can form a dense shrub layer



[Above] Upper side of autumn olive leaves on the left and silvery underside of leaves on the right.
By: James H. Miller, USDA Forest Service, Bugwood.org

TERRESTRIAL SHRUB/TREE



[Above top] Autumn olive flower. By: Nancy Loewenstein, Auburn University, Bugwood.org

[Above bottom] Fruits of autumn olive. By: Pennsylvania Department of Conservation and Natural Resources - Forestry Archive, Bugwood.org

53

Black Locust (*Robinia pseudo-acacia* L.)

Alien

- Medium sized tree
- Once-compound leaves with 6-20, egg-shaped leaflets
- Unbranched strong thorns (up to 1 inch) present in pairs
- Has white-hairy buds at leaf scars
- Twigs are hairless
- Bark on older trees are dark, deeply ridged, and cross-hatched
- Flowers are white and in clusters (Bloom in May or June)
- Fruits are 2" - 6" long, flat seed pods (Sept. to April)
- Careful to not confuse with native honey locust who has unpaired, branched, longer (up to 3") thorns, and more slender leaflets (that may be doubly compound occasionally)
- Black locust is found throughout the US

[Right] Black locust tree. By: Jan Samanek, State Phytosanitary Administration, Bugwood.org



TERRESTRIAL SHRUB/TREE



Long, flat seed pods and white, draping clusters of flowers

[Above] Drawing of various characteristics of the black locust tree.
By: Zelimir Borzan, University of Zagreb, Bug-

54

Distinguishing Black Locust (Alien) from Honey Locust (Native)

TERRESTRIAL SHRUB/TREE



[Above Left] Black locust thorns. Note the shorter, unbranched nature and how they are found in pairs.
Photo by: Robert Vidéki, Doronicum Kft., Bugwood.org

[Above Left] One black locust leaf.
Photo by: Paul Wray, Iowa State University, Bugwood.org

[Above Right] Honey locust thorns. Typically, honey locust thorns are longer and are branched. These thorns are usually found unpaired.
Photo by: William Fountain, University of Kentucky, Bugwood.org

[Above Right] One honey locust leaf.
Photo by: Tom DeGomez, University of Arizona, Bugwood.org

List of priority invasive terrestrial shrubs and trees in New York State

From: The New York State Department of Environmental Conservation

Common Name - Scientific Name

- | | |
|--|--|
| Norway Maple - <i>Acer platanoides</i> | Multiflora Rose - <i>Rosa multiflora</i> |
| Japanese Angelica Tree - <i>Aralia elata</i> | Wineberry - <i>Rubus phoenicolasius</i> |
| Japanese Barberry - <i>Berberis thunbergii</i> | Rusty Willow - <i>Salix atrocinerea</i> |
| Autumn Olive - <i>Elaeagnus umbellata</i> | Sycamore Maple - <i>Acer pseudoplatanus</i> |
| Winged Euonymus - <i>Euonymus alatus</i> | Smooth Buckthorn - <i>Frangula alnus</i> |
| Amur Honeysuckles - <i>Lonicera maackii</i> | Border Privet - <i>Ligustrum obtusifolium</i> |
| Morrow's Honeysuckle - <i>Lonicera morrowii</i> (incl. <i>xbella</i>) | Amur Cork Tree - <i>Phellodendron amurense</i> |
| Common Buckthorn - <i>Rhamnus cathartica</i> | Beach vitex - <i>Vitex rotundifolia</i> |
| Black Locust - <i>Robinia pseudoacacia</i> | |



What is Stormwater & Why should I care?

Top reasons for everyone's concern for water quality



Stormwater is rain that falls on roofs, lawns or hard surfaces and is carried away by a system of pipes, culverts, and ditches.

As it flows over the land surface, stormwater picks up or is contaminated by debris, chemicals, dirt and other pollutants. This untreated water is discharged into the waterbodies we use for recreation, food and drinking water.

1. Public Safety—Contaminated stormwater can lead to significant health problems for local drinking water supplies.
2. Sediment clouds the water, which harms important aquatic habitats.
3. Excess nutrients cause algae blooms. Oxygen levels are depleted when the algae die and decompose. Fish and other organisms can't live without oxygen.
4. Bacteria and other pathogens (commonly found in fecal wastes) discharge in swimming areas create health hazards and cause beach closings.
5. Debris washed into the water can choke, suffocate or disable aquatic life (ducks, fish turtle and birds).
6. Household hazardous wastes (insecticides, pesticides, pain and auto fluids) can poison aquatic life.
7. Polluted stormwater often affects drinking water sources causing human health risks and water treatment costs rise.

57



6 Steps to Pollution Protection for Lawn & Garden Maintenance

Take Action. Prevent Pollution. Be a Water Steward

Step 1. Use fertilizers & pesticides sparingly, especially near waterbodies



Step 4. Cover piles of dirt & mulch to prevent them from washing into drains.



Step 2. Select native plants & grasses that are drought tolerant & pest resistant.



Step 5. Sweep up yard debris on hard surfaces rather than hosing down areas or blowing them into the street.



"Only rain down the drain."



Step 3. Compost & recycle yard waste.

For more information visit: www.owsc.org



Step 6. Plant grass or vegetation where soil is exposed



58

References:

Information:

- A Guide to Invasive Non-native Aquatic Species in Massachusetts. Massachusetts Department of Conservation and Recreation Lakes and Ponds Program. May 2010.*
- Center for Aquatic and Invasive Plants. University of Florida. IFAS Extension. [Www.ifas.ufl.edu](http://www.ifas.ufl.edu)*
- Center for Invasive Species and Ecosystem Health. [Www.invasives.org](http://www.invasives.org)*
- Invasive Weed Identification Guide. Cayuga Lake Watershed Network. 2005*
- New Hampshire Department of Environmental Services. [Www.des.nh.gov](http://www.des.nh.gov)*
- New York Invasive Species. Cornell Cooperative Extension. [Www.nyis.info](http://www.nyis.info)*
- New York State Department of Environmental Conservation*
- Peterson, Roger Tory and Margaret McKenny. Wildflowers - Northeastern/North-central North America. Peterson Field Guide Series. Houghton Mifflin Company. Boston, NY. 1996*
- Petrides, George. Tree and Shrubs. Peterson Field Guides. Houghton Mifflin Company. Boston, NY. 1972.*
- USDA, NRCS. 2012. The PLANTS Database (<http://plants.usda.gov>, 12 June 2012). National Plant Data Team, Greensboro, NC 27401-4901 USA.*

Images:

- Range maps:* plants.usda.gov
[USGS NAS](http://USGS.NAS)
[\(newyorkinvasivespecies.info\)](http://newyorkinvasivespecies.info)
Www.nps.gov
- All aquatic line drawings (unless indicated otherwise):*
www.ifas.ufl.edu
- Photos: Brazilian waterweed, frogbit:* www.ifas.ufl.edu
- Hydrilla illustration:* Cayuga Lake Watershed Network
(Rev. March 2012, CCE ISP)
- Pondweed illustration/photo:* www.macalester.edu
- Photos of Milfoil, Garlic mustard, Multiflora rose, hydrilla:*
www.bugwood.org
- Look-a-like images:* Www.des.nh.gov
- Multiflora rose drawing:* www.greatswamp.org
- Fanwort, parrotfeather photos:* co.cayuga.ny.us
- Milfoil comparison photo:* pcalr.org
- Stonewort illustration:* stonewort.usegrid.net
- Stonewort photo:* www.seagrant.sunysb.edu
- Terrestrial plant line drawings:* plants.usda.gov
Bugwood.org
- Phragmites photos:* www.nps.gov/plants/alien/fact/phau1.htm
- Various Terrestrial plants as indicated:* Bugwood.org
Www.invasive.org
Plants.usda.gov
- Spotted Knapweed:* www.upproject.org, www.invasive.org
- Maples:* [Gary Fewless. botany.wisc.edu/herbarium/](http://Gary.Fewless.botany.wisc.edu/herbarium/)
www.northshorewx.com/environment.asp