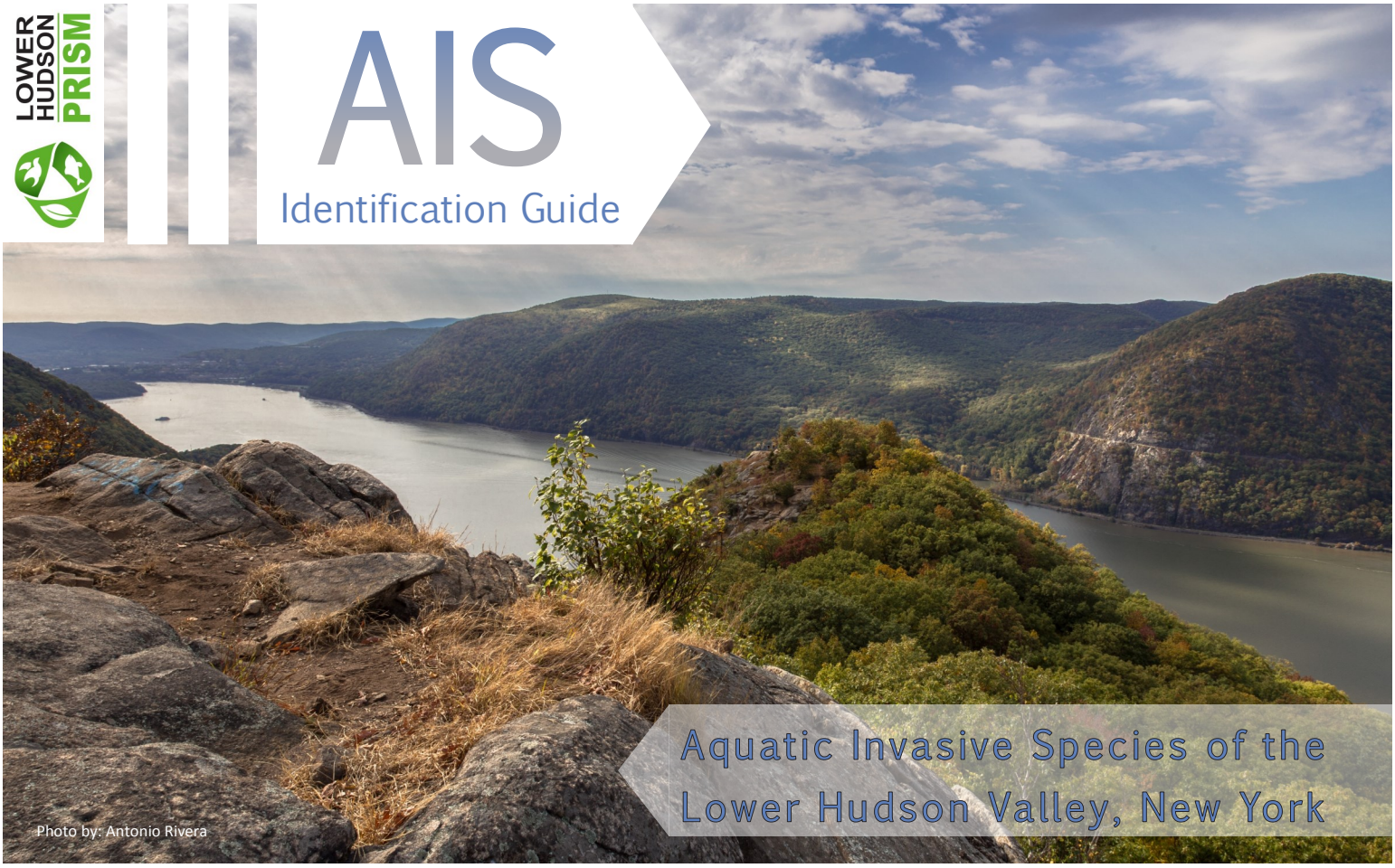
LOWER HUDSON PRISM

AIS

Identification Guide



Aquatic Invasive Species of the Lower Hudson Valley, New York

SAV
MYSP
4

Eurasian Watermilfoil

Myriophyllum spicatum

Identification

Leaves

- Four soft, feather-like leaves whorled around stem, widely spaced
- Each leaf has 12-15 leaflets and a blunt tip
- Loses shape out of water

Stem

- Can be reddish-brown to whitish-pink; highly variable, 3-9 ft long

Flowers & Reproductive Structures

- Very small, yellow, grow from spike above water
- In bloom mid-June to late-July

Eurasian Watermilfoil

Aquatic Invasive Species of the Lower Hudson Valley: Priority Species List

Plant (Submerged/Floating)

Eurasian watermilfoil
Curly-leaf pondweed
Brittle Naiad
Variable-leaf milfoil
Fanwort
Brazilian Elodea
Hydrilla
Waterwheel
Starry stonewort
Water chestnut
European frog-bit

Animal (Small Invertebrate)

Zebra mussel
Chinese mystery snail
Rusty crayfish
Spiny water flea/Fishhook water flea

Using this guide:

At the top of each species page is the growth form, four-letter code provided by the USDA Plants database, and the LHPRISM tiered categorization number.

SAV
ALVE
2

Growth Form

SAV: Submersed Aquatic Vegetation
FLLF: Floating-leaf
FRFL: Free-floating
INV: Invertebrate Animal

Tiers

1: Threat
2: Emerging
3: Established
4: Widespread

This guide was created for the Lower Hudson PRISM to provide information on identifying aquatic invasive species of high priority and data collection protocols for volunteer surveyors.

Curly-Leaf Pondweed

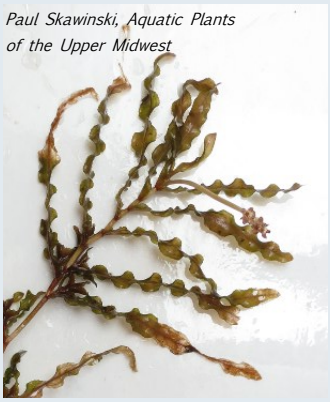
Curly-Leaf Pondweed

Potamogeton crispus

SAV
POCR
4

Chris Evans, University of Illinois, Bugwood.org

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



Paul Skawinski, Aquatic Plants of the Upper Midwest

Identification

Leaves

- Stiff, wavy leaves ~2-3 in. long
- Alternate arrangement along stem
- More dense toward end of stem
- Translucent, olive to red color
- Toothed/serrate margins

Stem

- Color varies, can grow up to 15 ft.

Flowers & Reproductive Structures

- Flowers grow from spike above water, in bloom mid-June
- Reproduces by turions (overwintering buds)

SAV
NAMI
3

Brittle Naiad

Najas Minor

Identification

Leaves

- Stiff, thin, recurved; ~1-2 in. long
- Opposite arrangement, appear as whorled clusters
- Bright green to green-brown
- Toothed/serrate margins

Stem

- Highly branched, appears "bushy"
- Holds form out of water

Flowers & Reproductive Structures

- Flowers small, inconspicuous at leaf axils

Graves Lovell, Alabama Department of Conservation and Natural Resources, Bugwood.org

Brittle Naiad

SAV
CACA
2

Fanwort

Cabomba caroliniana

Identification

Leaves

- Opposite, thin, vein-like, fan-shaped
- Two leaves attached by single petiole
- Secrete gelatinous mucous
- Occasionally has small emergent leaves
- Lose shape out of water

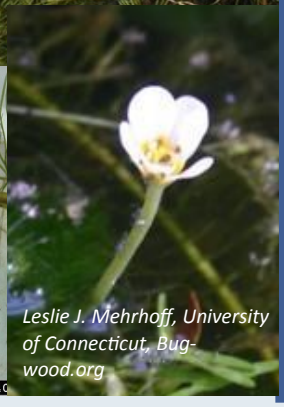
Stem

- Can reach up to 32 ft long
- Can survive free-floating for 6-8 weeks

Flowers & Reproductive Structures

- Small, white or yellow cupped flower
- In bloom May-September

Graves Lovell, Alabama Dept. of Conservation and NR, Bugwood.org



Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Fanwort

Variable-Leaf Milfoil

Variable-leaf Milfoil

Myriophyllum heterophyllum

SAV
MYHE
2

Identification

Leaves

- Has both submerged and emergent leaves
- Submerged: feather-like, whorls of 4-6, with 4-10 leaflets/leaf
- Emergent: lance-shaped, serrate, bract 10-15 cm above water
- Much fuller and close together than Eurasian watermilfoil

Stem

- Thick, reddish-brown

Growth

- Bottle-brush appearance

Brazilian Elodea

Brazilian Elodea

Egeria densa

SAV
EGDE
2

Identification

Leaves

- Bright green, very finely serrate, arranged in whorls of 3-6
- Looks similar to both native elodea and hydrilla, but leaves are much longer and more robust

Stem

- Dense, branching, up to 15 ft

Flowers & Reproductive Structures

- Small, white or yellow, 3 petals
- In bloom spring/summer

SAV
EGDE
2

Hydrilla

Hydrilla verticillata

Identification

Leaves

- Green, serrate, arranged in whorls of 3-5, typically 5
- Pointed/lance-shaped

Stem

- Dense, branching, up to 30 ft

Flowers & Reproductive Structures

- Has most reproductive potential;
- Turions (overwintering buds form in leaf axils), tubers (potato-like structures that grow in the sediment), fragmentation
- HIGH ALERT

Robert Vidéki, Doronicum Kft., Bugwood.org

David J. Moorhead, University of Georgia, Bugwood.org

Hydrilla

FRFL
ALVE
1

Waterwheel

Aldrovanda vesiculosa

Identification

Leaves

- Arranged in whorls of 4-9
- Carnivorous, clam-like traps at the tip of each leaf, surrounded by 4-6 bristles

Stem

- Rootless, free-floating, air-filled for floatation

Flowers & Reproductive Structures

- Small, white, only opens for a short period of time
- HIGH ALERT

Chris Doyle, Allied Biological, Bugwood.org

Barry Rice, CalPhotos

Carnivorousplantresource.com

Waterwheel

Hydrilla (Look-a-Likes)

Hydrilla | Brazilian Elodea | Native elodea

Comparison Images

Native elodea is common, has whorls of 3;
neither Brazilian or native Elodea produce tubers

Photo credit: Michael J. Grodowitz, U.S. Army Engineer Research and Development Center

Photo credit: Paul Skawinski, WI SeaGrant

Photo credit: Paul Skawinski, Aquatic Plants of the Midwest

Starry Stonewort

Starry Stonewort

Nitellopsis obtusa

FRFL
NIOB
1

Identification

Leaves

- Bright green, branch-like, arranged in whorls
- Appears plant-like; rootless macro-algae

Stem

- Can grow up to 7 ft.

Flowers & Reproductive Structures

- White star-shaped bulbils found at the base. May be in or on top of sediment
- ~size of a grain of rice
- HIGH ALERT

FLLF
TRNA
4

Water Chestnut

Trapa Natans

Identification

Leaves

- Triangular shaped, serrate, 2-4 cm
- Floating, arranged in a rosette
- Submerged leaves are feather-like

Stem

- Cord-like, buoyant, up to 16 ft

Flowers & Reproductive Structures

- Sharp, four-horned nut, develops under water.
- Living seeds are green, while dead seeds are black


EstuaryLive.pbworks.com


Mike Naylor, National Park Service


National Park Service

Carnivorousplantresource.com

Water Chestnut

INV
DRPO
3

Zebra Mussel

Dreissena polymorpha

Identification

Shell

- Triangular, sharp point at hinge
- Alternate banding, smooth or wavy
- Brown and white

Size and Shape

- Very small; can grow to 5 cm but typically fingernail-sized
- Shaped like the letter D

Growth and Behavior

- Attach to hard surfaces, including each other


Randy Westbrooks, Invasive Plant Control, Inc., Bugwood.org


Amy Benson, U.S. Geological Survey, Bugwood.org


Amy Benson, U.S. Geological Survey, Bugwood.org

Zebra Mussel

European Frog-bit

European Frog-bit

Hydrocharis morsus-ranae

FLLF
HYMO
2

Identification

Leaves

- Heart-shaped, 1-2 in wide (SMALL)
- Underside is dark purple/red
- Free-floating

Stem

- Arching stalks attached to the mid-vein of each leaf

Flowers & Reproductive Structures

- White, cupped, 3 petals

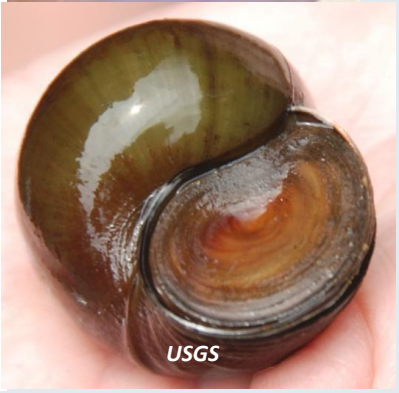
*Note the small size of the leaf. Looks similar to native water lily, but smaller and no gelatinous coating like the native.

Chinese Mystery Snail

Chinese Mystery Snail

Cipangopaludina chinensis

INV
CICH
2



Identification

Shell

- Smooth, 6-8 rounded whorls
- Olive green, greenish brown, or reddish brown
- Has a “trap door” (operculum)

Size and Shape

- Large, up to 2.5 in long
- Rounded edges, deeply indented

Growth and Behavior

- Solitary, shells often found along the shore, on rocks

INV
ORRU
2

Rusty Crayfish

Orconectes rusticus

Identification

Color

- Body: Olive green to greenish brown, rusty spots on either side
- Legs: greenish
- Claws: Gray-green to reddish brown, black band at the tips

Size and Shape

- Up to 10 cm long, robust claws

Growth and Behavior

- Can live in lakes, ponds and streams; prefer rocks, logs, debris

Amy Benson, U.S. Geological Survey, Bugwood.org

Rusty Crayfish

Survey Protocol

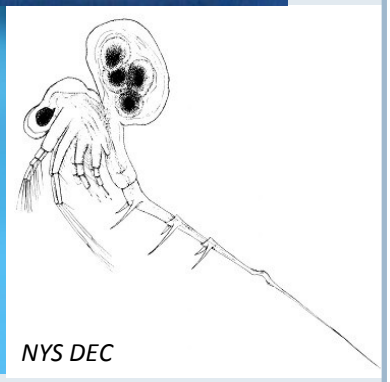
- Safety first! Be sure you have a life jacket, whistle, and anything else you may need. Do not go into any body of water for which you do not have permission to enter.
- Be Prepared. Bring data sheets, pencils, a GPS unit, weed rake, and specimen bags
- When surveying, stick to the littoral zone (depth is 20' or less). This is where most plants are able to grow.
- The distance between GPS points and sampling depends on the size of the waterbody (1 point/acre). Aim to take a point at least every 100 ft.
- Toss the weed rake twice at each location; once to the left and once to the right, being sure to hold on to the end of the rope! Pull the rope in very slowly as to not lose any plants found.
- Mark the time of the rake toss, species found using the 4-letter code and percent cover. The percent cover is regardless of species, and refers to how dense the overall vegetation is at each point, or how little of the sediment can be seen.
- Note the relative abundance of each species found on the rake using the following:
  - Z = zero (no plants)
  - T= trace (fingerful of plants on the rake)
  - S = sparse (handful of plants on the rake)
  - M = moderate (rake covered in plants)
  - D = dense (rake hard to pull out of water due to excess plants)

Spiny Water Flea

Spiny Water Flea

Bythotrephes longimanus

INV
BYLO
1



Identification

Notable traits

- One black eye
- Egg pouch on its back
- Carnivorous

Size and Shape

- 10-15 mm (extremely small)
- Long, spiny tail

Growth and Behavior

- Tendency to clump into gelatinous mounds
- Two swimming antennae and four pairs of legs

Survey Protocol

Trace

Sparse

Moderate

Dense

- Be sure to include the start and end time, location, your name, and your start and end data point.
- Voucher Specimens

  If you collect a sample and are unable to identify it but believe it is one of the focal species: Take pictures of the sample trying to include as many parts of the plant as possible (stem, leaf, leaf margin, flowers…). Take pictures with a white background when possible.

  Put it in a plastic bag filled with water from the site. Label the bag with the time, location, and surveyor name.

*Always collect a voucher specimen for hydrilla, waterwheel, starry stonewort, and spiny water flea unless sampling a location with a known infestation.