PROTECT YOUR WATERS

Help Prevent the Spread of Aquatic Invasive Species

AQUATIC INVASIVE SPECIES (AIS) are plants and animals that can:

- interfere with boating and fishing,
- harm native plants and animals,
- destroy habitat,
- lower waterfront property values, and
- reduce the quality of drinking water.

YOU can help prevent AIS from spreading to new lakes and rivers.

CLEAN. DRAIN. DRY.

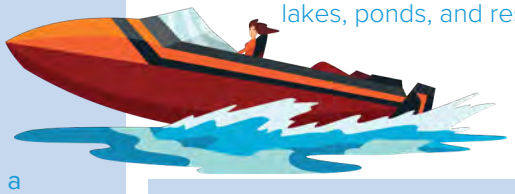
- Inspect your watercraft and trailer, and remove anything that shouldn't be there, like plants, animals, mud, or debris.
- Drain all water-holding compartments.
- Wash your boat and allow it to fully dry before entering a new waterbody.

INSPECT AND CLEAN your gear before using it in another waterbody.

VISIT a launch with a boat steward for help inspecting your boat and a free wash.

NEW YORK STATE

has more than **70,000 MILES** of rivers and streams, and more than **7,600** freshwater lakes, ponds, and reservoirs.



REHOME unwanted pets responsibly—never release them into the wild.

Dispose of plants and aquarium gravel in the trash.

THINK before you buy—make smart choices about the pets and plants you bring home.

DISPOSE of unused bait in trash cans and dump bucket water on dry land (not into the water).

Purchase only certified, disease-free bait.

TELL A FRIEND!

Together, we can all help protect the lakes and rivers we love.

JOIN US ON SOCIAL MEDIA!

Use the hashtags:
#ProtectNYWaters
#CleanDrainDry

Thank you for keeping New York's waters swimmable, fishable, drinkable, and livable!

Learn more by searching for "aquatic invasive species" on our website: dec.ny.gov.

NEW YORK STATE | Department of Environmental Conservation

CREEPING WATER PRIMROSE

Ludwigia peploides

NEW YORK STATE | Department of Environmental Conservation

What is creeping water primrose?

Creeping water primrose is a perennial invasive wetland plant that is native to parts of South America, as well as the southern and central regions of North America. It grows aggressively, creating dense, sprawling mats on the water's surface and shore that crowd out native plants in waterbodies. Creeping water primrose was likely introduced intentionally as a water garden plant, but then escaped cultivation.

Identification

The bright yellow, five-petalled flowers bloom for several months throughout late spring to early fall. Leaves are long and narrow, about 3.5 inches when mature, and grow in clusters on alternate branching stems. The stems can grow up to 2 meters in length and are usually reddish and hollow. Creeping water primrose looks similar to the non-invasive evening primrose that grows on land.

Creeping water primrose flowers are bright yellow and bloom in late spring.
Graves Lovell, Alabama Department of Conservation and Natural Resources, Bugwood.org

Where is creeping water primrose located in New York State?

It is found primarily in slow-moving streams and rivers, still waterbodies, and muddy streambanks. In New York, its presence has been confirmed in Nassau and Suffolk Counties.

How does creeping water primrose spread?

It can spread easily when fragments and stem clippings of the plant are moved on boats, equipment, and clothing. Even small fragments can sprout and establish an infestation in a new waterbody.

The plant can survive on land when water levels drop.
Graves Lovell, Alabama Department of Conservation and Natural Resources, Bugwood.org

What are the impacts of creeping water primrose?

- Grows in dense mats, which reduce light and oxygen availability in water and may result in the death of native fish
- Shades out native wetland plant species, making it difficult for native plants to grow, and decreasing the plant diversity in an area
- Reduces the amount of suitable habitat for native wildlife
- Hinders recreational opportunities, such as boating, fishing, and swimming, because of the dense, tangled mats it creates
- Impairs water quality by trapping flowing soil particles and slowing the movement of water
- Can survive on land if water levels drop, and, once there, it can crowd out native plants

What are the tools for management?

The best method for managing creeping water primrose is preventing its spread from one body of water to the next. However, once a waterway is infested, management can be successful depending on the size and location of the infestation. Options include: using herbicides, physically removing plants, or a combination of those methods. It is critical to remove all traces of the plants to prevent reestablishment.

Management methods should be evaluated on a case-by-case basis for each infestation. For help with selecting the best management for your situation, contact your local Partnership for Regional Invasive Species Management (PRISM) (https://www.dec.ny.gov/animals/47433.html).

Creeping water primrose forms dense mats, displacing native plants.
Robert Vidéki, Doronicum Kft., Bugwood.org

What can I do?

- Learn how to identify creeping water primrose.
- Choose native or non-invasive plants for your aquatic garden.
- Clean, drain, and dry your watercraft and equipment thoroughly before visiting other water bodies.
  - Inspect and remove debris and mud from boats, trailers, and equipment before and after each use.
  - Dispose of all debris in trash cans or above the waterline on dry land.
  - Drain all water holding compartments, including live wells, bait wells, and bilge areas. If possible, disinfect with hot water (140°F) for at least 30 seconds.
  - Dry boats, trailers and all equipment before use in another waterbody. A minimum of 5-7 days drying time in dry, warm conditions is recommended.
- Avoid weed beds when boating.
- Dispose of aquarium waste or specimens in the trash. Do not dump them in drainage ditches, sewers, or any water bodies.
- If you think you have found creeping water primrose, please take several photos of an individual plant on a white background with an object for scale, collect the GPS coordinates for the location where you found it, and contact isinfo@dec.ny.gov or your local Partnership for Regional Invasive Species Management (PRISM) by visiting www.nyis.info.
- Once the plant is identified, submit a report to iMapinvasives at www.NYiMapInvasives.org.

CONTACT INFORMATION

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Division of Lands and Forests **New York State Department of Environmental Conservation**

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www.dec.ny.gov

HYDRILLA

Hydrilla verticillata

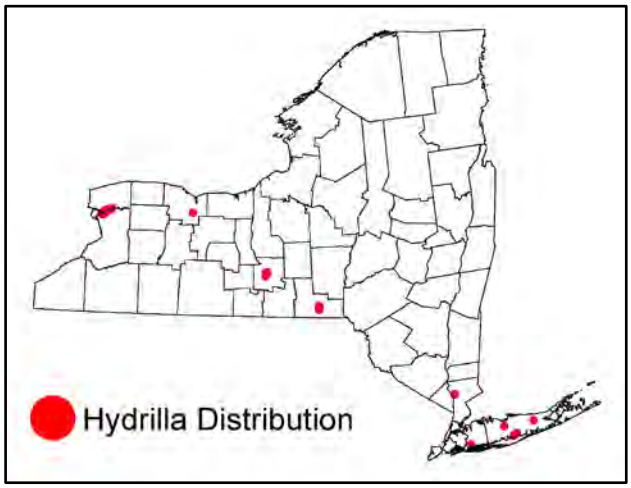
NEW YORK STATE | Department of Environmental Conservation

What is hydrilla?

Hydrilla or “water thyme” (*Hydrilla verticillata*) is an aquatic weed from Asia that is one of the most difficult aquatic invasive plants to control and eradicate in the United States. Infestations can have negative impacts on recreation and tourism, as well as severe consequences for aquatic ecosystems.

Where is hydrilla located?

Hydrilla was first discovered in 2008 in a small pond in Orange County and has since been discovered in Broome, Erie, Kings, Monroe, Nassau, Niagara, Suffolk, Tompkins, and Westchester counties.



What does it do to rivers, lakes, and wetlands?

Hydrilla can grow up to an inch a day, producing dense mats of vegetation that initially grow along the bottom of lakes and rivers. As they grow up to the water’s surface, these mats can become several feet thick. The mats shade out and displace native plants that provide food and shelter to native wildlife. They interfere with waterfowl feeding areas and fish spawning sites. Hydrilla disrupts water flow in reservoirs, hampers drainage in irrigation canals, and decreases dissolved oxygen in the water, which results in fish kills. The size and weight of sport fish are also reduced in areas infested with hydrilla.

How can it impact me?

Hydrilla’s dense mats of vegetation can interfere with boating, swimming, and fishing. Municipalities that rely on tourist dollars from recreational use of lakes and ponds can suffer serious losses in income due to an infestation. Waterfront property values can be greatly reduced, and property owners may incur some of the costs of management, which is expensive and long-term.

How does hydrilla spread?

In addition to producing seed, hydrilla has green overwintering buds called turions and tubers that grow at the end of the roots and store energy. New populations of hydrilla can sprout from any of these, as well as from plant fragments that easily break off from the main plant. Turions, tubers, and plant fragments can be carried by currents or boats, boat trailers, and fishing gear to new locations.

Dense mat of hydrilla in Croton River
Photo: C. McGlynn, NYSDEC

What are the tools for management?

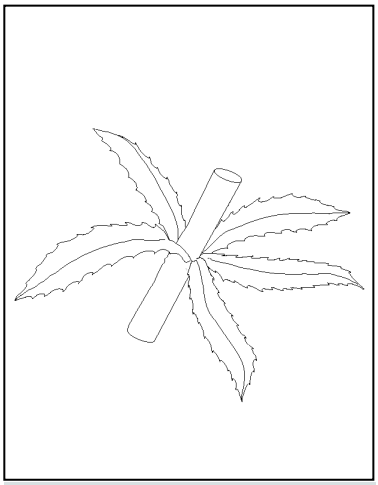
Several options for control and management are currently available and are used on a case-by-case basis. These options include: sterile grass carp (*Ctenopharyngodon idella*), benthic mats, hand pulling, and herbicide. Which management options are chosen depends upon factors including the size of the infestation, whether or not the waterbody is connected to other waterbodies, and the pattern of water movement in the waterbody. Several of these options have been used to aggressively manage infestations in the Cayuga Inlet and Erie Canal.

Photo: Robert Vidéki , Doronicum Kft., Bugwood

What can I do?

- Inspect and remove plant fragments and mud from boats, trailers, and equipment before and after each use.
- Dispose of all debris in trash cans or above the waterline on dry land. Note: tubers and turions can easily be transported in sediment.
- Clean and dry your equipment thoroughly before visiting other waterbodies.
- Do not dispose of unwanted aquarium plants in waterbodies, ditches, or canals.
- Monitor recently acquired aquatic plants because hydrilla tubers can be transported in the attached soil/growing material.
- Learn how to identify hydrilla and report infestations to DEC at isinfo@dec.ny.gov.

More information about hydrilla can be found here:
westchester.cce.cornell.edu/horticulture-environment/invasive-species



Whorl of leaves with serrated edges.
Illustration from Center for Aquatic Invasive Plants, University of Florida, IFAS

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Updated May 26, 2020

NORTHERN SNAKEHEAD

Channa argus

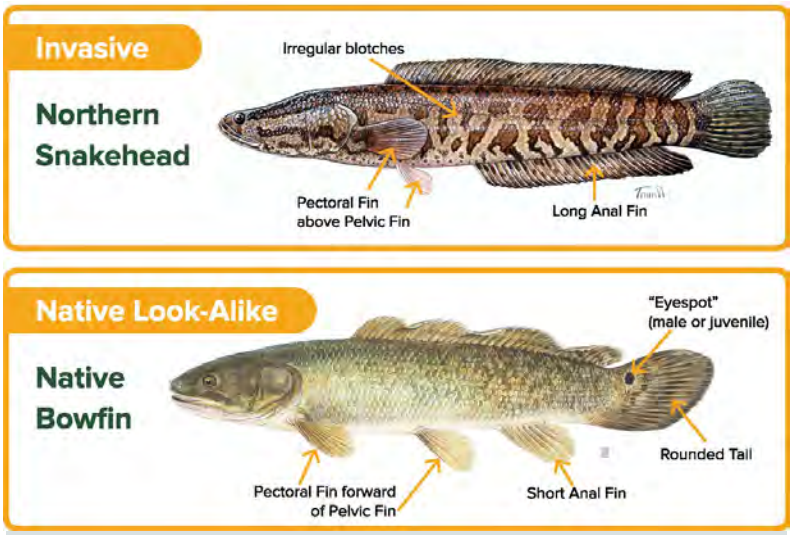
NEW YORK STATE | Department of Environmental Conservation

What are northern snakeheads?

Northern snakeheads are predatory fish native to Asia. They were most likely introduced to New York through aquarium dumping and accidental, as well as intentional, releases from fish markets. It is crucial that we stop the spread of this invasive predator to protect the health of our waters, wildlife and fishing industry.

Identification

Northern snakeheads are long, thin fish with a single fin running the length of the back. They are generally brown with large, dark blotches along their sides and can grow up to three feet long. They have a somewhat flattened head and a large mouth with many teeth. Northern snakeheads are very similar to our native bowfin (*Amia calva*), which can most easily be distinguished from snakeheads by a shorter anal fin and a rounded tail fin.



Snakehead image: Susan Trammell, Bowfin image: Ellen Edmundson

Where are they located?

Although this species prefers to live in stagnant shallow ponds or swamps, it can inhabit any of our canals, reservoirs, lakes, and rivers. In New York State, snakeheads were identified in two connected ponds in Queens where steps have been taken to keep the population contained. Another population found in Ridgebury Lake in the town of Wawayanda, Orange County, was eradicated in 2008 using the pesticide rotenone.

How do snakeheads spread to new areas?

Besides aquarium dumping and fish market releases, people also contribute to their spread by illegally using them as bait or unknowingly transporting juveniles in water-containing compartments of boats. Snakeheads will also spread to nearby waterbodies on their own since they can breathe air and survive for days out of water.

How can they impact me?

Northern snakehead juveniles feed on a wide variety of microscopic organisms, insect larvae, and crustaceans on which native fish rely. As adults, they feed mostly on other fish species, but also eat crustaceans, reptiles, mammals and small birds. Snakeheads have the potential to reduce or even eliminate native fish populations and alter aquatic communities. Municipalities which rely on tourist dollars from recreational fishing may suffer losses should northern snakeheads continue to invade New York waters.

What is being done?

Northern snakeheads are federally listed as “Injurious Wildlife”, meaning they may not be imported or transported between states without a permit. The New York State Part 575 Invasive Species Regulation takes this a step further by prohibiting the possession, sale and transport of live snakeheads in the state.

What are the tools for management?

The best method for dealing with northern snakeheads is preventing their spread and establishment. Once they are in an area however, there is little that can be done to control and manage them. Trap nets, electrofishing and pesticides like rotenone may be used on a case-by-case basis depending on the population size and whether the infested waterbody is connected to other waterbodies.

What can I do?

- Learn how to identify northern snakehead.
- Dispose of aquarium animals and plants in the garbage, not in waterbodies.
- Dispose of all bait in trash cans, at disposal stations, or above the waterline on dry land. Note: It is illegal to use snakehead as bait in NY.
- Dump water from boat compartments, bait buckets, and live wells on dry land.

Northern snakehead in an aquarium
Wikicommons

If you believe you have caught a northern snakehead…

- DO NOT RELEASE IT.
- Kill it immediately and freeze it.
- If possible, take pictures of the fish, including close ups of its mouth, fins and tail.
- Note where it was caught (waterbody, landmarks or GPS coordinates).
- Report it to your regional DEC fisheries office (http://www.dec.ny.gov/outdoor/7927.html) or to DEC’s Invasive Species Bureau (see below).
- You can also submit a report through *i*Mapinvasives at www.nyimapinvasives.org.

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Updated January 5, 2018

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SPINY WATERFLEA

Bythotrephes longimanus

What are spiny waterfleas?

Spiny waterfleas are aquatic zooplankton (small animals) from Europe and Asia that have invaded the Great Lakes ecosystem, as well as some inland water bodies. Adults range from ¼ to ⅝ inch long and they have a single long tail with 1-3 sets of small spines along its length. Infestations of spiny waterfleas negatively impact native fish populations, aquatic habitats and sports fishing. There is no successful method of control.

Individual spiny waterfleas.
(Photo: Emily DeBolt, Lake George Association)

Where are spiny waterfleas located?

Spiny waterfleas live in fresh water habitats and prefer cold temperatures, but can tolerate both brackish and warm water. They have spread throughout the Great Lakes and have been found in more than ten counties in New York State. Lake Erie, Lake Ontario, Lake George, Great Sacandaga Lake, Stewarts Bridge Reservoir, Lake Champlain and a number of smaller water bodies are infested.

Why are spiny waterfleas a problem?

Spiny waterfleas eat smaller, native zooplankton that are important food for both small crustaceans and native fish such as perch. In some lakes, they have eliminated native zooplankton from the food chain, causing serious declines in native fish populations. In the Great Lakes, spiny waterfleas have been associated with the decline of alewife.

Spiny waterfleas also interfere with fishing, as their spines catch on fishing line, resulting in clogged fishing rod eyelets and damaged reel systems, preventing fish from being reeled in.

On fishing lines, spiny waterfleas look like masses of bristled jelly with dark spots scattered throughout.

How do spiny waterfleas spread?

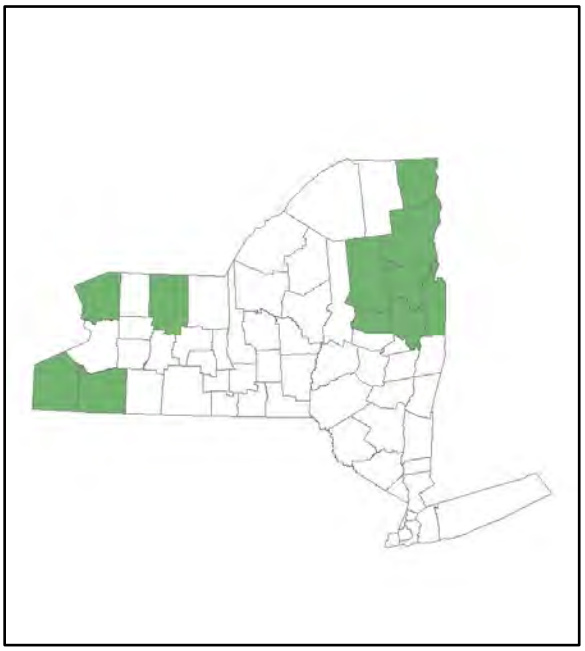
Spiny waterfleas originally arrived in the Great Lakes through the ballast water of cruise ships, tankers and cargo carriers. Ballast water is water taken on or discharged by ships for stability, often resulting in organisms getting caught up in the ballasts and inadvertently moved from one region to another. Spiny waterfleas spread by attaching to fishing lines, downriggers, anchor ropes, and fishing nets and hitching rides to other waterbodies. They can also be transported in bilge water, bait buckets, live wells, and the bottoms of canoes and kayaks.

What can I do?

There is no known control method for the spiny waterflea once it is introduced, so preventing the spread of this invasive is critical.

- Clean, drain, and dry your watercraft, trailer, and equipment before and after each use.
- When possible, use the following methods to fully decontaminate your equipment.
  - Clean the outside of the watercraft and trailer with high pressure (2500 psi) hot water (140°F) for 10 seconds.
  - Flush the inside of the motor and all compartments (bilge, live well, bait buckets, ballast, etc.) with hot water (140°F) for two minutes.
  - Soak fishing gear and equipment in hot water (140°F) for two minutes.
- Dump bait bucket water where it came from or on land.
- Learn how to identify spiny waterfleas: visit http://www.seagrant.umn.edu/ais/waterflea for more information.
- Report infestations to DEC at isinfo@dec.ny.gov or to iMapInvasives at www.NYiMapInvasives.org.

Steward removes aquatic invasive species from boat.
(J. Clayton, NYSDEC)



Current locations of spiny waterflea in New York State

CONTACT INFORMATION

Invasive Species Coordination Unit

Division of Lands and Forests,

Bureau of Invasive Species and Ecosystem Health

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NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

STARRY STONEWORT

Nitellopsis obtusa

Starry stonewort is an algae with a plantlike structure that is native to Eurasia. It was likely introduced to the Great Lakes from ballast water and has spread to inland lakes in New York. It was first discovered in the United States in the St. Lawrence Seaway in 1978. Stonewort is associated with several social and economic impacts throughout the Great Lakes.

Where is starry stonewort located?

Starry stonewort has been reported in fourteen counties in New York State: Cayuga, Chautauqua, Cortland, Franklin, Jefferson, Lewis, Monroe, Onondaga, Ontario, Oswego, Otsego, St. Lawrence, Tompkins, Wayne, and Yates. Unfortunately, starry stonewort is difficult to distinguish from closely related muskgrasses and stoneworts, so there may be places where it has not yet been detected.

How do I identify starry stonewort?

Starry stonewort has four to six long branches growing around each stem, and it can reach over 7 ft. (2 m) tall in water more than 30 ft. (10 m) deep. It forms dense, pillow-like mats (with plants of different heights) along the bottoms of still, alkaline ponds and lakes. It is tolerant of both salt and fresh water and tends to grow on sand and gravel in both shady and sunny areas.

Photo: Scott Brown, Michigan Lake and Stream Association

How does it spread?

Starry stonewort is named for its star-shaped reproductive structures, or bulbils, which can be transported in mud. Starry stonewort can also spread by fragments and is often found near docks and marinas, indicating that watercraft likely transport this algae from site to site.

What are its impacts?

Researchers studying the impacts of starry stonewort indicate that it can potentially impact native species in several ways. It may outcompete native plants and phytoplankton (small aquatic plants) that provide food and shelter for native invertebrates and fish. The dense mats may also hinder the spawning of native fish species.

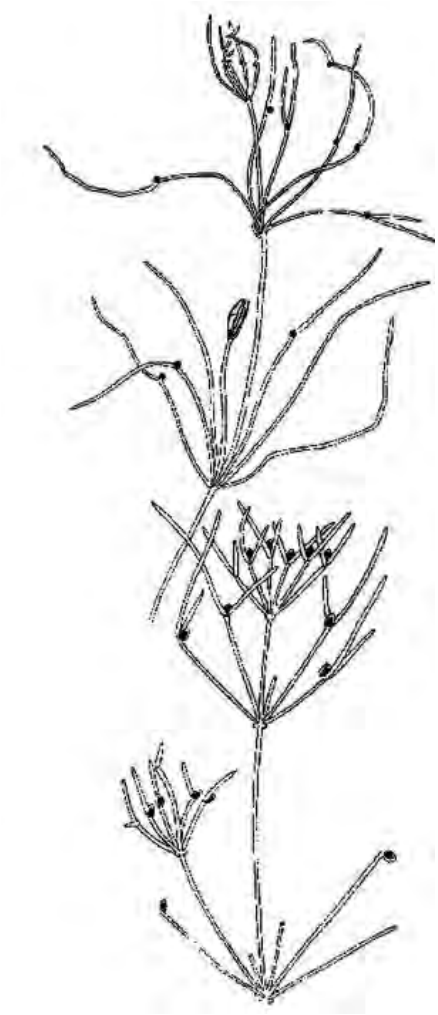
What are the tools for management?

Preventing the spread of this invasive plant is critical. Both chemical (herbicide) and manual (hand-pulling and harvesting) controls have been used with varying success. Research on best management practices is being conducted throughout the Great Lakes region.

Photo: Progressive AE via Michigan.gov

What can I do to help?

- Clean, drain, and dry your watercraft, trailer, and equipment before and after each use. Regulation 6 NYCRR Part 576 (http://www.dec.ny.gov/animals/99141.html) requires everyone who uses watercraft on public waters to follow this protocol.
- When possible, use the following methods to fully decontaminate your equipment. (Consult DEC's website regarding this protocol: http://www.dec.ny.gov/animals/48221.html)
  - Clean the outside of the watercraft and trailer with high pressure (2500 psi) hot water (140°F) for 10 seconds.
  - Flush the inside of the motor and all compartments (bilge, live well, bait buckets, ballast, etc.) with hot water (140°F) for two minutes.
  - Soak fishing gear and equipment in hot water (140°F) for two minutes.
- If you think you've found starry stonewort, please take several photos and submit a report to iMapInvasives (www.imapinvasives.org).



USDA NRCS

CONTACT INFORMATION

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Division of Lands and Forests
Bureau of Invasive Species and Ecosystem Health

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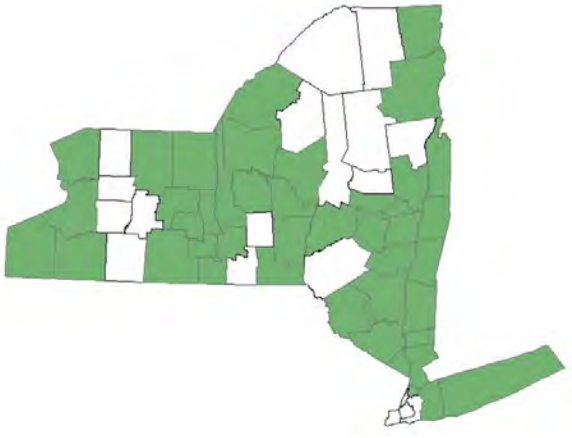
WATER CHESTNUT

Trapa natans

Water chestnut is an aquatic invasive plant that is native to Eurasia and Africa. Introduced in the United States in the mid-1800s as an ornamental plant, water chestnut was soon found growing in Collins Lake near Scotia, NY. Water chestnut colonizes areas of freshwater lakes, ponds and slow-moving streams and rivers where it negatively impacts aquatic ecosystems and water recreation.

Where is water chestnut found?

Water chestnut is found in forty-three counties in New York. Many of the infestations are reported in or near the Hudson River. No water chestnut has been reported in the following counties: Allegany, Cortland, Delaware, Franklin, Fulton, Genesee, Hamilton, Herkimer, Kings, Lewis, Livingston, New York, Orleans, Queens, Richmond, St. Lawrence, Tioga, Warren, and Wyoming.



How do I identify water chestnut?

Water chestnut is an annual plant with a submerged stem 12-15 feet long with fine roots that anchor it to the soil. Its floating leaves are triangular with saw-toothed edges and hollow, air-filled stems. Leaves form a rosette around a central point. Its four petaled, white flowers bloom in June. The fruits are hard nuts with four-inch barbed spines. Seeds within these fruits can remain viable for up to 12 years.

Mike Naylor, Maryland Department of Natural Resources

How does it spread?

Water chestnut spreads by rosette and fruits detaching from the stem and floating to another area on currents. They also spread by clinging to floating objects, including recreational watercraft, the pads of boat trailers, and fishing equipment.

What are its impacts?

Water chestnuts form dense mats of rooted vegetation that can be very difficult to get through in a boat, kayak, canoe, or when swimming. Water chestnut fruits are often found along the shoreline and bottom of waterways: their very sharp spines can cause painful wounds when stepped on. The dense mats of vegetation shade out native aquatic plants that provide food and shelter to native fish, waterfowl, and insects. Decomposition of these mats reduces dissolved oxygen levels and may impact fish. Property values along shorelines of infested waters may decrease.

What are the tools for management?

Water chestnut can be controlled using manual, mechanical, and chemical methods. As with all other infestations, early detection is key for containing and controlling spread. The smaller the size of the infestation, the more easily it can be eradicated and its economic and ecological impacts reduced.

Hand-pulling when rosettes first appear (mid-June to early July) is an effective way to control spread and reduce the size of infestations. This method is impractical if the infestation covers a large area.

For larger infestations, as in Lake Champlain, harvesting machines are used.

Applications of aquatic herbicides approved for use in New York can also be effective. Because the fruits remain viable for up to twelve years in the sediment, it will take several years for both mechanical and chemical methods to be fully effective. NYS DEC is currently funding a study of the effectiveness of predator insects from water chestnut's native range.

Angela May and Beth Walker, Marion Elementary School

What can I do to help?

Prevention is the most effective method for dealing with invasive species. If they are never introduced, they never become established.

- Clean, drain, and dry your watercraft, trailer, and equipment before and after each use. Regulation 6 NYCRR Part 576 (http://www.dec.ny.gov/animals/99141.html) requires everyone who uses watercraft on public waters to follow this protocol.
- When possible, use the following methods to fully decontaminate your equipment. (Consult DEC's website regarding this protocol: http://www.dec.ny.gov/animals/48221.html)
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  - Flush the inside of the motor and all compartments (bilge, live well, bait buckets, ballast, etc.) with hot water (140°F) for two minutes.
  - Soak fishing gear and equipment in hot water (140°F) for two minutes.
- Dump bait bucket water where it came from or on land.

Become a Chestnut Chaser!

Early detection of infestations helps to reduce removal costs and ecological impacts. We know that water chestnut is underreported in New York State. Each summer we encourage folks to survey their favorite swimming holes, lakes, ponds, and nearby waterbodies for water chestnut. If you think you've found water chestnut please take several photos and submit a report to iMapInvasives www.imapinvasives.org.

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