

# Hydrilla 101: Everything you wish you didn't have to know about

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# What is hydrilla?

- *Hydrilla verticillate* is a submersed, rooted, aquatic, perennial herb native to southeast Asia
- Frog's-Bit Family (*Hydrocharitaceae*)
  - *Egeria, Elodea, Hydrilla, Hydrocharis, Limnobium, Najas, Vallisneria*
- Aquarium plant Introduced to North America in 1950s
- Grows in depths up to 20 ft (6.1 m)
- Can survive in 40 ft (12 m) in non-turbid water
- Grows up to 2.5 cm/day
- Forms dense mats at surface

# What is hydrilla?

- Monoecious and Dioecious forms
  - Only female flowers found in US
  - No viable seeds in US
- Readily spreads by fragmentation
- Produces turions on stems which survive freezing & drought
  - Up to 3,000 turions / m<sup>2</sup>
- Produces tubers on rhizomes for reproduction
  - Up to 6,000 tubers / m<sup>2</sup>
    - viable several days out of water
    - Viable 4 years in undisturbed sediment
    - Viable after ingestion & regurgitation by waterfowl

# What is hydrilla?

- Invades slow-moving or still water systems
- Restricts native plants, recreation, hydroelectric production, irrigation and water flow

# Turions



# Tubers



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# Hydrilla mats



Tim Murphy, University of Georgia, Bugwood.org



Tim Murphy, University of Georgia, Bugwood.org

# Hydrilla mats



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



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

# Hydrilla



Tim Krynak, Cleveland Metroparks, Bugwood.org



Robert Vidéki, Doronicum Kft., Bugwood.org



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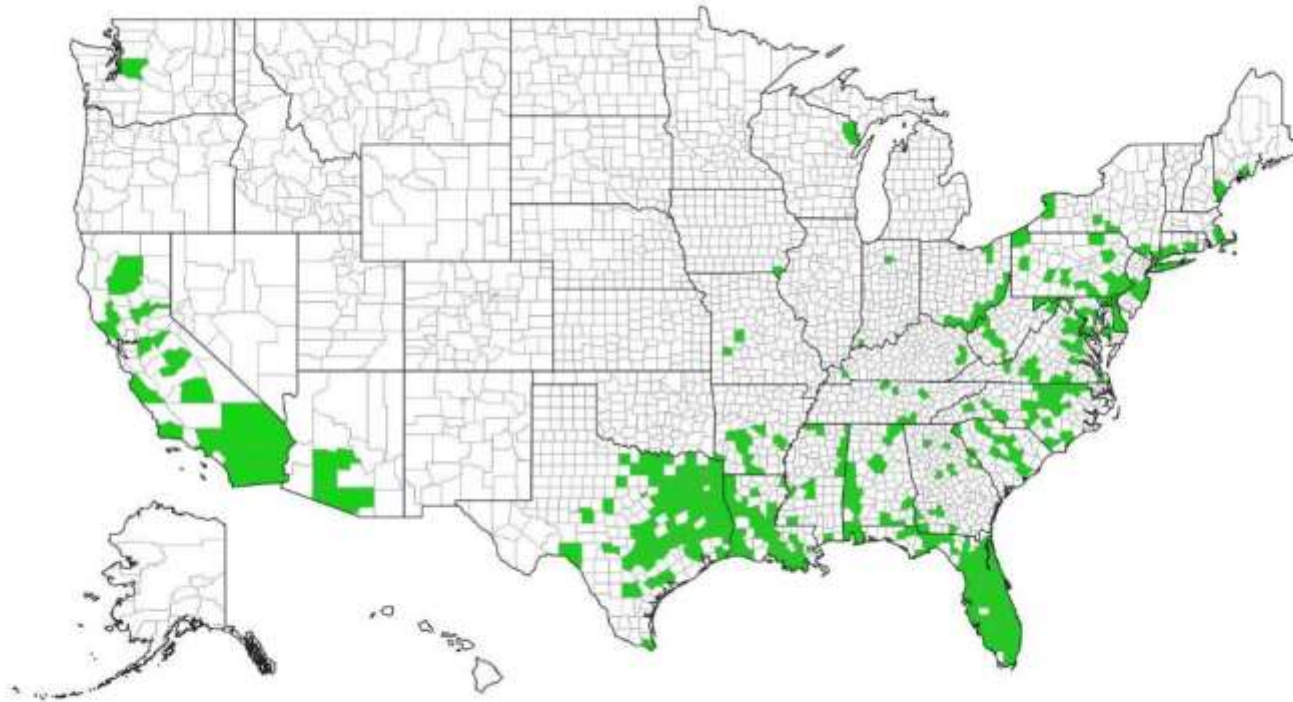


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# US Distribution of *Hydrilla verticillata*

hydrilla (*Hydrilla verticillata*)

EDDMapS



**Legend**

- No Data
- Species Reported

Map generated on Mar 24, 2018

## Early Detection and Distribution Mapping System

EDDMapS. 2018. Early Detection & Distribution Mapping System. The University of Georgia - Center for Invasive Species and Ecosystem Health. Available online at <http://www.eddmaps.org/>; last accessed March 24, 2018.

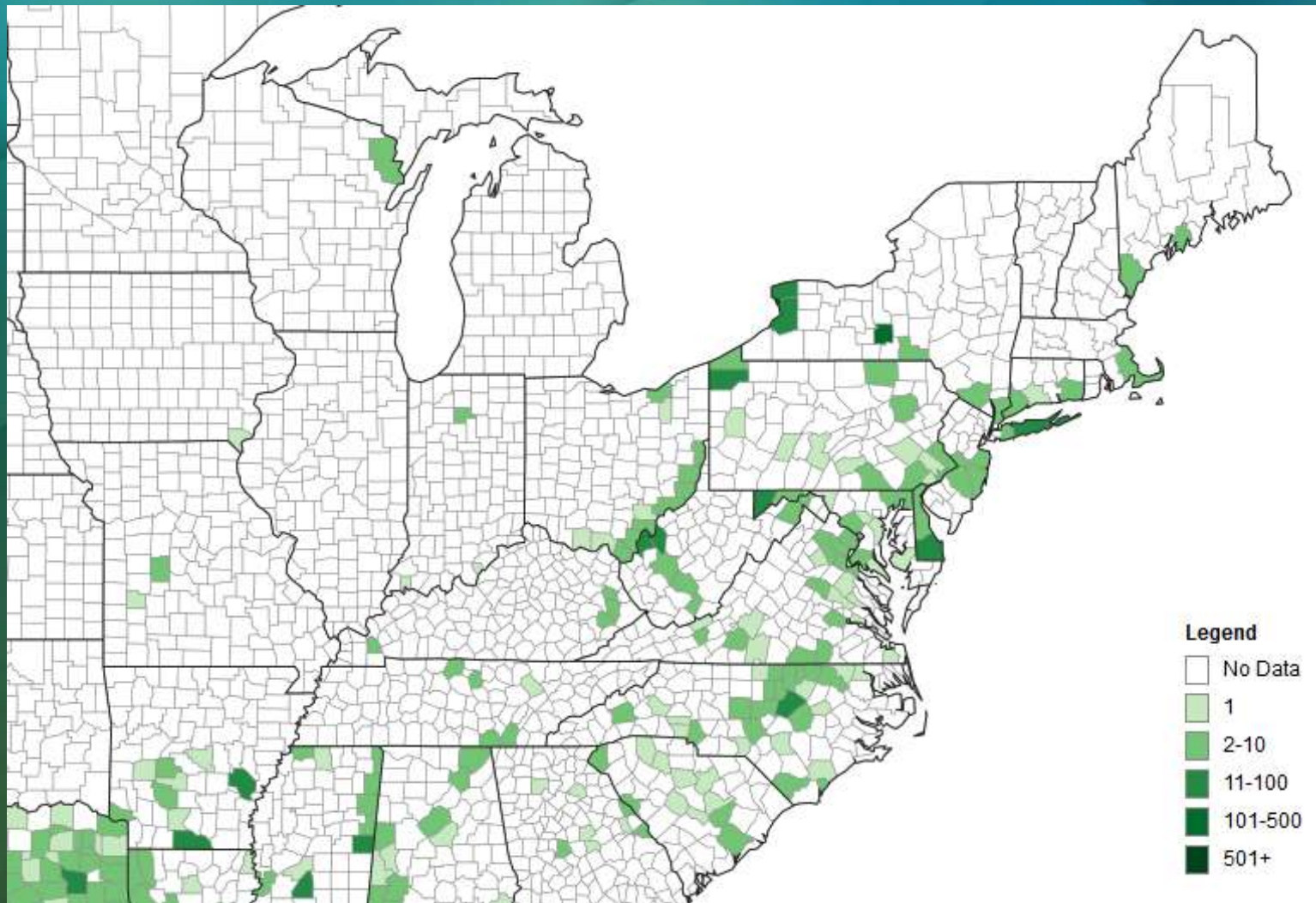


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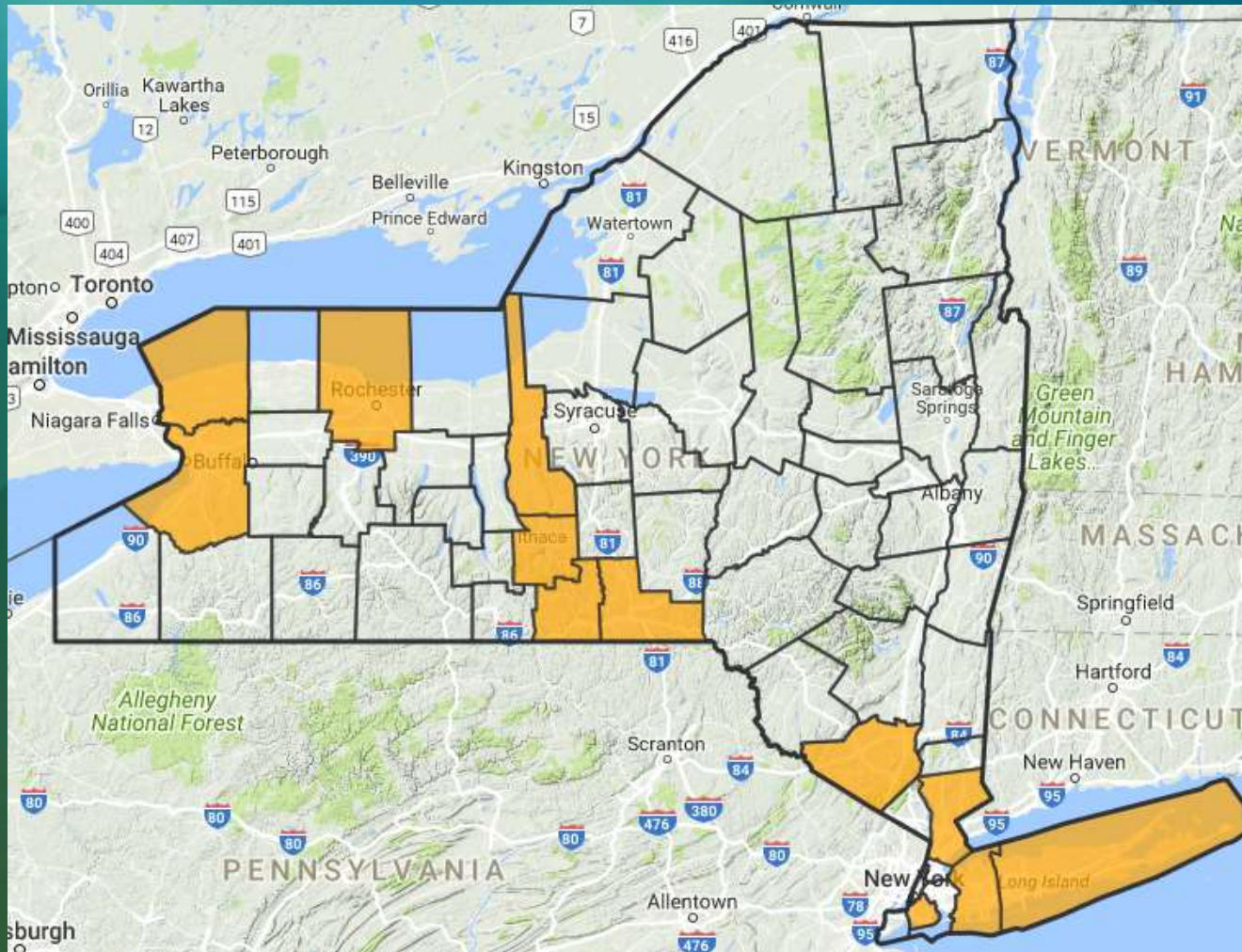


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# NE Distribution of *Hydrilla verticillata*



# NYS Distribution of *Hydrilla verticillata*



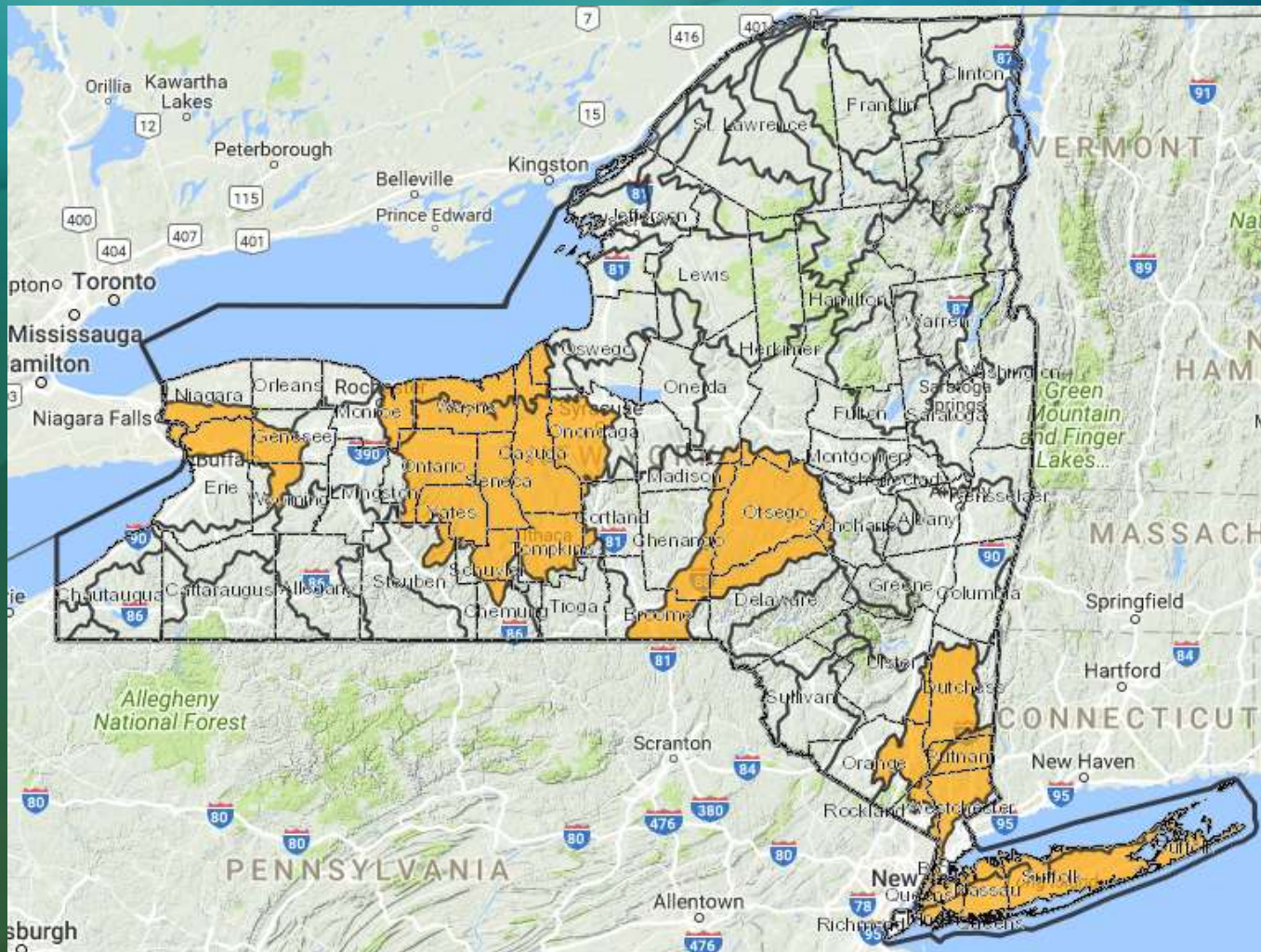
Map Source: iMapInvasives

- Niagara
- Erie
- Monroe
- Cayuga
- Tompkins
- Tioga
- Broome
- Orange
- Westchester
- Kings
- Nassau
- Suffolk

**New York** – First sighted at Creamery Pond in Sugar Loaf in 2008

(L. Surprenant, NY DEC, pers. comm. 2008; King 2008) – NOAA GLANSIS

# NYS Distribution of *Hydrilla verticillata*



Map Source: iMapInvasives

# Hydrilla is similar to . . .

- *Elodea canadensis*, Common elodea – native
- *Egeria densa*, Brazilian waterweed – invasive
  - Albany County, Orange County, Rockland County, Westchester County, Nassau County, Suffolk County
- Najas, Water naiad – some native, some invasive

# Characteristics of hydrilla

## Hydrilla (*Hydrilla verticillata*)

Origin:	Non-native (Korea)
Leaf Type:	Ribbon
Leaf Arrangement:	Whorled
Number Leaves in Whorl:	4-8
Leaf Shape:	Strap
Leaf Margin:	Saw or Hook Toothed (Visible with naked eye)
Tubers and Turions?	Yes



11

# Common lookalikes and how to distinguish Brazilian Elodea (*Egeria densa*)

Origin: Non-native (S America)

Leaf Type: Ribbon

Leaf Arrangement: Whorled

Number of Leaves in Whorl: 4-7

Leaf Shape: Strap

Leaf Margin: Very Finely Serrated  
(Visible with hand lens)

Tubers and Turions? No



Photo credit- NYSFOLA, Jon Reis Photography

Source: Hydrilla webinar, 7/26/13



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# Hydrilla v. Egeria



Robert Vidéki, *Doronicum Kft.*, Bugwood.org

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Virginia Tech Weed Identification Guide  
Virginia Polytechnic Institute and State  
University, Bugwood.org



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# Common lookalikes and how to distinguish

## Common Elodea (*Elodea sp*)

Origin:	Native (two species)
Leaf Type:	Ribbon
Leaf Arrangement:	Whorled
Number of leaves in whorl:	3, rarely 4
Leaf Shape:	Strap
Leaf Margin:	Smooth (Fine serration under scope)
Tubers and Turions?	No



Photo credit- NYSFOLA, Jon Reis Photography



# Hydrilla v. Elodea

Hydrilla



Elodea



Robert Vidéki, Doronicum Kft., Bugwood.org

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# Common lookalikes and how to distinguish

## Naiads (*Najas* sp)

Origin:	Native (except brittle naiad)
Leaf Type:	Thread
Leaf Arrangement:	Opposite (2 leaves per node)
Leaf Shape:	Varied: needle-like to strap
Leaf Margin:	Minutely serrated (prominent in brittle naiad)
Tubers and Turions?	No

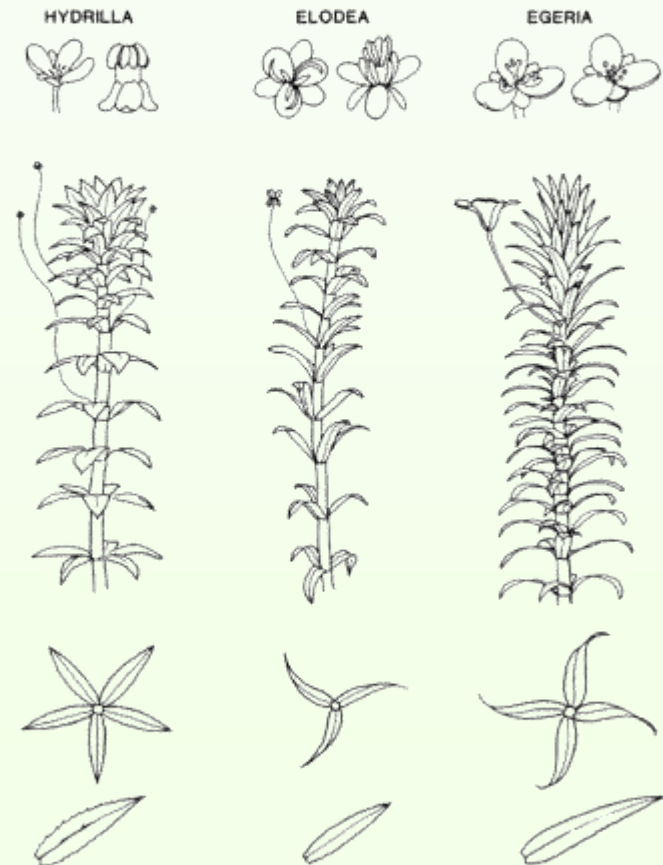


Photo credit- NYSFOLA, Jon Reis Photography

Source: Hydrilla webinar, 7/26/13

# Differences: Hydrilla v. Egeria v. Elodea v. Naiads

- Hydrilla:
  - Leaf whorls in 4-6
  - Leaf margins serrate (“hook” under scope)
  - Tuber as “foot” of plant
  - Turion near growing tip in late fall
  - White rhizomes (roots)
- Egeria:
  - Leaf whorls in 4-6
  - Leaf margins smooth (“saw” under scope)
  - No tubers, turions or rhizomes
- Elodea:
  - Leaf whorls in 3 (usually)
  - Smooth margin
  - No tubers, turions or rhizomes
- Naiads:
  - Leaves not in whorls (opposite or nearly so)
  - No tubers, turions or rhizomes



# Methods of Control

- Mechanical/Physical

- Cutting & raking (does not remove roots, tubers, tyrions)
- Benthic barriers
- Suction Harvesting

- Biological

- Grass carp
- Leaf-mining flies / tuber feeding weevil – non-native

# Methods of Control

- Herbicides

- Fluridone (Sonar, Avast, Whitecap) – broad spectrum, systemic
- Diquat (Reward) - contact
- Penoxsulam (Galleon) – broad spectrum, systemic
- Flumioxazin (Clipper) – contact
- Imazamox (Clearcast) – broad spectrum, systemic
- Endothall (Aquathol, Hydrothol) – contact

- KEEP IT OUT!

# Hydrilla 101: Everything you wish you didn't have to know about Hydrilla Questions?

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