Anti-fouling Paints and Boat Bottom Maintenance

3.4 Best Management Practices for Invasive Freshwater Plants

Invasive freshwater aquatic plants are problematic because:
- they form dense mats
- block sunlight
- eventually starve other aquatic organisms of oxygen when they die off
- crowd out native vegetation
- crowd out native animals by depriving them of food, shelter, nesting including:
  - small mouth bass
  - walleye
  - fisheries specimens

New York State Aquatic Invasive Plants
- Curly leaf pond weed
- Eurasian water milfoil
- European Frogbit
- European water chestnut
- Fanwort
- Hydrilla

The most common invasive aquatic weeds are:
- Eurasian water milfoil
- Fanwort
- Hydrilla

The most common methods for dealing with these common invasive aquatic weeds in lakes include:
- Herbicide
- Mechanical harvest
- Hand pulling

Illegal to transport vegetation on boats, vessels, trailers

Invasive aquatic weeds in upstate NY include:
- Water chestnut (Horned water chestnut, water caltrop)
  - Black nut with sharp spine
  - Stems grow to six feet
  - Little value to wildlife
  - Have spongy buoyant bladders
  - Dense mats of vegetation severely limit light penetration
  - Reduce oxygen through the decay of the plant mass
  - One seed can produce 15 rosettes (each producing 200 or more seeds yearly) for up to 12 years, so management must be conducted for at least 7 years to ensure eradication
  - Spread by:
    - Water
    - Birds
    - Boats
    - Trailers
    - Fishing gear
  - triangular leaves with toothed edges
  - dense floating mats
  - seeds and plants attach to trailers

Curly leaf pond weed
- Submerged perennial
- Rigid, reddish-green, oblong leaves with distinct, fine toothed, wavy edges
- Has turions (buds) in the winter that look like pinecones
- Up to 1600 turions/square yard with 60-80% germination
- Gets a jump on the season through these winter buds and dense growth
- When the weed dies back, decay uses up oxygen, get eutrophication
- Grows in both shallow and deep water

Rock Snot, also known as Didymo (Didymosphenia geminata)
- Microscopic algae that are mat forming
- Actually native to New York
- Large amounts of stalk form thick brown mats on stream beds
- Threat to:
  - aquatic habitats
  - biodiversity
  - recreation
- Chokes out other organisms and their food sources
- Rapid expansion
- Originally in cool, clear, nutrient poor waters but now in waters with high nutrient levels
- Rivers with regular, stable flow are particularly at risk from Didymo
- Color is tan, brown, white, but never green
- May form “tails”
- Texture like wet wool, NOT slimy
- Firmly attached, does not fall apart when rubbed
- Methods of spread:
  - Anglers
  - Kayakers
  - Canoeists

    - Boaters
    - water recreationists
    - inner tubers
- Can cling to:
    - Waders
    - Boots
    - Boats
    - Clothing
    - Lures
    - Hooks
    - fishing line
    - other equipment

NOTE: Didymo remains viable for several WEEKS even in seemingly dry conditions!

NOTE: SPECIFIC TO DIDYMO ONLY: Equipment, gear, etc. can be placed in a freezer until ALL moisture is frozen solid to kill off Didymo.

- If cleaning, drying, freezing is not practical, limit equipment use to a single water body where Didymo is already present

European Frogbit

- free floating plant
- dark, heart shaped leaves that are green and purple
- likes slow moving sections of fresh water
    - rivers
    - lakes
    - swamps
    - marshes
- emergent perennial
- tiny white flowers
- reproduces by buds called turions, which break off and sink to the bottom
- forms dense canopies on the water's surface and prevents the sun from penetrating the water column
- spreads by:
    - water currents
    - boats
    - trailers
    - waterfowl

Starry Stonewort

- invasive floating macroalgae
- often found floating among duck weed and coontail
- found in slow, deep fresh or brackish water
- diagnostic: cream-colored bulbs at the ends of long, uneven branches

Brazilian elodea plant

- submerged perennial
- makes a monoculture in slow moving water in:
    - lakes
    - streams
    - ponds
- destroys recreational value of boating, fishing, and swimming
- traps sediment
- restricts water movement
- displaces native vegetation
- causes fluctuations in water quality which can be very harmful for sensitive species

Fanwort

- NATIVE to the southeast
- perennial aquatic plant
- produces two kinds of leaves:
- fan-shaped, whorled leaves
- small, alternate floating leaves
- produces small white-pink flowers that float on the water's surface
- habitat:
    - lakes
    - ponds
    - stream
- highly competitive
- forms dense stands
- displaces native vegetation
- clogs or prevents water flow in streams and ditches
- interferes with recreational and agricultural uses of freshwater systems on Long Island, Catskills, Saratoga County

Hydrilla

- one of the worst aquatic weeds in the United States
- Also called Indian Star Vine, Water Thyme, Florida Elodea
- Submerged, rooted perennial with stems that can be 30 feet long, branch at surface to form dense mats
- small white flowers grow above water line on stalks
- leaves are saw toothed and arranged in whorls of 3-10, with 5 leaves per whorl most commonly
- leaves are blade like, 5/8ths of an inch long, with reddish, spined midribs
- best identifying factor: small, white-yellow potato like tubers attached to roots
- Hydrilla reproduces four ways:
    - fragmentation of one node or whorl
    - tubers, formed on rhizome and each produces 6,000 new tubers
    - turions, which are a type of bud formed in the leaf axil; they form a new plant when they break off
    - seeds: long distance dispersal by ingestion by birds
- fragments attach to boats; hard not to have this happen when passing through a "wall of Hydrilla"
- Hydrilla populates fresh water:
    - Lakes
    - Ponds
    - Rivers
    - Impoundments
    - Canals

- Hydrilla is very hardy, tolerating many conditions including low light and low nutrients

Water Hyacinth

- has thick, wavy, oval leaves that may be two feet across
- water hyacinth branches out from the center on modified stems that can raise a meter or more above the water
- does not survive NY winters but there are seasonal escapes
- can double its population in two weeks, making it one of the fastest growing plants known
- reproduces by seeds, horizontal stems, and stolons plus fragmentation
- travels on wind, waves, and propellers

Eurasian water milfoil

- feathery leaves in whorls of 4
- forms dense beds
- plant fragments attach themselves to boats and trailers
- submerged aquatic plant
- takes root in lake bottoms
- creates dense beds and canopies

Creeping water primrose

- invasive in the Peconic river
- tolerates depths of up to 10 feet
- grows in freshwater wetlands, ponds, shorelines, and streams
- can tolerate dry spells
- creates dense floating mats
- clog waterways and reduces habitat for native wildlife and plants
- fast-growing: one location went from 400 square feet to 320 acres in five years
- dense growth interferes with navigation
- clogs irrigation canals and streams
- increases sedimentation
- reduces water flow
- displaces native vegetation used by waterfowl and other wildlife
- can reduce pH and dissolved oxygen in the water and harm fish habitat

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