

Invasive Plant Control

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Problems Associated w/Weeds

- Interfere with fishing & other activities
- Impair fish foraging
- Degrade biodiversity
- Impact water quality
- Unsightly / smelly
- Attract other pests





Aquatic Vegetation Management

- Plant life necessary for fish production
 - Preferably phytoplankton in small waterbodies
 - Native SAV and emergent species
- Delicate balance between not enough and too much
- Some plants desirable/beneficial; others nuisance weeds

Terms

- **Introduced**: brought in from somewhere else
- **Invasive**: non-native to the ecosystem, cause harm or destruction to natives
- **Native**: endemic to ecosystem/ecoregion
- **Exotic**: non-native to the continent
- **Nuisance**: problematic
- **Noxious**: destructive & difficult to eradicate

Causes of Nuisance Weeds

- Abundant Nutrients
 - high P:N ratio favors BG's
- Shallow Water
- Sufficient Sunlight
- Favorable Temperature

Formulating a Game Plan

- Identify vegetation type and species
 - Algae
 - Submersed
 - Emergent
 - Floating
- Identify Control Methods
 - Mechanical
 - Chemical
 - Biological
 - Integrated Approach
- Implement Plan / Monitoring and Assessment

Commonly Encountered Weeds

- Filamentous Algae
 - Various species



Commonly Encountered Weeds

- Chara
 - *Chara spp.*



Commonly Encountered Weeds

- Blue-green Algae
 - various species



Commonly Encountered Weeds

- Pondweeds
 - *Potamogeton* spp.



Commonly Encountered Weeds

- Coontail
 - *Ceratophyllum demersum*



Commonly Encountered Weeds

- Naiads
 - *Najas spp.*



Commonly Encountered Weeds

- Water Milfoils
 - *Myriophyllum* spp.



Commonly Encountered Weeds

- Hydrilla
 - *Hydrilla verticillata*



Leslie Mehrhoff, Univ. of Conn., bugwood.org



Commonly Encountered Weeds

- Water primrose
 - *Ludwigia* spp.



Commonly Encountered Weeds

- Cattail
 - *Typha* spp.



Commonly Encountered Weeds

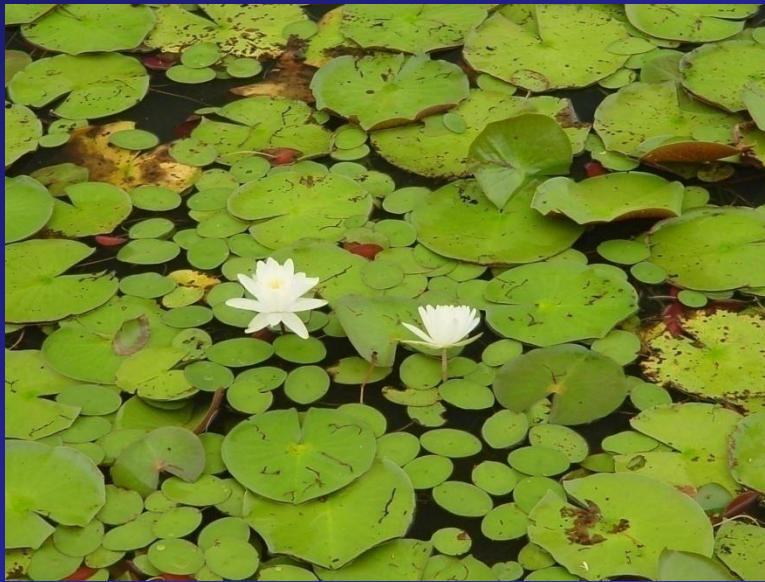
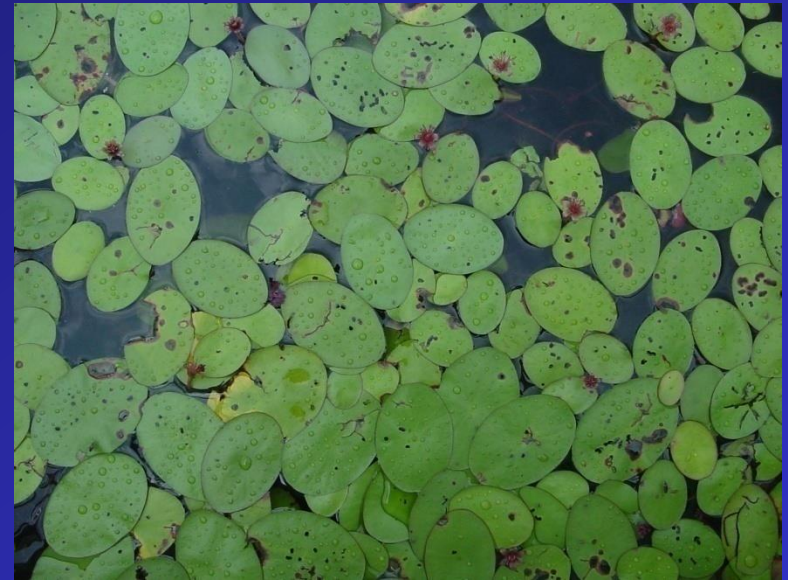
- American lotus
 - *Nelumbo lutea*



Commonly Encountered Weeds

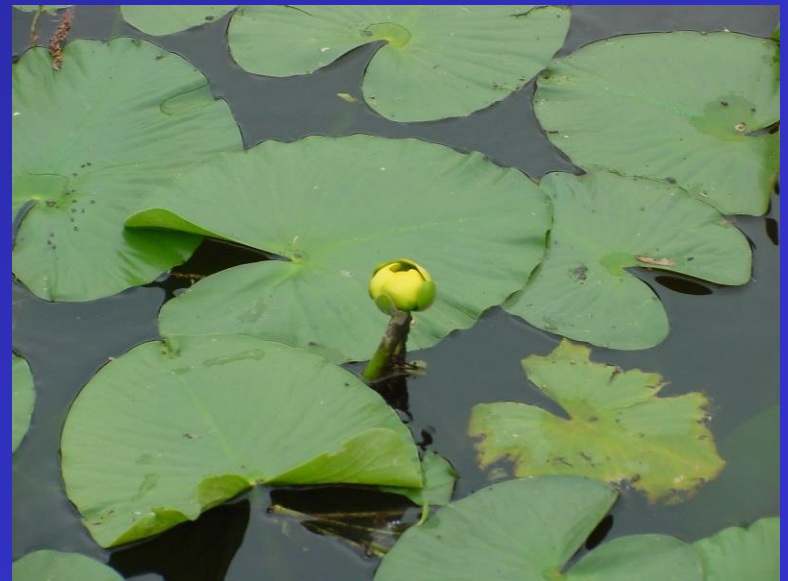
- Other Pads

Watershield



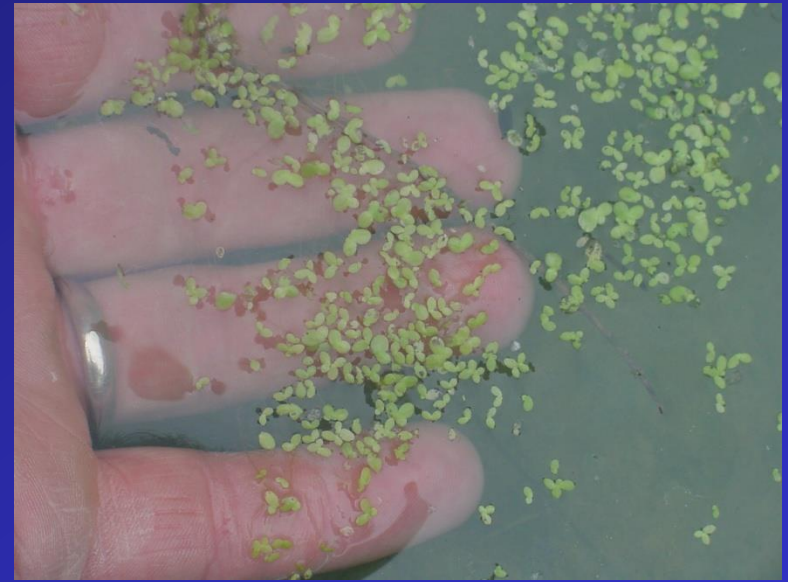
Water lily

Spatterdock



Commonly Encountered Weeds

- Duckweeds
 - *Lemna* spp.
 - *Spirodela* spp.



Commonly Encountered Weeds

- Watermeal
 - *Wolffia* spp.



Control Measures

- Prevention
- Mechanical
- Biological
- Chemical
- Shading
- Nutrient Sequestration



Control Options: “It All Depends”

- Species
- Size, Shape and Watershed of Pond/Lake
- Water Uses
- Aversion to Chemicals
- Sense of Urgency
- Budget

Prevention

- Minimize shallow water
- Minimize nutrient loading
- Incorporate aeration
- Deter waterfowl
- Don't introduce weeds



Mechanical

- Labor intensive (even with machines)
- Short-term solution
- Can even encourage spread of weeds
- Lethal to littoral fishes, amphibians, inverts, etc.



Biological Control

- Grass Carp
 - prefer succulent vascular plants
 - ineffective on algae (stock at high rates)
 - economical, long-term control option





Biological Control

- Tilapia
 - readily consume algae
 - convert nuisance algae into forage & fillets
 - will not overwinter in Midwest



Chemical

- Short-term control
 - Re-growth likely
 - Treating symptoms only
- Rapid results
 - Depends upon chemical
- Generally safe
 - If handled correctly
 - Perceived by some as poison





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Approved Chemicals

- Copper complexes
 - Contact, algaecides
- Peroxides
 - Contact, algaecides
- Diquat
 - Contact, broad spectrum
- Endothol
 - Contact, broad spectrum
- Flumioxazin
 - Contact, broad spectrum
- Glyphosate
 - Systemic, broad spectrum
- Imazapyr
 - Systemic, broad spectrum
- 2,4-D
 - Systemic, selective
- Fluridone
 - Systemic, selective
- Triclopyr
 - Systemic, selective







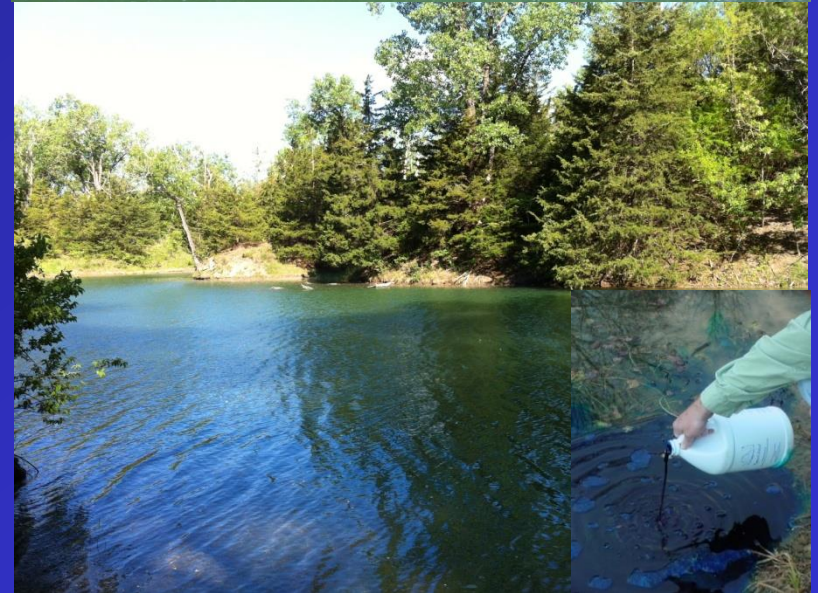






Shading

- Fertilization
 - Healthy plankton bloom
 - Limit sunlight penetration
 - Fish production benefit
- Aquatic dyes
 - Early in season before phytoplankton can bloom
 - Creates a “pretty” blue-green color
 - Impractical on large lakes
 - Need to consider flushing rate

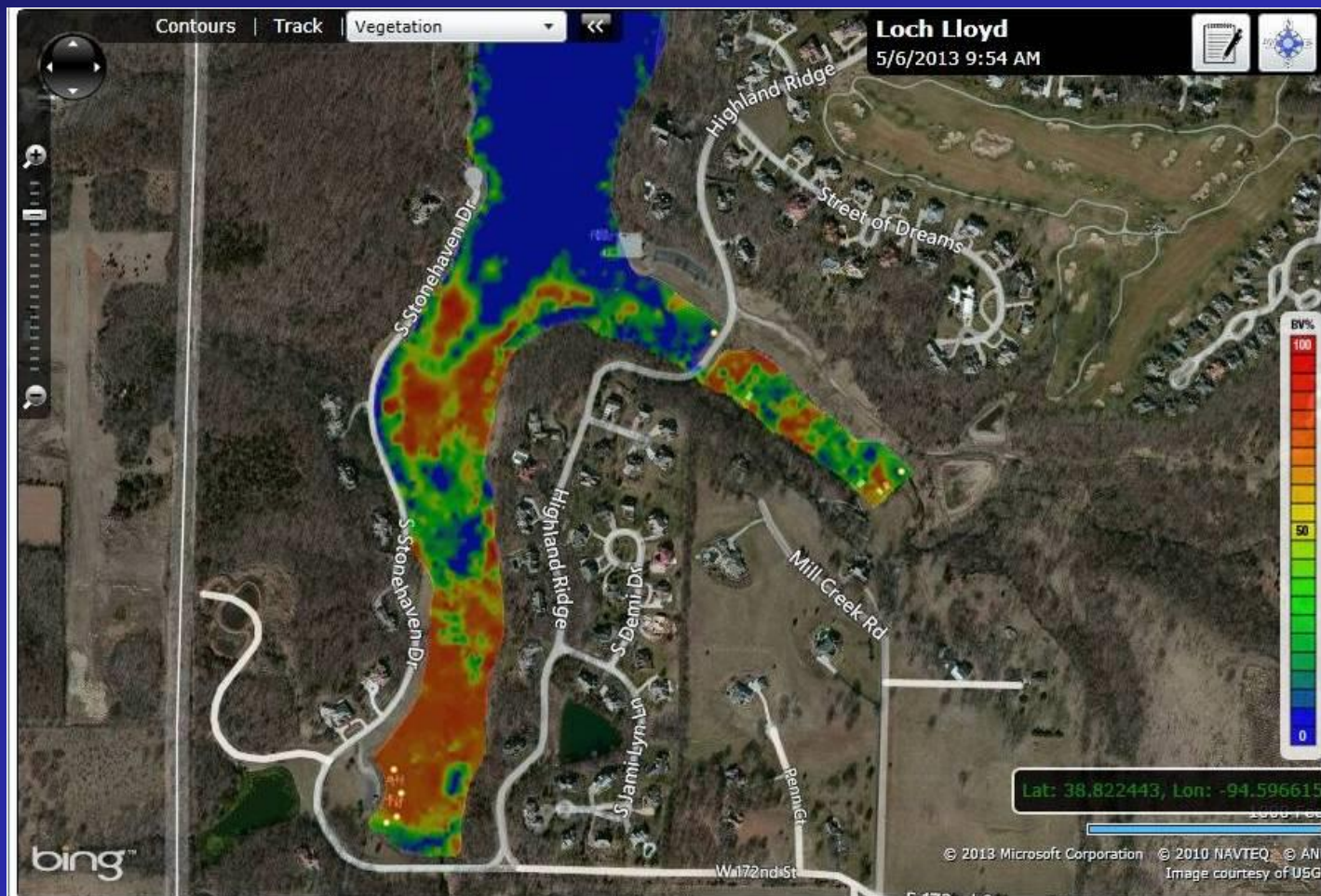


Integrated Management

- Integrated approach usually the best option
- Incorporates multiple control measures
 - Herbicide applications
 - Stocking grass carp and/or tilapia
 - Winter drawdown, deepen edges, fertilization regimen
 - Nutrient reductions/sequestration, aeration, microbes
- Need to monitor and make adjustments to plan

Monitoring and Assessment

- Determine effectiveness of control measures
- Identify new areas of infestation



Education

Biology and Control of Aquatic Plants



A Best Management Practices Handbook: Third Edition

Lyn A. Gettys, William T. Haller and David G. Petty, editors



The Aquatic Ecosystem Restoration Foundation views sustainability in the aquatic industry as:

Protecting, rehabilitating and restoring biodiversity while sustaining the health of critical natural aquatic habitats and ecosystems through the selective control or eradication of invasive and nuisance aquatic weeds and algae. Aquatic weeds and nuisance algae alter the ecological balance in bodies of water such as lakes, ponds, rivers, streams and estuaries.

Invasive aquatic and riparian vegetation are significant stressors on our nation's aquatic habitats. The impact on those habitats include decreasing biodiversity, degrading water quality, impeding navigation, irrigation and recreation, impacting the health of animals and humans, and accelerating the loss of habitat for fish and wildlife. Based on sound science, the AERF supports the responsible use of all tools available, including EPA registered aquatic herbicides and algicides. The strategic use of these tools should be employed to return threatened bodies of water to sustainable aquatic ecosystems.

We have a responsibility to create sustainable aquatic ecosystems that will preserve the integrity of these aquatic environments for future generations. This responsibility includes protecting, restoring and enhancing aquatic ecosystems while encouraging the use of sustainable management practices for our nation's waters.

Remember to Take a Kid Fishing

