

Aquatic Plant Management Workshop Part 1



Chicago Metropolitan
Agency for Planning



LakeCounty
Health Department and
Community Health Center



Illinois
Lake
Management
Association

Outline

1. Benefits of Plants
2. Problems with Excessive Aquatic Vegetation
3. Management Methods
4. Developing a Aquatic Plant Management Plan
5. Regulatory and Labels
6. Writing a Request for Proposals

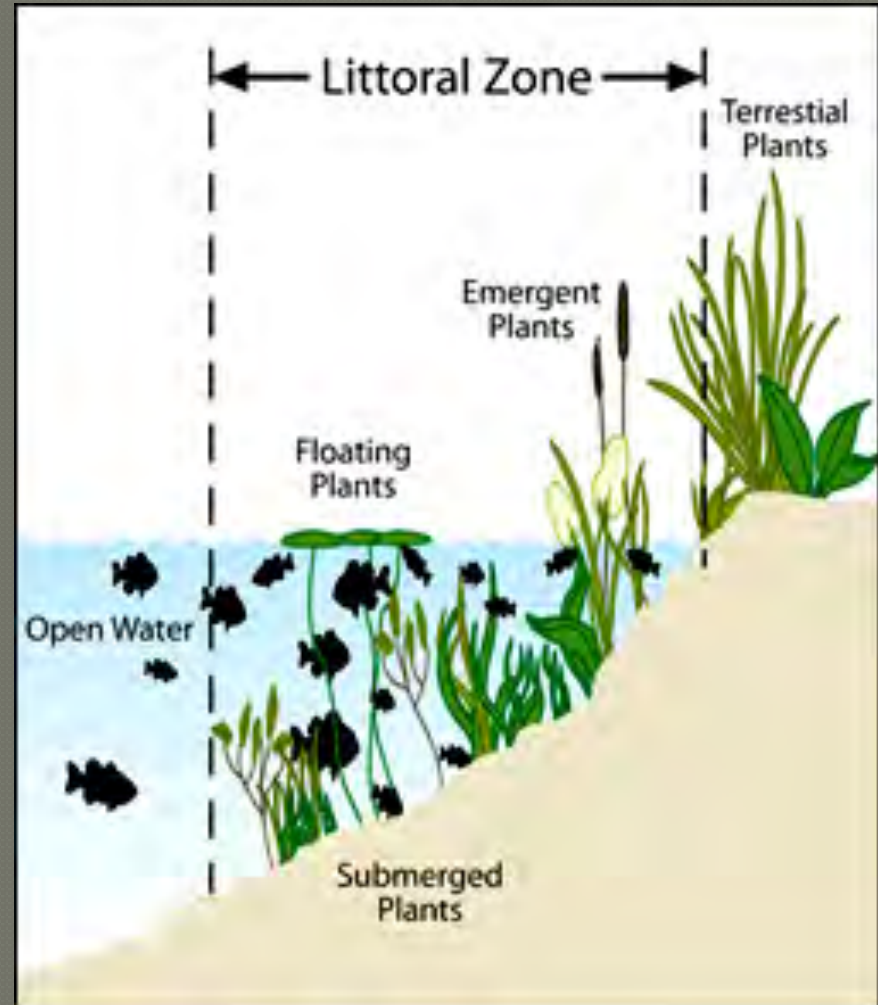
Aquatic Plant Management Workshop Part 1

1. Benefits of Plants



Benefits of Plants

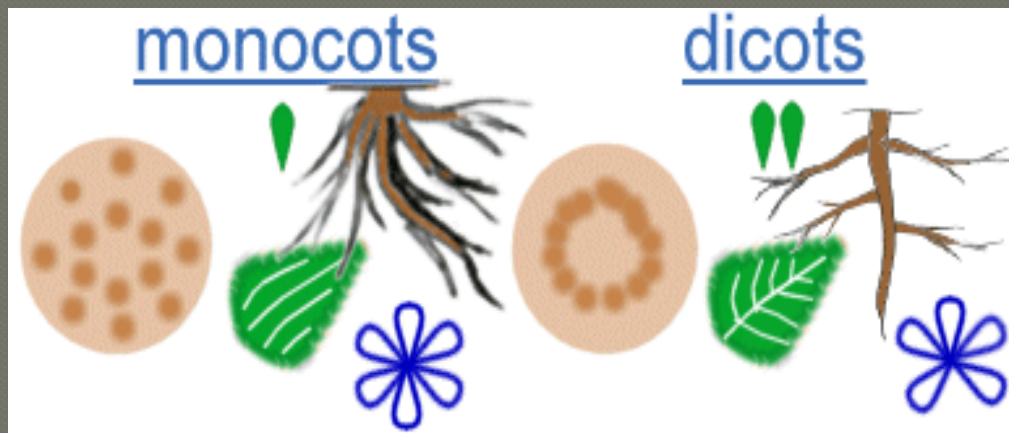
- Emergent
 - Filter runoff
 - Reduce Erosion
 - Spawning areas
- Floating-Leaved
 - Shade and refuge
- Submersed
 - Create oxygen
 - Compete with algae
 - Reduce turbidity



Aquatic Plants

- Flowering plants are divided into two groups:

Simplified Illustration of the differences between monocots and dicots

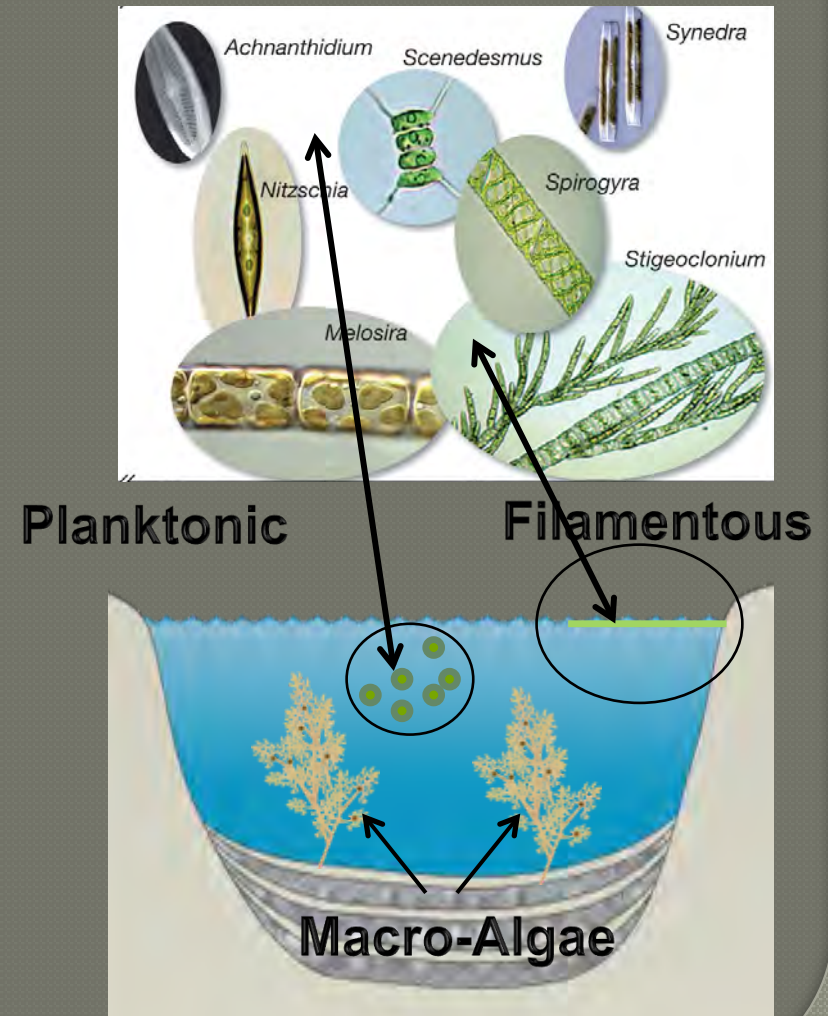


Oracle Education Foundation

- Monocots Grass-like
 - One cotyledon
 - Parallel leaf veins
 - Complex roots
 - Multiple of 3 petals
- Dicots Broad-leaf
 - Two cotyledon
 - Networked leaf veins
 - Taproot
 - Multiple of 4 or 5 petals

Algae Vs Aquatic Plants

- Planktonic
 - Suspended in water
 - Color the water
 - May rise to the surface
- Filamentous
 - Dense free-floating mats
 - Hair like structure
- Macro-algae
 - Resemble aquatic plants



Planktonic Algae Blooms

- Blooms usually occur where nutrients are excessive



Chain O' Lakes, Lake County

Filamentous Algae Blooms

- Mat-like growths usually begin around the edges and bottoms of bodies in the spring.



Grand Avenue Marsh, Lake
County

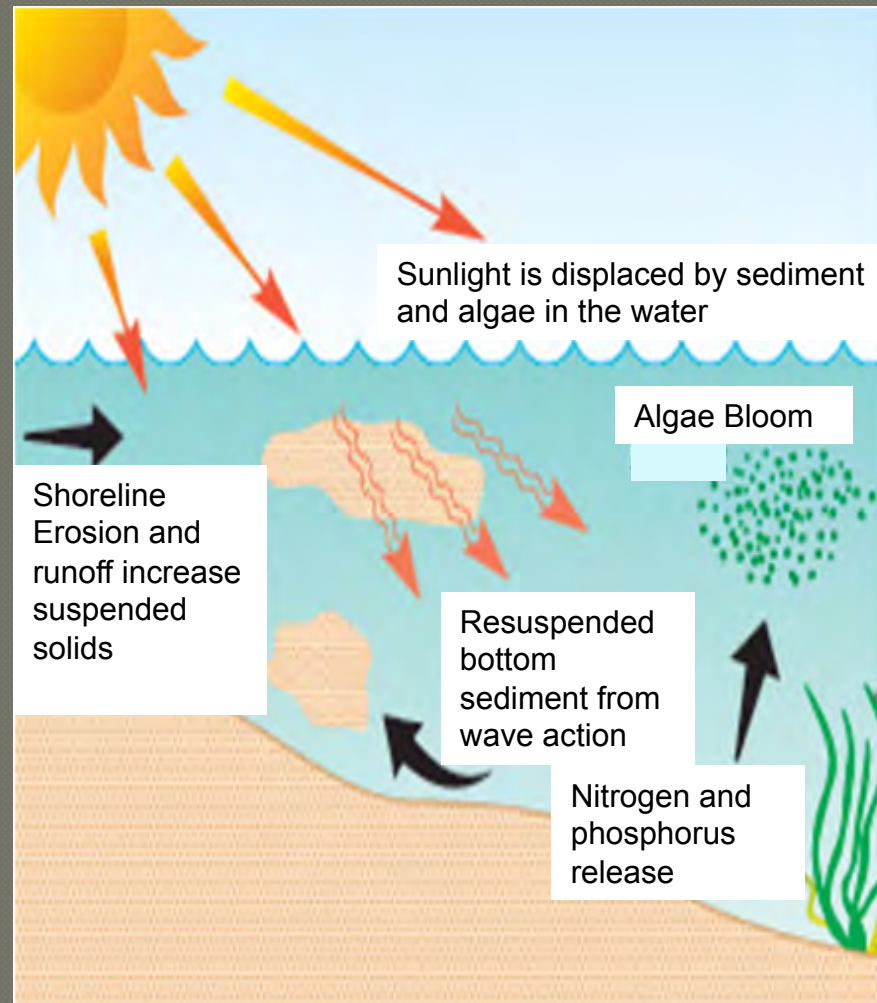
Macro-algae in Lakes

The plant is completely underwater and has a musky smell. It provides valuable habitat for fish and sediment stabilization however, under certain circumstances can form dense colonies



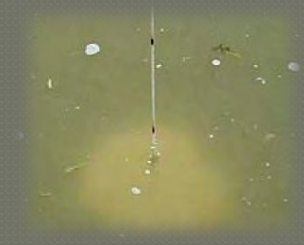
Algae Dominated

- Muck bottoms
- Low oxygen levels
- Poor fish habitat
- Appearance of pea soup



Aquatic Plant Dominated

- Dense plant growth
- Excellent habitat
 - Fish
 - Ducks
 - Bugs
- Better water quality



Before Eurasian Watermilfoil Treatment



After Eurasian Watermilfoil Treatment

Aquatic Plant Management Workshop Part 1

2. Problems with Excessive Aquatic Vegetation



Problems with Excessive Aquatic Plant Populations

- Reduce native plant growth
- Impede recreation
- Poor game fish
- Economic impacts
- Reduce water clarity
- Increase in organic accumulation





Aquatic Plants

- Plants in Illinois that have potential to reach nuisance densities.
 - Coontail
 - Eurasian Watermilfoil
 - Curlyleaf Pondweed
 - White Water Lily
 - Spatterdock
 - Duckweed
 - Watermeal
 - Elodea



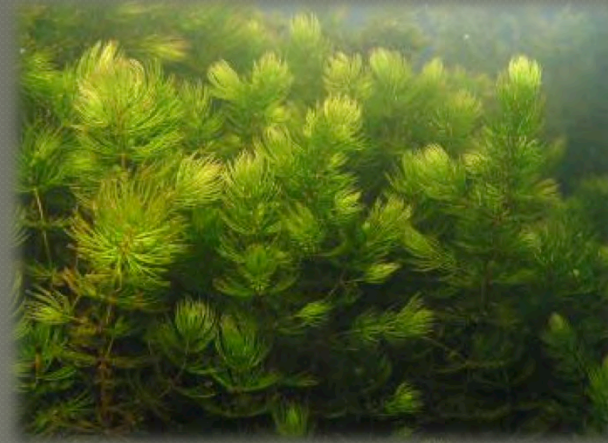
Coontail-Dicot

CERATOPHYLLUM DEMERSUM

- Origin
 - Native, Common in Lake County and Illinois
- Description
 - submersed aquatic plant with coarse, bushy stems and no roots.
- Habitat
 - Found in the submersed plant community from the surface to depths of several meters. Lacking true roots, the plants may drift between a variety of depths during the growing season.
- Importance
 - Overwinters as an evergreen plant, it provides important habitat to many invertebrates and fish year round.



The tips of the braches are crowded with leaves giving it a "Coontail" resemblance.



**LOOK
ALIKES:
CHARA
MILFOILS**

Eurasian Watermilfoil-Dicot

*MYRIOPHYLLUM SPICATUM EXOTIC**

- Origin
 - Europe and Asia. Found throughout lake county and Illinois.
- Description
 - often abundantly branched stems form a reddish or olive-green surface mat in summer.
- Importance
 - This invasive plant spreads rapidly, crowding out native species, clogging waterways, and blocking sunlight and oxygen from underlying waters.
- Look Alikes
 - Northern Watermilfoil
 - Coontail

Leaves are rectangular with ≥ 12 pairs of leaflets per leaf and are dissected giving a feathery appearance, arranged in a whorl



Non-native

Eurasian Water-milfoil, ©DNR Photo



Topped out Eurasian Watermilfoil,
Harvey Lake, Lake County

White Water Lily-Dicot

NYMPHAEA ODORATA

- Origin
 - Native, North America
- Description
 - round, smooth, green, leathery leaves are up to 30 cm in diameter and have a slit on one side. The underside is often red or purplish with numerous veins.
- Importance
 - leaves and roots are eaten by mammals and the seeds are eaten by waterfowl.
- Look Alikes
 - Spatterdock
 - Watershield



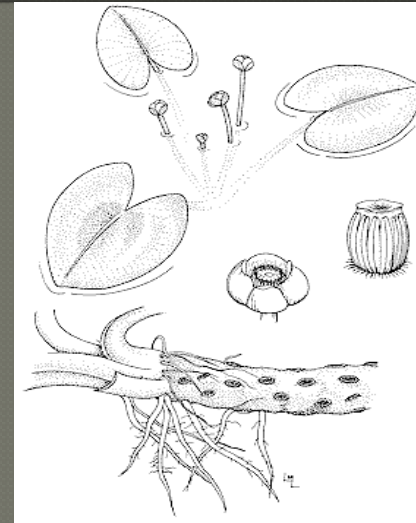
Straight, flexible stalks attach leaves and flowers to thick submerged rhizomes.



Spatterdock-Dicot

NUPHAR VARIEGATA

- Origin
 - Native, North America
- Description
 - Large green, heart-shaped leaves, and greenish-yellow globes open to form bright yellow cup-shaped flowers that rise above the water
- Importance
 - Food source for mammals and waterfowl and provides spawning habitat for fish
- Look Alikes
 - White Waterlily, Watershield



Fibrous roots anchor the massive, scaly, log-like rhizomes to the sediment.



Elodea-Monocot

ELODEA CANADENSIS

- Origin
 - Native, North America
- Description
 - Depending on growing conditions some are bushy and robust, others have few leaves and weak stems
- Importance
 - FOOD AND HABITAT FOR FISH, WATERFOWL, AND OTHER WILDLIFE
- Look Alikes
 - BRAZILLIAN ELODEA
(EXOTIC)

This species can sometimes occur as tangled masses in lakes, ponds, and ditches.

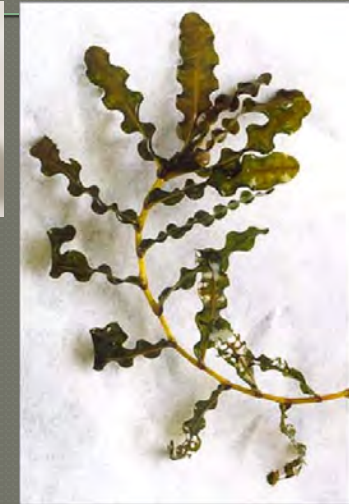


- (EXOTIC)

Culyleaf Pondweed-Monocot

POTAMOGETON CRISPUS EXOTIC*

TURION



CAN FORM
DENSE
STANDS IN
WATER UP TO
15 FEET DEEP

- Origin
 - ASIA, AFRICA, AND EUROPE FOUND THROUGHOUT LAKE COUNTY AND ILLINOIS
- Description
 - oblong, stiff, translucent leaves have distinctly wavy edges with fine teeth, also produces turions for reproduction
- Importance
 - Tolerance for low light and water temperatures that allow the plant to get a head start on native plants. By mid summer when most aquatic plants are growing, Curlyleaf plants are dying off. Which may result in a critical loss of dissolved oxygen and an increase in nutrients
- Look Alikes
 - NONE



Potamogeton crispus
curly pondweed growing in
Blake Lake, Wisconsin
Photo by Frank Koshorek

Duckweed-Monocot

LEMNA SPP.

Origin

- Native, found throughout much of the temperate and subtropical regions of the world

Description

- The leaf-like body floats on the water surface

Importance

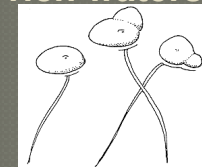
- Food for fish and waterfowl and habitat for invertebrates. Also has been used to remove nutrients from sewage effluent

Look Alikes

- Watermeal and Giant Duckweed



*A single Duckweed plant can reproduce about every 3 days under ideal nutrient-rich waters



Duckweed and Watermeal on Bangs Lake, circle channel.

Watermeal-Monocot

LEMNA SPP.

- Origin
 - Native, found throughout much of the temperate and tropical regions of the world
- Description
 - Watermeal plants are tiny, globular plants without roots
- Importance
 - Provides food for fish and waterfowl, and habitat for aquatic invertebrates. Has a high nutrient value and has been used for cattle and pig feed in Africa and India
- Look Alikes
 - Algae
 - Duckweed



They sometimes occur in colonies that form bright green mats on sheltered waters

Smallest flowering plant in the world



Close up of Watermeal and Duckweed

Chara-ALGAE

- Origin
 - Native, common in Lake County and Illinois
- Description
 - branchlets of equal length grow in whorls around the stem, and are never divided. These branchlets often bear tiny thorn-like projections, which give the plant a prickly appearance when magnified
- Importance
 - Food source for waterfowl. Provides protection for invertebrates and young fish.
- Look Alikes
 - Coontail
 - Spiny Naiad



Although these common lake inhabitants look similar to many underwater plants, there are actually ALGAE! Chara, will not extend above the water surface and often has a “grainy” or “crunchy” texture



Photo Ken Russ

Aquatic Plant Management Workshop Part 1

3. Management Methods



Management Methods

- Prevention
- Mechanical
- Biological
- Habitat Alteration
- Chemical

Prevention

1. Prevent the spread
2. Reduce Nutrients
 - Aquatic plants need the proper conditions to grow.

CLEAN BOATS CLEAN WATERS



Prevent the Spread

STOP THE SPREAD

INVASIVE AQUATIC SPECIES

CHECK-CLEAN-DRY

CHECK
CLEAN
DRY

You can help protect these waters

Clean In
Clean out

BE A HERO

TRANSPORT ZERO

FIGHT THE SPREAD OF AQUATIC INVADERS

STOP AQUATIC HITCHHIKERS!

Remove species like zebra mussels, quagga mussels, and the 50+ other IAS before you launch and away. You can help prevent their spread.

Before leaving launch: After leaving launch:

Remove zebra, quagga, and all other mussels. Drain all water from livewells, bilge, and hull. Rinse all equipment with lake water. Report sightings, species, and/or numbers of drift or fouling to 888-337-7647.

STOP AQUATIC HITCHHIKERS!

STOP AQUATIC HITCHHIKERS!

Arrive Cleaned Drained Dry

PROTECT LAKE GEORGE

**CLEAN BOATS
CLEAN WATERS**

stop AQUATIC INTRUDERS

the spread of

STOP!

The spread of invasive species and harmful pathogens

Unused bait and invasive plants and animals hitchhiking in bait buckets can ruin your fishing.

DON'T DUMP BAIT

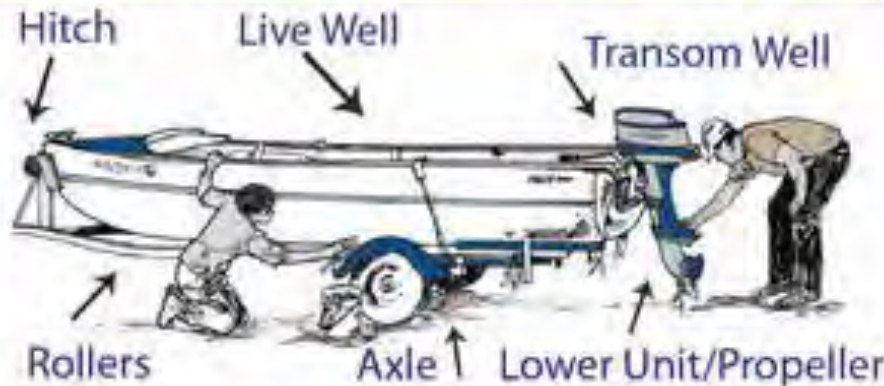
ALWAYS:
DRAIN BAIT BUCKET WATER ON LAND
DISPOSE OF UNWANTED BAIT IN THE TRASH

www.protectyourwaters.net

Sea Grant

Developed by Environmental and Estuarine Science Institute (Sea Grant), Florida Research 1108 (in partnership with the Gulf of Mexico Research Initiative) © 2013 The Board of Trustees of the University of Florida, 1108-1134

WATERCRAFT CHECK POINTS



KEEP IT CLEAN

STOP AQUATIC HITCHHIKERS!

Reduce Nutrients

- In most Lake County Lakes everything that aquatic plants and algae need to survive is available except: sunlight, warmth, nitrogen, and phosphorus.



Reduce Nutrients

- Do NOT fertilize your pond or lake!



Summerhill Estates Lake, Lake County,
Illinois

Reduce Nutrients

- Maintain native vegetation cover around the body of water and areas that drain into the body of water



Photo Credit, Pizzo

Reduce Nutrients

- Do NOT apply Fertilizers 10-20 feet from the shoreline



Forest Lake, Lake County IL

Reduce Nutrients

- Check septic tanks for possible leakage or seepage into the water



Antioch Lake, Lake County, Illinois



Failing Septic from shoreline home on Antioch Lake, Lake County, Illinois

Reduce Nutrients

- Establish a settling or retention pond or wetland area to receive and settle nutrients before the flow reaches the lake



Tower Lake County IL

Mechanical / Manual Control

● Considerations

- The size of the growth
- The size of the lake
- Type of aquatic plant for control
- “Mowing the plants”



Use the
right tool
for the job

Manual

○ Pros

- Cost effective
- Reduce chemical applications

○ Cons

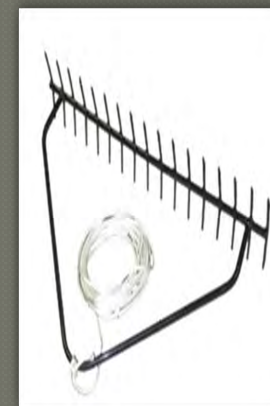
- Populations must be LOW
- Labor intensive
- Non selective



Aquatic Rake with
Blade



Aquatic Plant Rake



Double-sided Throwable
Rake

Mechanical



Smaller Lake
Harvester
Timber Lake, Lake
County, Illinois



Loon Lakes, Lake County,
Illinois

Mechanical

● Advantages

- Cutting creates immediate open areas of water
- Site Specific
- No Chemical Drift
- Habitat for fish and other organisms is retained

● Disadvantages

- Specialized equipment
- Not Selective
- By catch
 - Endangered species
- Regrowth
- Floating Fragments
- Disposal

Biological-Milfoil Weevil

- Native
 - Exclusive to Milfoil species
- Results are variable
 - Overwinter habitat
 - Fish predation
 - Water depth
 - Nutrient Availability
 - Hybridization



Eurasian Watermilfoil Weevil (*Euhrychiopsis lecontei*)
(Alwin, 2008)

Biological-Grass Carp

- **Exotic**
 - **Eastern Asia**
- **Vegetarians**
 - Consume almost all submersed vegetation
 - **Except Eurasian Watermilfoil**
- **Advantages**
 - Longterm cost effective tool for aquatic plant removal in closed systems
- **Disadvantages**
 - Decreased water quality
 - Longterm increases
 - Nutrients
 - Algae



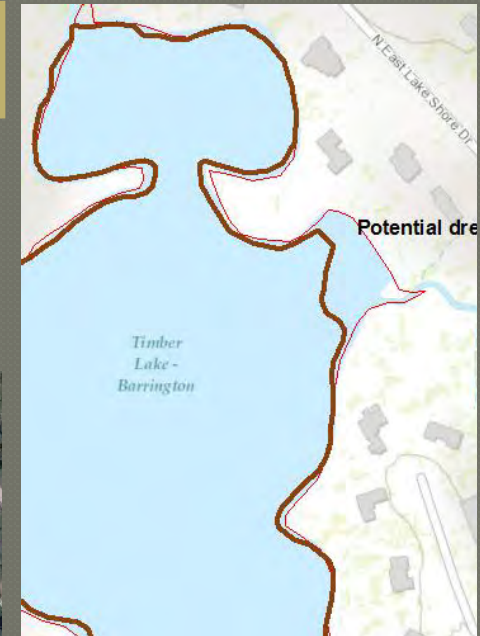
Grass Carp (*Ctenopharyngodon idella*)
Tower Lake South, Lake County, Illinois

Habitat Alteration

● Lake Drawn Down

- Exposure of sediments in shallow areas
 - EWM, waterlilies
- Degree of control depends of severity of winter

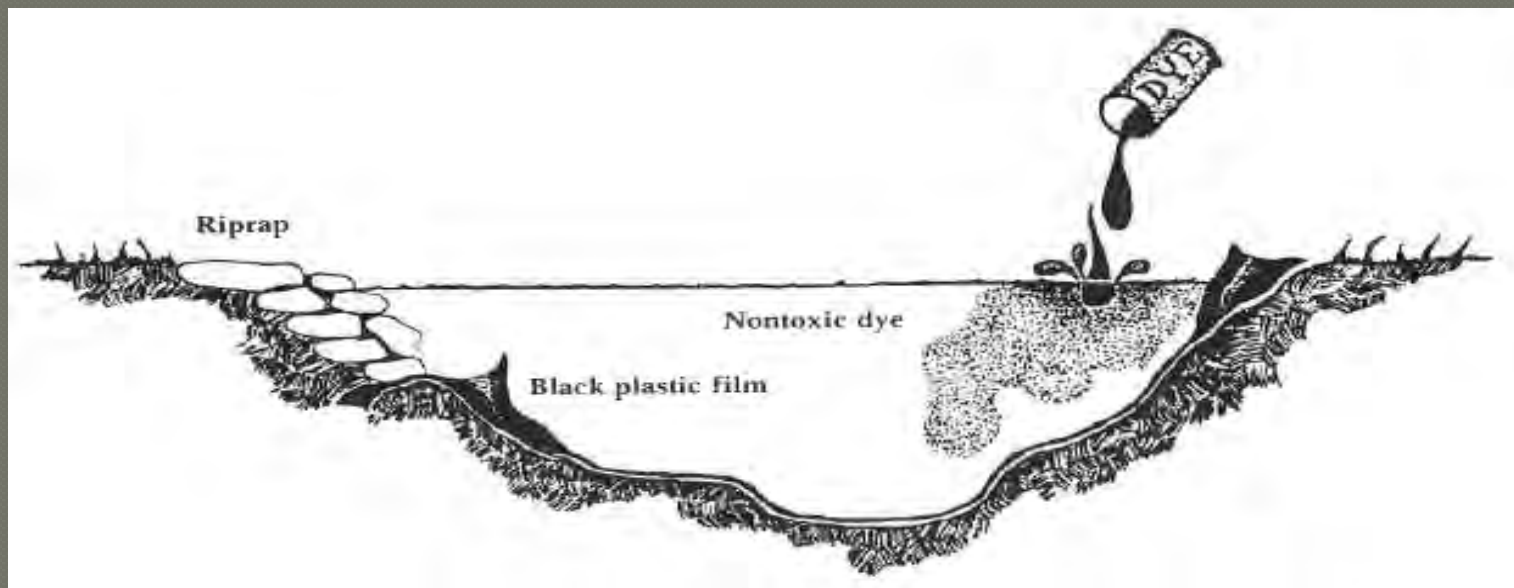
Lake Draw Down Water Level Winter 2012-2013
(Right)



Eurasian Watermilfoil population 2013, Tower Lake South, Lake County, Illinois (Left)

Habitat Alteration

- Riprapping shorelines
 - Emergent plants
- Anchoring black plastic sheeting to bottom sediments
 - Dock areas
- Dyes
 - Apply early
 - Effective only on submerged plants



Chemical – Nutrient Manipulation

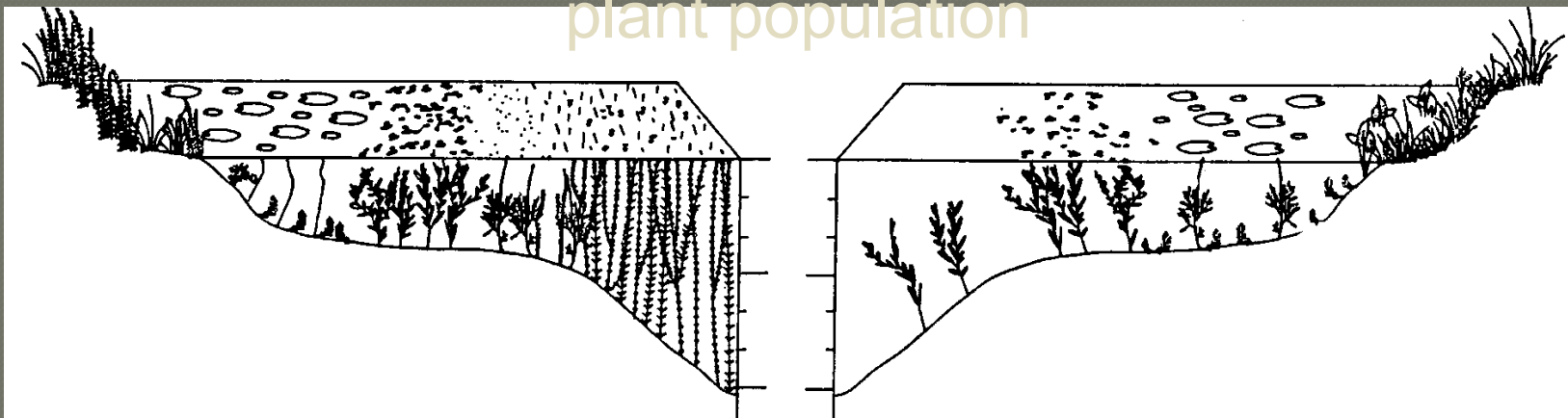
- Aluminum sulfate (alum) most common
- Inactivates phosphorus in water and sediment
- Better for algae control, less for plants
- Life span is variable: 5-20 years



Chemical

- Types of treatments
- Plant susceptibility
- Commonly used herbicides

A key to a healthy lake is a well-balanced aquatic
plant population



Chemical Considerations

1. Proper identification of plant or plants
2. Uses of the water to be treated
3. Timing of treatment
4. Water temperature
5. Method of application
6. Probability of retreatment
7. Toxicity to fish
8. Damage to shoreline vegetation and desired aquatic plants
9. Cost
10. Permits/Bottom Ownership

Contact Herbicides

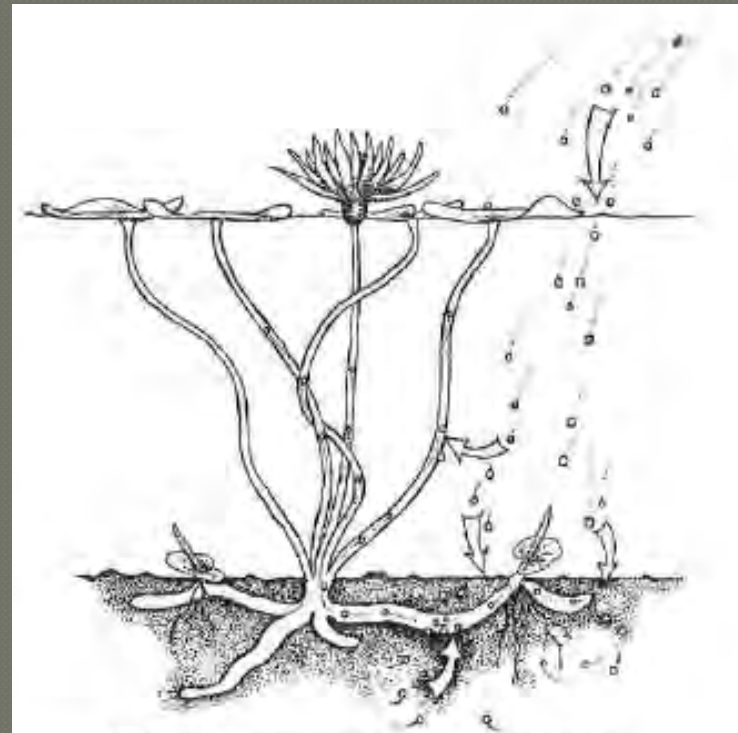
- Good coverage is essential
- Kills plant tissue herbicide comes in contact with
- Initially effective
- Often rapid recovery
- Possible low oxygen due to decomposition



University of Florida Contact
Herbicides

Systemic

- Are mobile in plant tissue and affect all portions of the plant
- Considered “selective herbicides”
 - i.e. Dicots
- Longer exposure time needed
- Plants begin to collapse 2-3 weeks after treatment



Movement of systemic herbicides Illinois
Pesticide Applicator Training Manual 39-6

Endothall-Contact

● Formulation

- Formulation: granular and liquid
- Trade Names: Aquathol, Hydrothol 191

● Aquatic Use

- Contact Herbicide
 - Prevents some plants from making the proteins they need
- Vary in plant selection based on formulation

● Exposure

- Hours to days

● Water Restrictions

- Irrigation and animal water restrictions

● Impact on Aquatic Organisms

- Hydrothol 191- not recommended where fish are considered an important resource.

● Human Health

- At this time EPA believes endothall poses no unacceptable risks to water users if water use restrictions are followed. Endothall is not a neurotoxicant or mutagen, nor is it likely to be a human carcinogen

Diquat-1986

● Formulation

- Formulation: liquid
- Trade Names: Reward, and Weedtrine-D

● Aquatic Use- Contact

- Exposure Time
 - Hours to days
- Non Selective
- Strongly attracted to silt and clay particles
 - Do NOT use in Turbid water, do not disturb bottom sediments

● Water Restrictions

- No restrictions for swimming or eating fish.
- Some irrigation restrictions

● Degradation

- Not degraded, binds to organic matter in sediment indefinitely and will accumulate in the sediment

● Impact on Aquatic Organisms

- Direct toxicity and loss of habitat impact amphipods and daphnia
- Walleye are the most sensitive fish to diquat

● Human Health

- Serious health impacts (e.g. birth defects and cancer) is not believed to be significant. Some risk of allergic reactions or skin irritation is present for sensitive individuals.

2,4-D-1946

- Formulation-EPA approved 1946, 1986, 2005
 - Formulation: liquid and slow release granular
 - Trade Names: Aqua-Kleen, Weedar 64, and Navigate
- Aquatic Use-Systemic
 - Used for submersed dicots like Eurasian Watermilfoil
 - Considered “selective”
 - Exposure time: 4 to 21+ days
- Water Restrictions
 - Depending on formulation, 24-hour swimming restriction and 30 day irrigation
- Impact on Aquatic Organisms
 - Ester formulation: toxic to fish and invertebrates
 - Amine formulation are not at application rates
- Human Health
 - Some studies have documented increased risk in high exposure populations (farmers) of Hodgkin’s lymphoma
 - 2005 studies determined in 2005 that there is not sufficient evidence to classify 2,4-D as a human carcinogen

Fluridone-1986

- Formulation-EPA registered 1986
 - Formulation: liquid and slow release granular
 - Trade Names: Avast!, Sonar, and Whitecap
- Aquatic Use-Systemic
 - Plants must be actively growing
 - Low concentrations but long exposure time (45+ days)
 - Plants vary in susceptibility and may build a resistance
- Water Restrictions
 - No restrictions on swimming, eating fish or drink water, some irrigation restrictions may apply
- Impact on Aquatic Organisms
 - No apparent short or long term effects on fish at application rates. Invertebrates have been reported to have an increase in mortality
- Human Health
 - No evidence of birth defects, reproductive toxicity, genetic mutations or is it considered a carcinogenic
 - EPA has requested additional studies on degradation products that may cause birth defects.

Glyphosate-Systemic

- Formulation
 - Trade Names: Rodeo, Shore-Kear, Aquapro and Refuge
- Aquatic Use
 - Only effective on plants that grow above the water.
 - Must be applied on plants that are actively growing
 - Plants die in 2-7 days 30 for woody plants
- Water Restrictions
 - No restrictions on swimming, or eating fish
 - Potable water intakes within a ½ mile must be turned off for 48 hours
- Impact on Aquatic Organisms
 - Rated practically non-toxic to aquatic species, some laboratory testing indicates that glyphosate is toxic to carp, bluegills, trout, and water flea at dosages above the application rate
- Human Health
 - Glysophate is linked to endocrine disruption and effects human embryonic cells

Imazamox-2008

- Formulation-EPA registered 2008
 - Formulation: liquid and granular
 - Trade Names: Clearcast, Clearcast 2.7G
- Aquatic Use-systemic 14+days exposure
 - Relatively new herbicide that has not been extensively field tested
 - Current uses, emergent vegetation and Curlyleaf Pondweed
- Water Restrictions
 - Immediate use for fishing, swimming, cooking, bathing, and watering livestock. A 24- hour irrigation restriction may apply
- Impact on Aquatic Organisms
 - Laboratory tests using rainbow trout, bluegill, and water fleas indicate imazamox is not toxic at application rates. Imazamox does not bioaccumulate in fish
 - Honey bees are affected at application rates so drift during application should be minimized
- Human Health
 - Not considered to pose a risk to recreational water users. Chronic tests imazamox was not shown to cause tumors, birth defects or reproductive toxicity in test animals.

Imazapyr-2003

- Formulation-Registered with EPA 2005:
 - Trade Names: Habitat, Ecomazapyr 2sl, Imazapyr 2sl, and Polaris AC
- Aquatic Use-Systemic
 - Plants that are actively growing,
 - Used to control emergent and floating-leaf vegetation,
 - **Not recommended for submersed vegetation**
- Water Restrictions
 - No restrictions on swimming, or eating fish
 - Potable water intakes within a ½ mile must be turned off for 48 hours
- Impact on Aquatic Organisms
 - Imazamox does not bioaccumulate in fish
 - Is practically non toxic to fish, invertebrates, birds and mammals
- Human Health
 - Chronic toxicity tests for imazapyr indicate that it is not carcinogenic, mutagenic, or neurotoxic. It also does not cause reproductive or developmental toxicity, and is not a suspected endocrine disrupter.

Copper Compounds-1950

- Formulation-Used since 1950
 - Copper sulfate and copper chelate
 - Trade Names: Nautique, Komeen, Captain, K-Tea, EartheC, Curtrine-Plus, Clearigate, and SeClear
- Aquatic Use
 - Primarily used to treat algae but some plants are effected as well
 - Effective on free-floating, filamentous algae, and macro-algae
 - Copper is an element and does not break down like other herbicides. Buildup of copper in lake sediments is a serious concern
- Water Restrictions
 - No restrictions
- Impact on Aquatic Organisms
 - Copper sulfate and chelated copper products are toxic to invertebrates at application rates
- Human Health
 - Copper is not carcinogenic, Even with regular use for many years, few chronic health concerns have been documented. In one study applicators were found to have some sings of liver damage.

Sodium Carbonate Peroxyhydrate-2002

- Formulation-Registered with EPA in 2002
 - Formulation: granulation
 - Trade Names: Phycomycin, GreenClean, PAK27 and EcoBlast
- Aquatic Use
 - Filamentous algae and free-floating
 - Not to be used with insect biocontrol measures
- Water Restrictions
 - No restrictions
- Impact on Aquatic Organisms
 - Not toxic to minnows at application rates, it is toxic to water fleas at application rates
 - Highly toxic to honey bees
- Human Health
 - No significant risks are present to recreational users of water treated.

Aquatic Plant Management Workshop Part 1

4. Develop an Aquatic Plant Management Plan



Getting Started

- Reaching and Listening to the people
 - **Identify lake stakeholders**
 - Lake association
 - Shoreline and bottom owners
 - Boaters, fishermen, swimmers, etc.
 - Government officials
 - **Identify communication pathways**
 - Convenient times and locations for meetings
 - Email/mail/posting signs in community spaces/social media/websites/
 - **Identify current lake uses**
 - **Identify current and past lake issues**

› Goal

- Define the outcome that is most agreeable and achievable based on lake morphology and lake users

› Problem Assessment

- Collect information about a problem and alternatives evaluating general feasibility

› Recommendations

- Prioritize management options, setting objectives and drafting the plan

› Education and Outreach

- Initiated at the beginning of the APMP and should continue throughout the APMP

› APMP Management

- Management of assets, detailed records of expenses, and time

› Implementation

- Scheduling activities for taking action to achieve goals

› Monitoring

- Biological communities and water quality parameters on a regular basis (VLMP)

› Evaluation

- Assessment of management techniques and stakeholder satisfaction

Goals



- Why are we doing this?
 - Goals need to be practical, set reasonable expectations
 - Consider which goals should be given priority
 - Education and communication to inform people why the plan is needed



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Problem Assessment

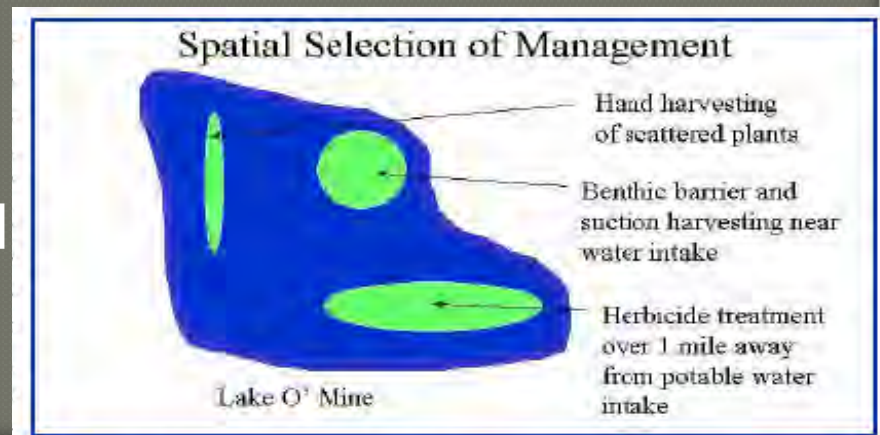
- Focus on identifying a problem and collecting information about the problem
 - Existing plans and studies of the lake
 - Lake County Health Department Assessments
 - IDNR fish assessments
 - Aquatic plant, fish, wildlife, and water quality data
 - Citizen surveys
 - Volunteer Lake Monitoring Program
 - River Watch
 - Maps and historical documents and traditional uses
 - Aerial photos
 - State and local regulations and ordinances
 - Examples of other lake APMP
 - Consider all alternatives



Recommendations

Analysis

- Compare existing conditions to desired conditions
- Should management efforts be aimed at managing lake plants in a different way
- Is it possible to restore the lake to an earlier condition
- Have invasive or rare species been identified that will alter the priorities for control methods
- Are control measures proposed in areas where no control is desired or warranted
- Note the proximity of aquatic plant concerns to desirable habitat areas and beds of native plants





Education and Outreach

- Initiated at the beginning of the APMP and continues throughout the APMP
 - Helps to build a consensus regarding the solution
 - Utilize local media outlets
 - Social media
 - Share your success with other associations
 - Illinois Lakes Management Association/
Conference



APMP Management

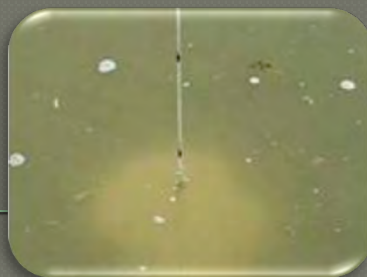
- Successful projects are the result of good planning and management
 - Assets
 - Financial resources
 - Partnerships
 - Volunteers
 - Personnel
 - Detailed records of expenses
 - Expenditures of time and labor



Implementation

• Who does What by When

- Administration
 - Requirements of staff or volunteers
 - Equipment
- Legal
 - Permits
 - Liability and liability insurance
- Financial
- Consider costs and prepare a budget
- Information and Education
 - Gives the major details of the APMP plan to the public and lake users

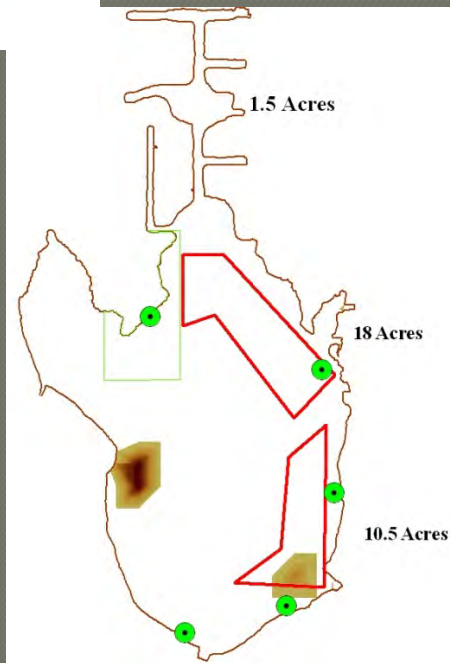
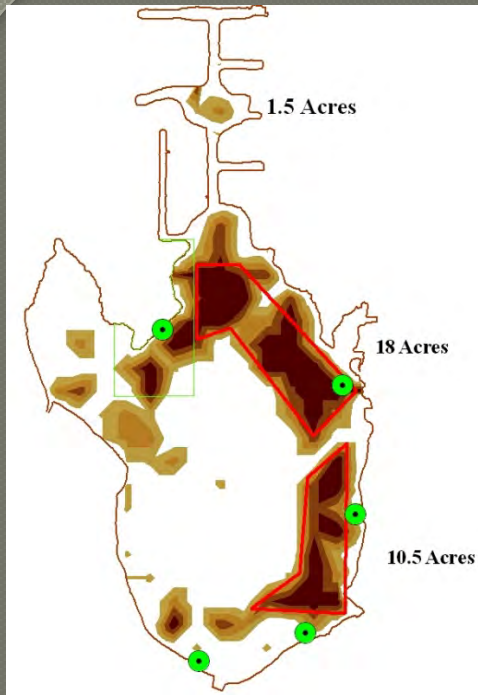


Monitoring

- Provides information for making adjustments to the APMP when needed
 - Baseline water quality data
 - Inventory invasive, nonnative, native, endangered and threatened plant species in the waterbody
 - Create maps
 - Collect information before and after management
 - Collect quantitative data



Evaluate and Adjust



- Quantitative assessment to determine the effectiveness of plant management activities
- Identify environmental impacts (positive and negative)
- Provide the economic cost per acre of management
- Address stakeholder satisfaction

Aquatic Plant Management Workshop Part 1

5. Regulatory and Labels



Regulations

- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
- Illinois Pesticide Act
 - Applicators licensed by Illinois Department of Agriculture
 - Commercial applicator
 - Within 30 days, provide customer with:
 - Pesticide name and registration #
 - Amount applied
 - Date of application
 - Use sites

Regulations

- Illinois Endangered Species Act (IDNR)
 - If threatened or endangered species (i.e., fish) present and publicly funded:
 - Incidental Take Authorization (ITA) required
 - Conservation Plan



Regulations

- Landowner Permission
- Plants on lake bottom belong to the owner
- Floating plants?



Labels

- “Label is the law”
- Applicators must have copy of labels with them
- Application rates
 - Maximum concentrations may be too high
 - Fluridone max application is 45 ppb, this would kill most plants in the lake

Labels

- Site specific conditions:
 - Water temperature (e.g., 50F)
 - pH (e.g., <6.5)
 - Hardness (e.g., <50 ppm)
- Environmental hazards
- Use restrictions (swimming, irrigation)
- Material Safety Data Sheets (MSDS)
 - Health and safety (spills, toxicity, etc.)

Permits

- General NPDES permit administered by IEPA
- Notice of Intent (NOI) submitted on IEPA website
- In most cases Applicator will handle
- Include this language in a RFP

Aquatic Plant Management Workshop Part 1

6. Writing a Request for Proposal



Request for Quotes/Proposals

- Why?

- Clarity – To reduce any confusion of what is being requested
- Standardization – To compare “apples with apples”
- Accountability – To set expectations and cover liability

Request for Quotes/Proposals

○ What?

- Cover letter/Introduction
 - Include due date and contact information
- Detailed description of work
 - “The successful contractor/vendor shall....”
 - Areas to be treated (include maps if possible)
 - Problem plant (if known)
 - Treatment report expectations
 - “Report due within 30 days of treatment”
 - Environmental data: water/air temp, pH, conductivity, dissolved oxygen, weather conditions, etc.
 - Maps or photos

Request for Quotes/Proposals

- What? (con't)
 - Requirements of a successful contractor/vendor
 - Permits (NPDES)
 - Liability Insurance
 - Workman's Comp Insurance
 - References
 - Costs
 - Follow up requirements
 - Herbicide concentration testing (ELISA)? Check for regrowth? Follow up treatment?
 - Payment provisions
 - Right to accept, reject and waive defects

Problems

- Pesticide misuse

- IDOA hotline: 1-800-641-3934
- Investigation, warning letter, fines, license suspension

Aquatic Plant Identification Workshop August 2nd Libertyville

