

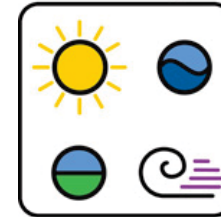
City of Chicago Invasive Species Ordinance

Department of Environment



Richard M. Daley,
Mayor

C h i c a g o



**Department of
Environment**

Suzanne Malec-McKenna,
Commissioner

Chicago's history of AIS actions

Policy

2003 ordinance prohibited release Asian carp into the environment

2007 ordinance prohibited additional AIS

On-going participating in policy at local, state, federal levels

Outreach

Fishing Community, Pet Shops, Boating Community, and more

In collaboration with Habitattitude™ and IL-IN Sea Grant



Habitattitude



**STOP AQUATIC
HITCHHIKERS!**

Prevent the transport of nuisance species.
Clean all recreational equipment.

www.ProtectYourWaters.net

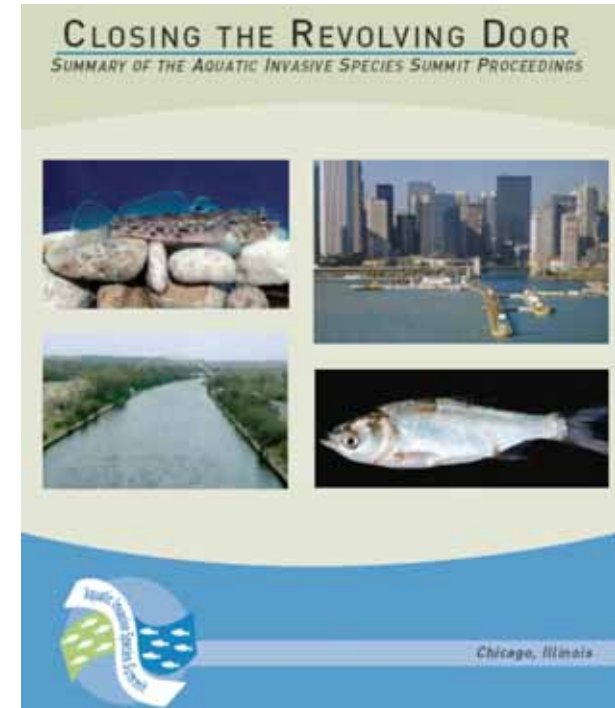
Chicago's history of AIS actions (cont.)

Research/Collaboration

Convened the first Great Lakes Aquatic Invasive Species Summit with United States Fish and Wildlife Service in 2003.

Recommendations:

- Investigate and Evaluate Hydrologic Separation of the Two Basins.
- Pursue Additional Control and Prevention Technologies
- Procure Broad-Based Political Support and Federal Funding



Invasive Species Ordinance

- **Revised version passed City Council in 2007**
- **Gives the Commissioner of DOE power to keep and update regulated list**
- **Makes it unlawful to:**
 - Import, sell, transport, own, keep or otherwise possess any live regulated species; (*live transport exception).
 - Release or introduce into the environment anywhere within the city any live or viable regulated plant species.
- **Exceptions for zoological, educational, medical or scientific purposes**



AIS Advisors

- Chicago Botanic Garden
- Illinois Department of Natural Resources
- Illinois-Indiana Sea Grant
- Illinois Natural History Survey
- Shedd Aquarium
- The Nature Conservancy
- The Field Museum
- University of Notre Dame
- US Fish and Wildlife Service
- Wisconsin Sea Grant



<http://members.aol.com/savetheclams/AsiaUnios.html>

Choosing Species

Justification in ordinance:

- cause or threaten to cause significant economic harm if they are introduced into the ecosystem;
- cause or threaten to cause significant hazards to wildlife or wildlife resources in the City;
- in the case of the “regulated animal species” and the “regulated plant species” listed below, have limited value as food or as commercial products;
- in the case of the “live transport species” listed below, have some value as food or commercial products but do not lose that value if they are sold dead; and
- in the case of *Neogobius fluviatilis* (Monkey goby); *Xenopus laevis* (African clawed frog), *Cipangopaludina chinensis* (Chinese mysterysnail), and *Phoxinus phoxinus* (Eurasian minnow) carry or threaten to carry detrimental diseases or parasites; now, therefore,

Choosing Species (cont.)

Current list prioritizes species that are:

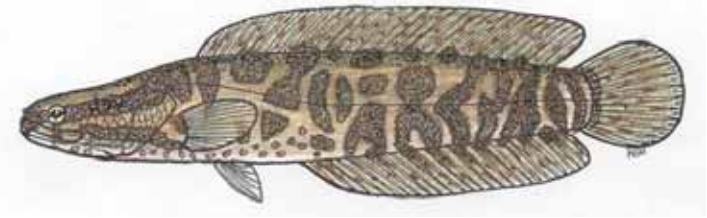
- in trade,
- not yet prevalent in the city, and
- pose the greatest threat to our natural areas



Blasting Zebra Mussels. Photo credit: Detroit Edison

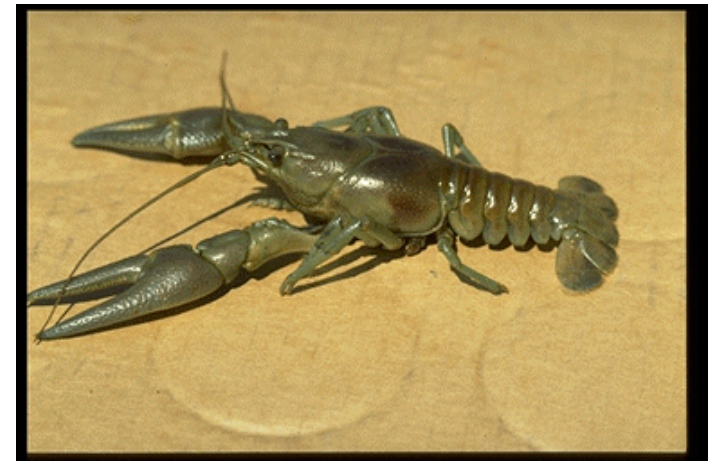
13 Aquatic Animal Species

- *Hypophthalmichthys nobilis* (Bighead carp);
- *Neogobius fluviatilis fluviatilis* (Monkey goby);
- *Perca fluviatilis* (European perch);
- *Phoxinus phoxinus* (Eurasian minnow);
- *Anodonta woodiana*;
- *Xenopus laevis* (African clawed frog);
- *Cipangopaludina chinensis* (Chinese mysterysnail);
- *Misgurnus anguillicaudatus* (Oriental waterloach);
- All species from the genera *Channa* and *Parachanna*, from the family *Channidae* (Snakehead).



Live transport species

- *Mylopharyngodon piceus* (Black carp);
- *Hypophthalmichthys molitrix* (Silver carp);
- *Ctenopharyngodon idella* (Grass carp/White amur);
- *Orconectes rusticus* (Rusty crayfish).



11 Aquatic Plant Species

- *Trapa natans* (Water chestnut);
- *Egeria densa* (Brazilian elodea);
- *Ranunculus lingua* (Greater spearwort);
- *Houttuynia cordata* (Chameleon);
- *Myriophyllum aquaticum* (Parrot feather watermilfoil);
- *Hydrilla verticillata* (Hydrilla or water thyme);
- *Eichhornia crassipes* (Water hyacinth);
- *Ipomoea aquatica* (Water spinach);
- *Myriophyllum spicatum* (Eurasian watermilfoil);
- *Hydrocharis morsus-ranae* (European frog-bit);
- *Butomus umbellatus* (flowering rush).



Implementation

- Enforcement and education occurs at about 50 businesses:
 - Aquarium and pet shops
 - Bait Shops
 - Live food markets in China Town and Little Vietnam
 - Garden centers that sell aquatic plants
- No tickets issued, but warnings given
- Combination of annual visits and complaint-based

Do your part to protect Lake Michigan and the region's waterways.
Use native animals in place of aquatic invasive species.

Aquatic species that are not native to our area are invading Lake Michigan and regional waterways, causing measurable harm and millions of dollars of damage. Invasive animals can:

- Make habitats unusable for recreation and heritage commercial and residential equipment.
- Reduce natural biodiversity and degrade ecosystem functions, and
- Increase the operating costs of municipal processes such as drinking water treatment plants.

The Invasive Species Ordinance passed City Council on May 8, 2007. The ordinance makes it unlawful to possess certain invasive species or a regulated list. The City of Chicago has worked with scientists and stakeholders to craft the regulated list, which includes the animals, plants, fungi and sea invertebrates listed below. These are many more invasive species that could cause harm in the region, but which are not included on species that pose the most serious threat. The law shows the aquatic invasive species that are prohibited in Chicago, as well as native alternatives for each species. To see the land-based species that are prohibited, go to cityofchicago.org/invasivespecies or call 312-743-9283.

For information on how to properly dispose of these species if you already have them, please see www.fishbase.org or www.cityofchicago.org/invasivespecies 312-743-9283

Do your part to protect Lake Michigan and the region's waterways.
Use native plants in place of aquatic invasive species.

Aquatic species that are not native to our area are invading Lake Michigan and regional waterways, causing measurable harm and millions of dollars of damage. Invasive plants can:

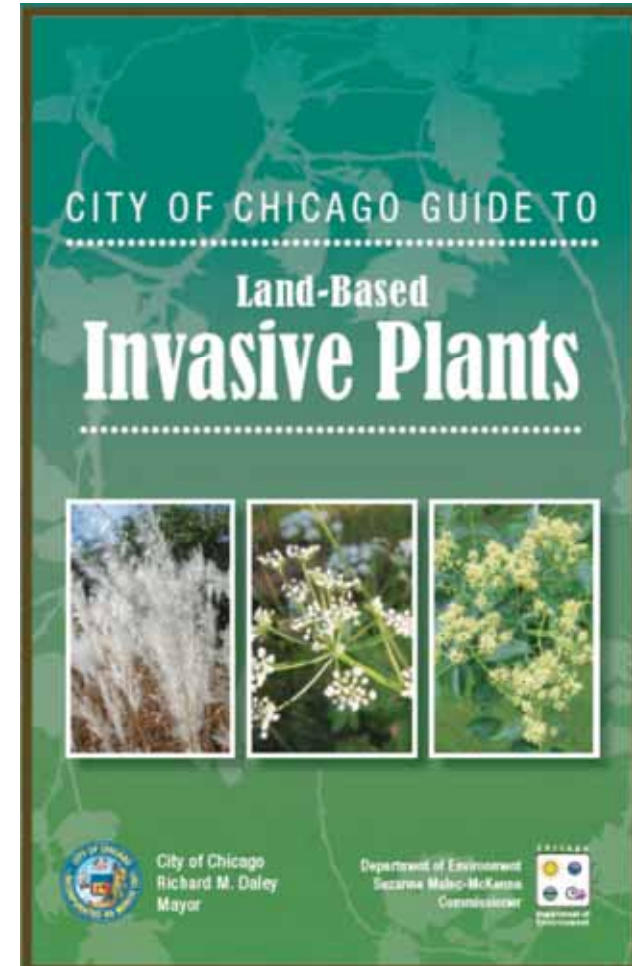
- Disrupt natural ecology, which is a important source of food and shelter for wildlife.
- Change ecological processes, such as oxygen production, because invasive plants can alter chemistry and flow, and
- Block drainage pipes, block irrigation and cause commercial and recreational fishing.

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Terrestrial Invasive Species

- Regulations updated April 6, 2009
 - *Akebia quinata* (Chocolate vine);
 - *Ampelopsis brevipedunculata* (Elegans porcelain berry vine);
 - *Anthriscus sylvestris* (Wild chervil);
 - *Celastrus orbiculatus* (Oriental bittersweet);
 - *Humulus japonicus* (Japanese hops);
 - *Leymus arenarius* (Lyme grass);
 - *Ligustrum* spp. (Privet);
 - *Miscanthus sacchariflorus* (Amur silver grass);
 - *Paulownia tomentosa* (Princess tree);
 - *Phellodendron amurense* (Amur corktree);
 - *Phellodendron japonica* (Japanese corktree);
 - *Polygonum cuspidatum* (Japanese knotweed);
 - *Quercus acutissima* (Sawtooth oak);
 - *Ranunculus ficaria* (Lesser celandine).



Terrestrial Advisors

- Chicago Botanic Garden
- Chicago Bureau of Forestry
- Chicago Park District
- Forest Preserve District of Cook County
- Illinois Department of Agriculture
- Illinois Department of Natural Resources
- Illinois Natural History Survey
- Lake County Forest Preserve District
- The Nature Conservancy
- US Department of Agriculture
- USDA Forest Service

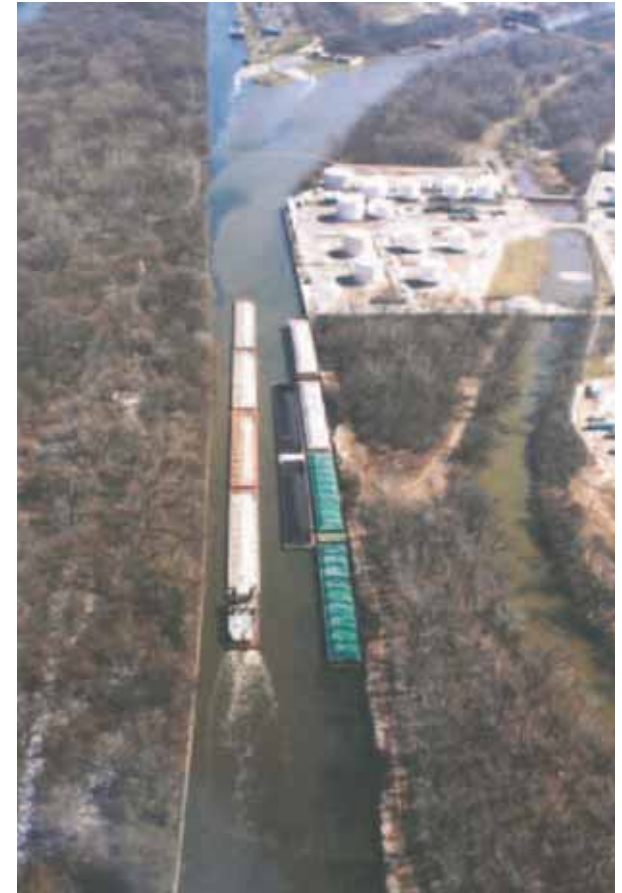
Concluding Thoughts

- Fish/plants know no borders
- One small part of the solution to combating AIS



Chicago perspective on Asian carp issue

- The solution must work in the long-term and be handled on a national level.
- An important first step is a detailed feasibility study of ecological separation of the basins.
- Closing the locks will not stop the carp; consideration must be given to stormwater conveyance, boating and shipping industry.



Chicago Sanitary Ship Canal.
Photo credit: MWRDGC2002-7

Other DOE Initiatives

- Chicago Climate Action Plan

chicagoclimateaction.org/

Tweet Home Chicago

birds@cityofchicago.org

- Rain Barrel Rebate Program

rainbarrel@cityofchicago.org

- Chicago Trees Initiative

cityofchicago.org/chicagotrees/

- Green Jobs

greencollarchicago.org/

www.cityofchicago.org/Environment



Thank you

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Richard M. Daley,
Mayor

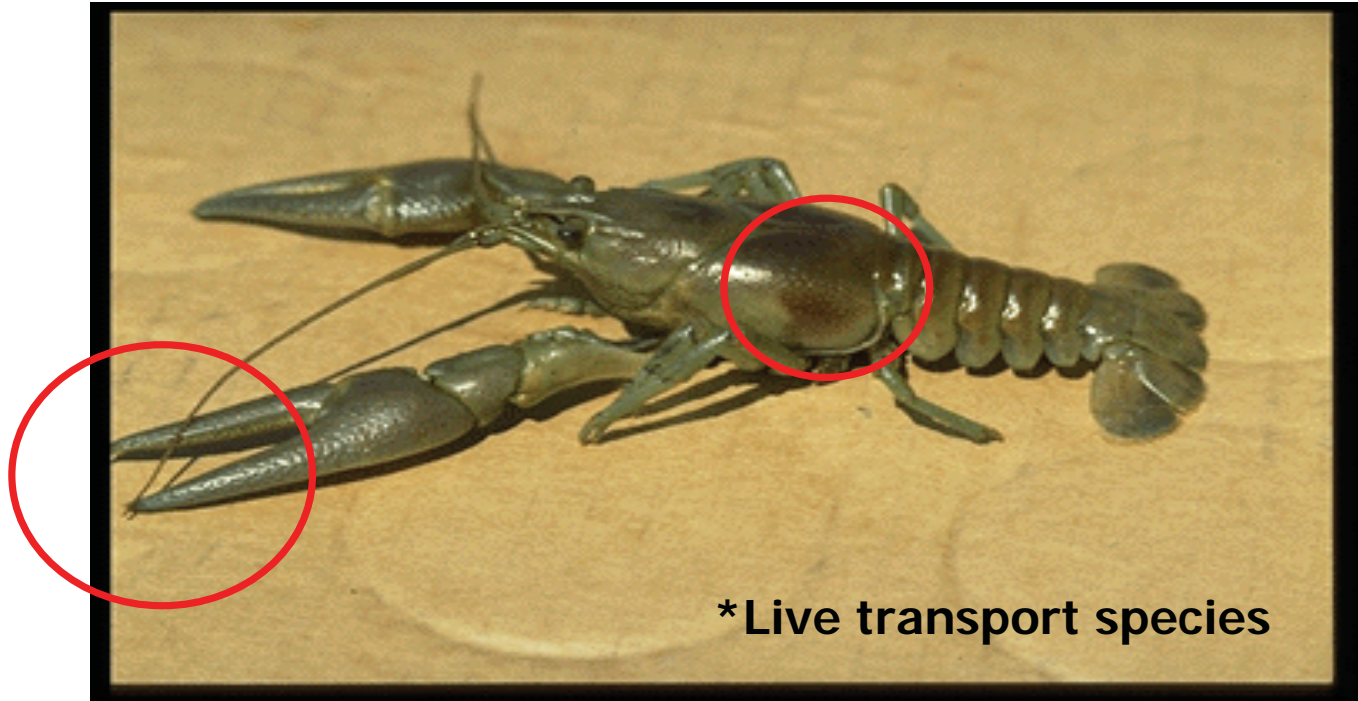


Suzanne Malec-McKenna,
Commissioner

Bait

Rusty Crayfish*

Orconectes rusticus



- **Generally 3-5" long, but can get up to 8" long**
- **Pair of rust-colored spots on carapace**
- **Large grayish-green/reddish-brown claws with black bands on tips**
- **Claws larger and smoother than other crayfish**

Bait (not in U.S.)

Monkey goby*

Neogobius fluviatilis



- Resemble large tadpole with large head and small body
- Maximum length 7 1/2 "
- Fused pelvic (belly) fin--like a suction cup

Slide credit IL-IN Sea Grant

Bait (not in U.S.)

European perch*

Perca fluviatilis



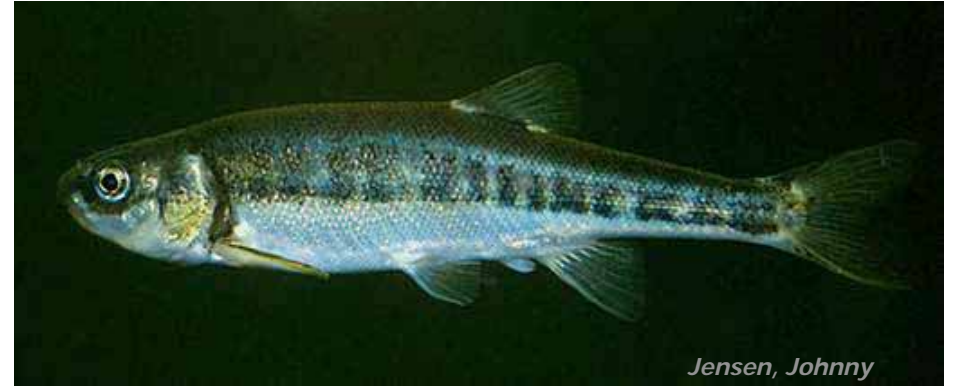
- Greenish-yellow body with 5-9 black bands
- First dorsal fin higher & gray, black spot at the tip; second dorsal greenish-yellow;
- Pectorals yellow; other fins red

Bait, aquarium (not in U.S.)

Eurasian minnow*

Phoxinus phoxinus

- Elongated body shape
- Maximum length 5 1/2"
- Forked caudal fin
- Banded coloring on top (dorsal) side



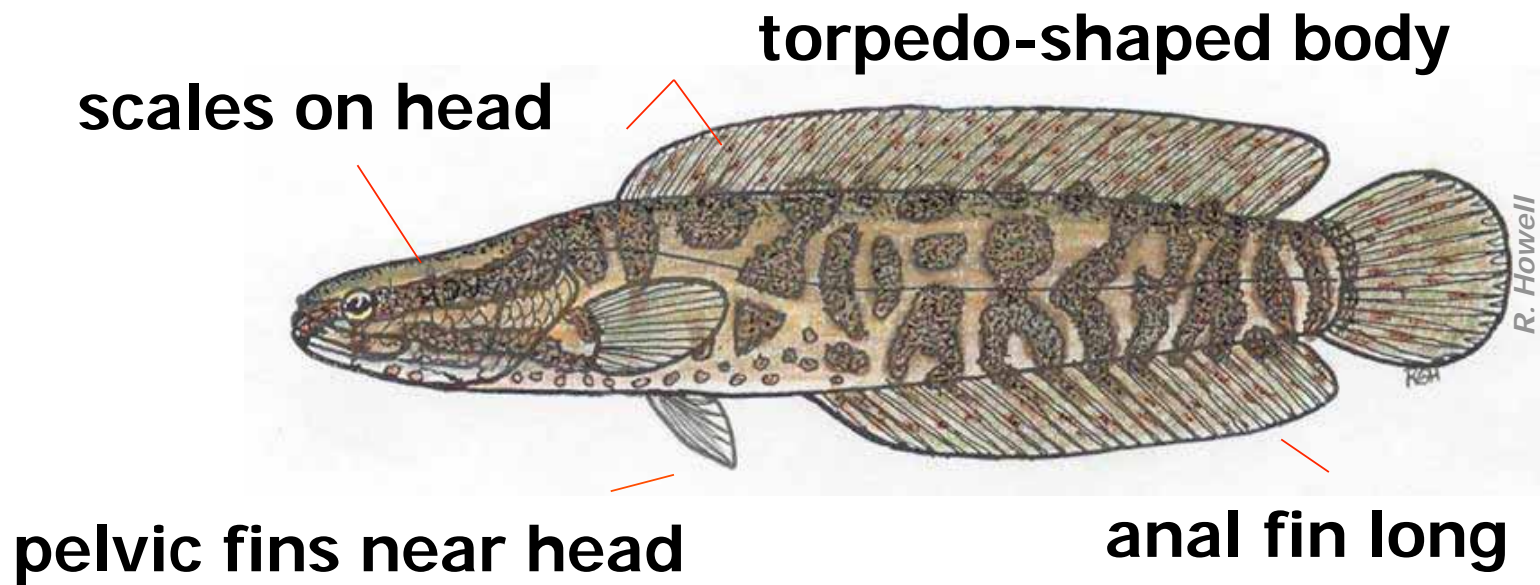
Jensen, Johnny



Kim, Ik-Soo

Live food, aquarium

Snakehead



Northern Snakehead

Channa argus

Live food, aquaculture

Bighead and Silver Carp*

Hypophthalmichthys nobilis and *H. molitrix*



- Low set eyes projecting downward
- Scaleless head and large upturned mouth
- Keel along belly
- Juveniles difficult to distinguish from baitfish

**live transport species*



Live food, aquaculture

Grass* and Black Carp*

Ctenopharyngodon idella and *Mylopharyngodon piceus*



J. Jensen, Denmark

Grass



© Leo G. Nico

Black

**live transport species*

- Thick, elongated body with broad head
- Large scales with dark edges give crosshatch appearance
- Subterminal mouth (opens below foremost point on head)
- No barbels, long dorsal fin, or spines

Live food

*Anodonta woodiana**



- Variable shell shape (elliptical to almost spherical)
- Size ranges from 4 1/2 - 8"

Live food, aquarium

Chinese Mystery Snail

Cipangopaludina chinensis malleatus
or Viviparus malleatus

- Smooth shell, up to 2 1/4" in size
- Uniform color: light to dark olive-green
- Up to 6-7 whorls strongly convex with each seam deeply indented
- Outer lip round/oval with black color on rim



USGS



Kansas Parks & Wildlife

Aquarium

Oriental Weatherloach

Misgurnus anguillicaudatus

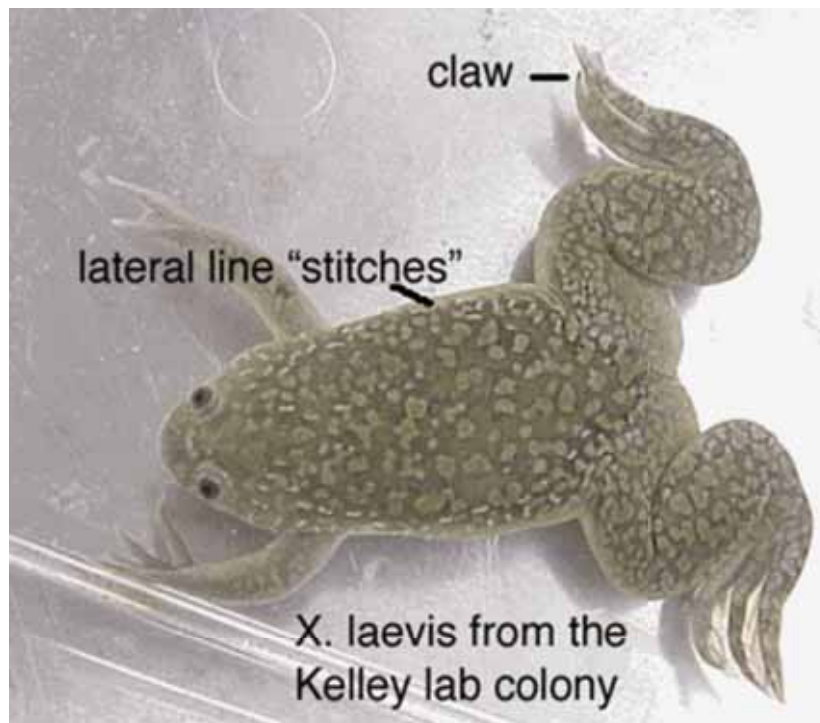


- Long, cylindrical body, up to 10" in length
- Subterminal mouth, surrounded by 3-6 pairs barbels
- Stout spine on pectoral fins
- Tan/olive color with marble markings on top, pale silver below, spots on dorsal & caudal fin

Aquarium African Clawed Frog

Xenopus laevis

- Body flattened and head wedge-shaped
- Front limbs small, not webbed; back limbs webbed, claws on three innermost toes
- Lateral line along back, otherwise smooth skin
- Olive – brown dorsal coloring w/ blotches and cream underside
- 2-5 inches



Columbia University

Flowering Rush *Butomus umbellatus*

- 3 - 4.5 ft tall
- Grass-like erect leaves
- Whitish pink flowers with 3 petals/3 sepals
- Flowers in umbrella-shaped clusters



Brazilian elodea / Anacharis

Egeria densa

Egeria densa

- Leaves in whorls of 3-5 (4 most common), serrated edges are not visible to naked eye
- Leaf size up to 4 cm
- Dark green color
- No tubers or turions



illustration provided by:
IFAS, Center for Aquatic Plants
University of Florida, Gainesville, 1990

Slide credit IL-IN Sea Grant

Water hyacinth

Eichhornia crassipes



- Spike with many lavender/purple flowers
- Flowers with central yellow spot
- Thick, waxy, dark green leaves that are rounded and curve inward with spongy bulbs by root

Chameleon *Houttuynia cordata*



- White flower with 4 petals
- Heart-shaped variegated leaves
- Ground cover plant, prefer moist soil, 6-12"
- Citrus smell when crushed

Hydrilla

Hydrilla verticillata

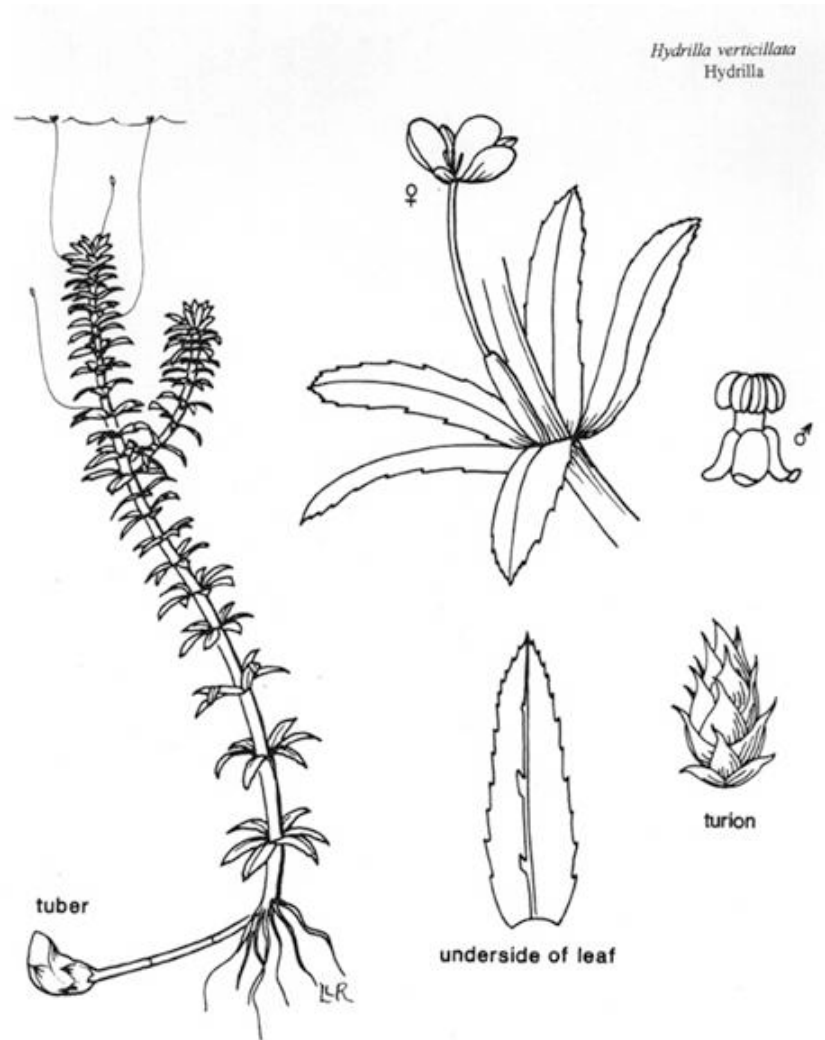
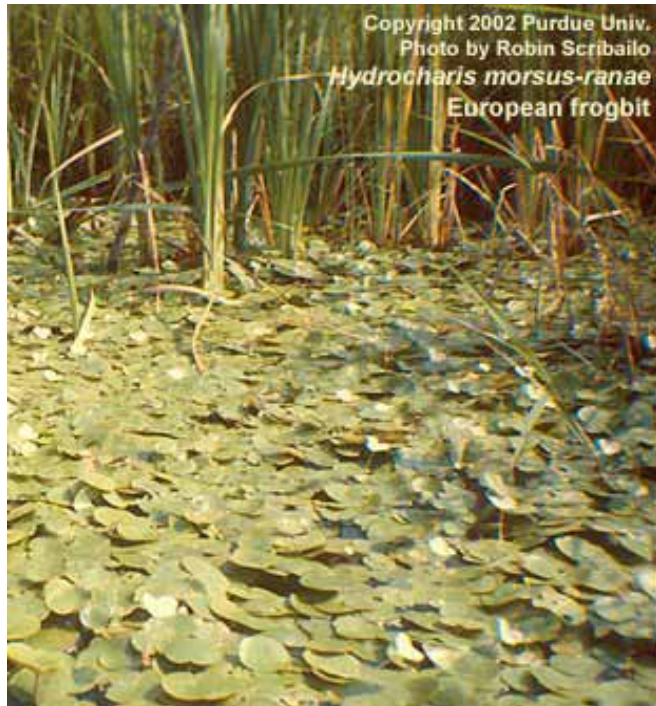


Illustration provided by:
IFAS, Center for Aquatic Plants
University of Florida, Gainesville, 1990

- Leaf size 1-2 cm
- Leaves in whorls of 2-8 (5), serrated edges
- May possess nut-like tubers on roots & turions

European Frogbit



Hydrocharis morsus-ranae

- Free floating, usually
- Heart-shaped smooth leaves
- White flowers w/3 petals
- Looks like small water lily



Water Spinach

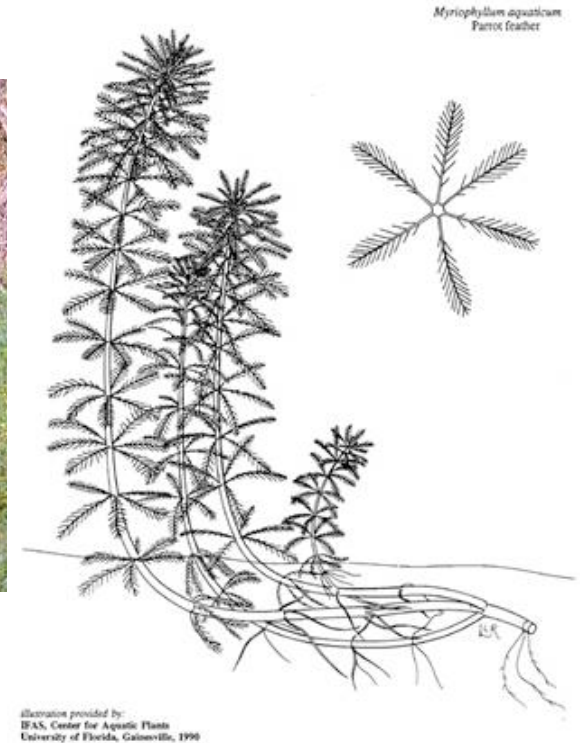
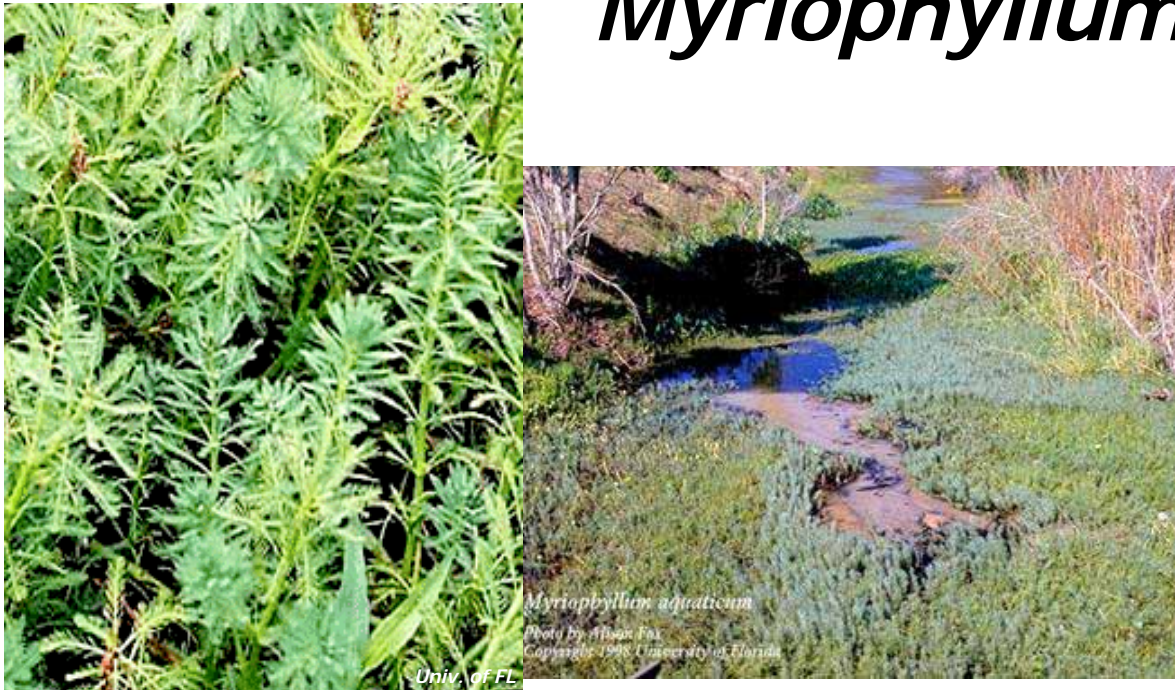
Ipomoea aquatica



- Emergent plant with trailing vine, up to 9 ft
- Morning glory-like, funnel-shaped, white/pink flowers
- Arrow-shaped leaves up to 6" long
- Hollow stem, milky sap

Parrot Feather

Myriophyllum aquaticum

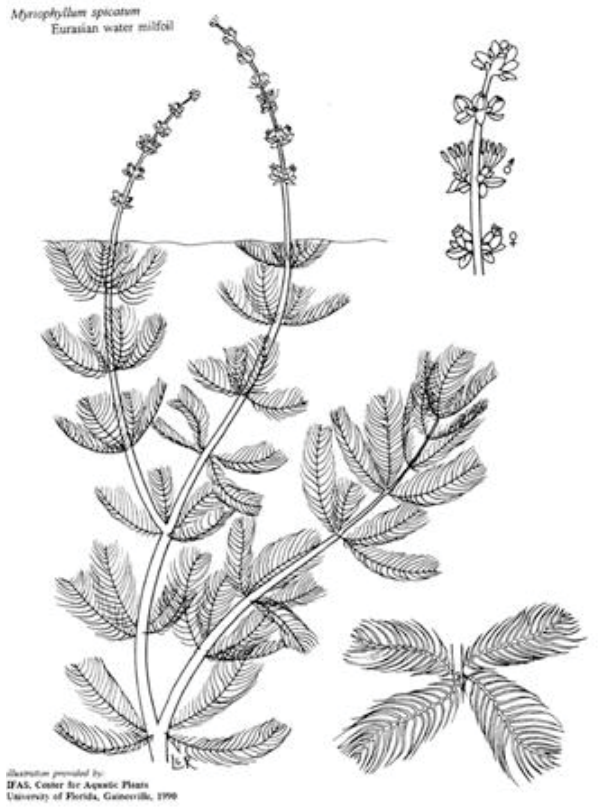


- Leaves light blue-green
- Submersed plant with emergent tips
- Delicate feathery leaves arranged in whorls of 4-6
- Stems up to 5 ft long

Eurasian Watermilfoil

Myriophyllum spicatum

- 3-5 feathery leaves in whorl on stem
- Each leaf with 12-20 leaflet pairs
- Small reddish flowers above water
- Forms dense mats in shallow water

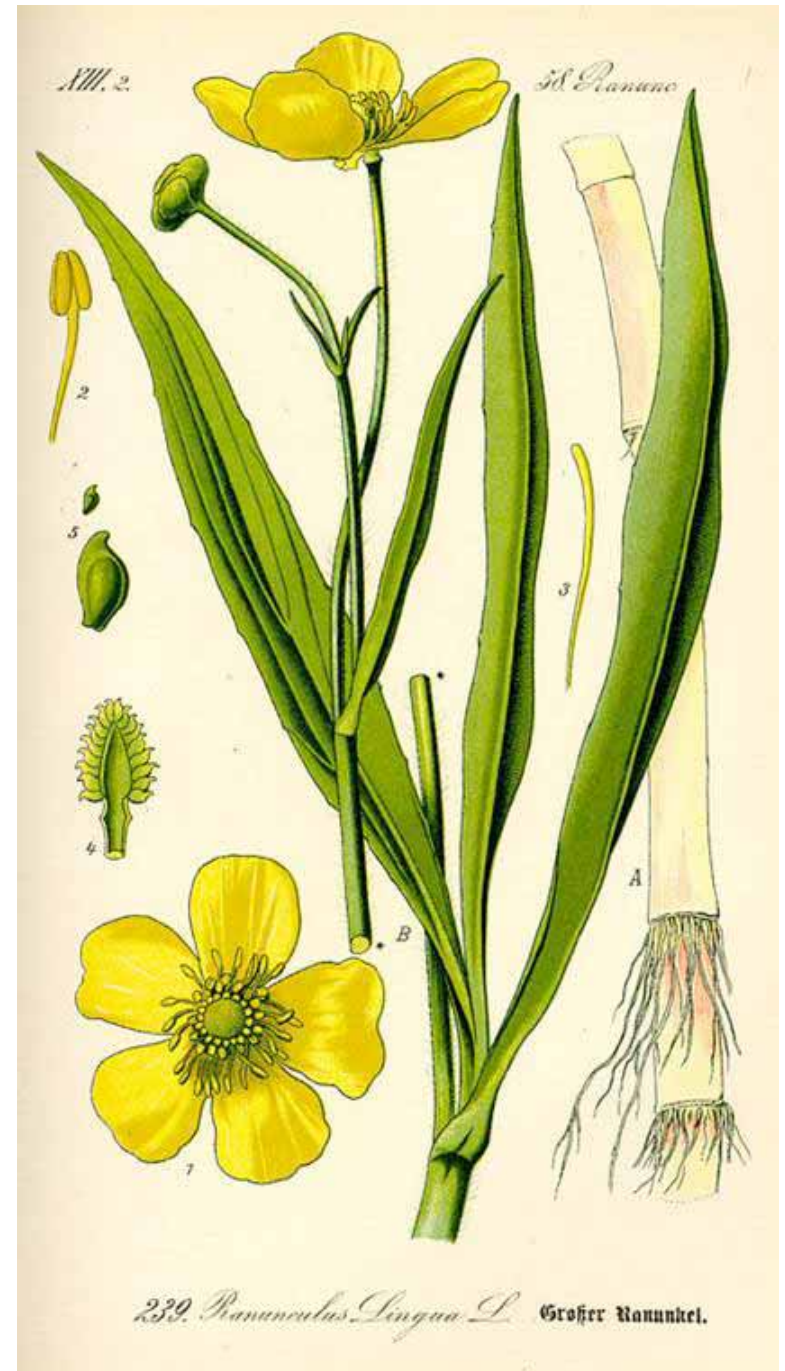


Greater Spearwort

Ranunculus lingua



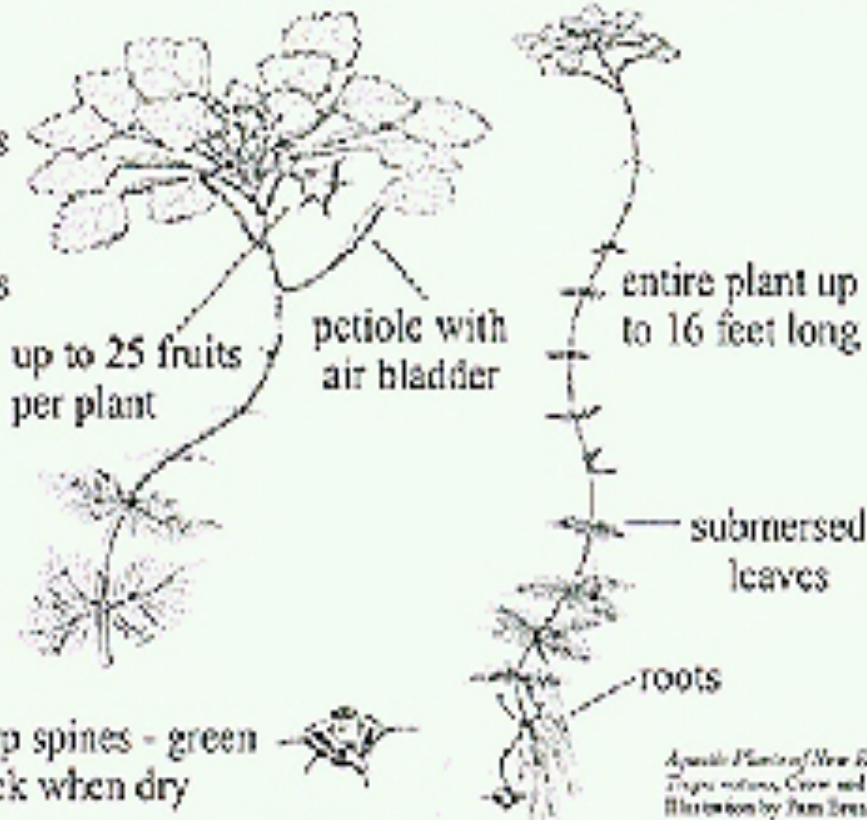
- Bright yellow, buttercup flowers with long stalks
- Long, narrow, oval leaves



Water chestnut *Trapa natans*

How to Identify Water Chestnut

green, glossy, triangular leaves with toothed edges, 2 inches wide, on water's surface



Highlights from Affidavit (for reference only)

- The City recognizes that silver and bighead carp represent a significant threat to the Great Lakes ecosystem and that all reasonable means should be employed to keep Asian carp from entering Lake Michigan. Furthermore, the City acknowledges the need for a comprehensive and long-term strategy to address the migration of Asian carp and other invasive species between the Great Lakes and Mississippi River drainage basins. Toward this end, the City supports the eventual and long-term ecological separation of the two drainage basins, and urges that a comprehensive and detailed feasibility study be completed in the near-term. This feasibility study should assess the environmental, water quality, public health, navigational, and economic impacts of ecologically separating the two drainage basins. The City also urges the evaluation of various methods to accomplish the ecological separation, such as a biological eradication zone and acoustic technologies.
- Due to the complex nature of the Chicago-area waterway system, the City supports a long-term solution that is consistent with the unique functions and limitations of the O'Brien Lock and Dam, the Chicago Controlling Works, and the Wilmette Pumping Station. The City asserts that any feasible long-term solution must treat each lock, sluice gate, and pumping station differently and that the one-size-fits-all approach proposed by the State of Michigan ("Michigan") in its Motion for Preliminary Injunction is incompatible with the unique attributes of those infrastructural assets.
- In the near term, the City supports the operation of the existing Electrical Dispersal Barrier System at the highest level possible that is conducive to human safety. Furthermore, the City supports the completion of the proposed Electrical Dispersal Barrier IIB as soon as possible. The City also supports a comprehensive monitoring program in the waterways between the Lockport Powerhouse and Lock and Lake Michigan, in line with those efforts already undertaken by the State of Illinois and the United States Army Corps of Engineers ("Army Corps"). And, the City supports the United States Coast Guard's efforts to prohibit vessels from carrying bilge water through the Lockport Powerhouse and Lock and into the Chicago waterway system.