The background of the slide is a photograph of a pond. The top portion shows a dense layer of green lily pads floating on the water. The middle portion is a clear, blue body of water. The bottom portion shows the silhouettes of tall, thin reeds or grasses with small, reddish-brown flowers, growing out of the water.

# Suburban Pond Ontogeny and Native Herbaceous Plants

Paul Koenig

Clean H<sub>2</sub>O

The background of the slide is a photograph of a pond. The top portion shows a dense layer of green lily pads floating on the water. Below this, the water is a calm, light blue-grey color. In the foreground, at the bottom of the frame, there are tall, thin reeds or grasses with small, reddish-brown flower heads. The overall scene is peaceful and natural.

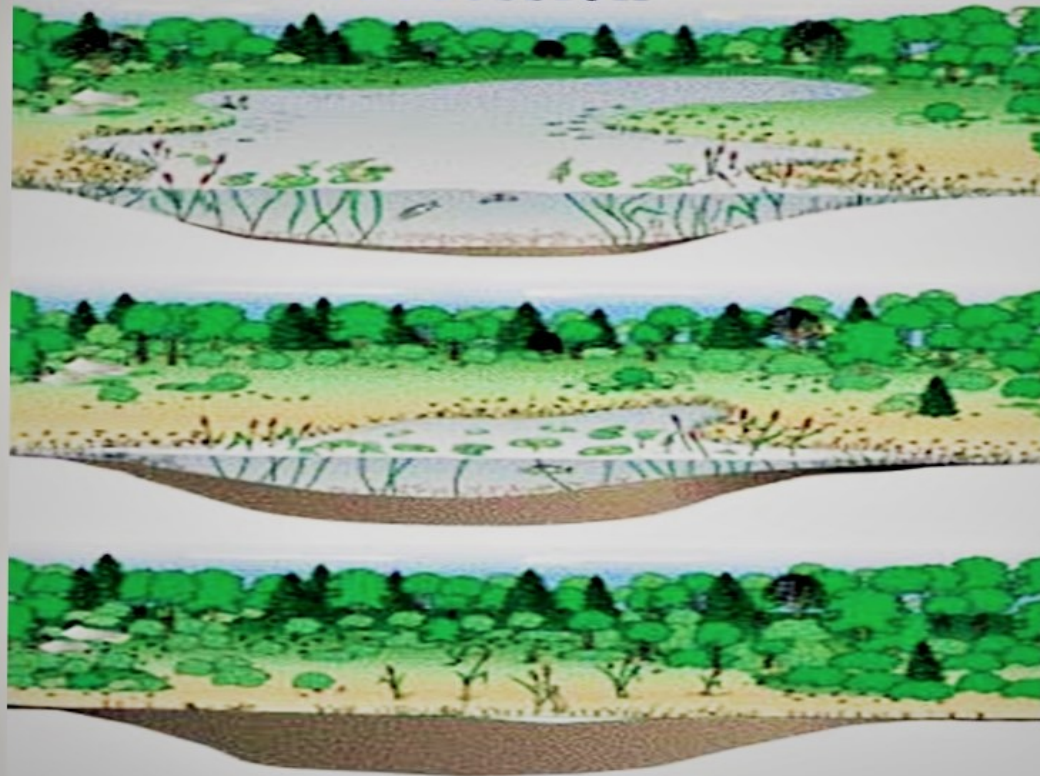
# Outline

- Seasons of a “Natural” pond ‘s life
- Urban & Suburban ponds
  - common aspects of life history
- Beautifying pond treatments
- Aquatic plants – the good, bad & ugly
- Planning
- Summary



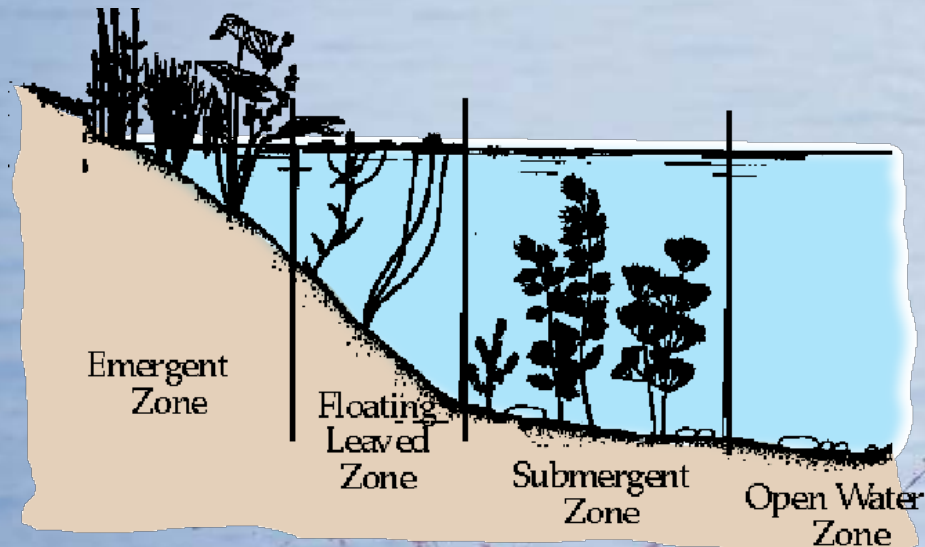
# “Natural” Ponds

## Aquatic Succession



# Natural Ponds.....native plants

Native plants provide valuable functions of protecting shorelines and cleaning the water



- Terrestrial plants above the shoreline
- Emergent plants 0'-2' deep
- Submersed plants 2'-4' deep














*Keeping it in place*





A photograph of a pond. The top portion of the image shows a dense layer of green lily pads floating on the water's surface. Below this, the water is a calm, light blue-grey color. In the foreground, at the bottom of the frame, there are several tall, thin reeds or grasses with small, reddish-brown flower heads. The overall scene is peaceful and natural.

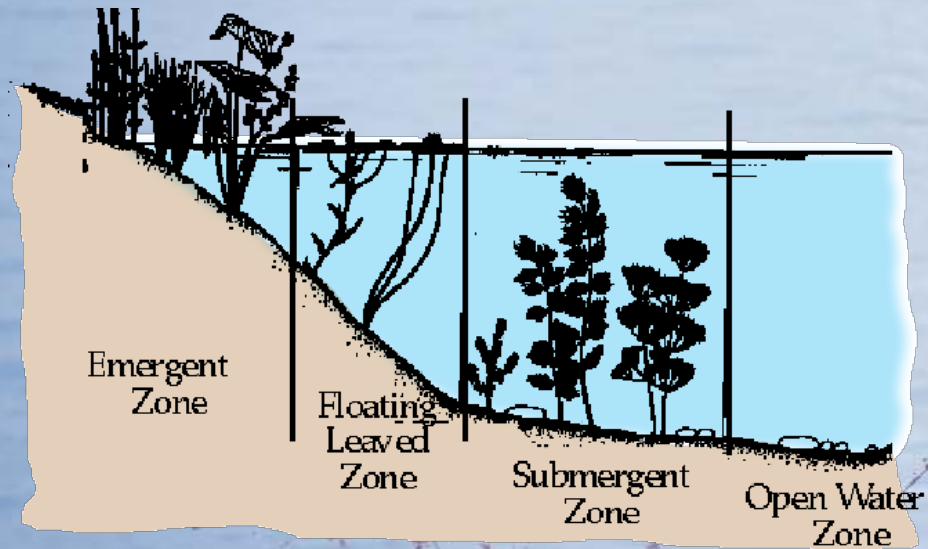
# Beautifying pond treatments

- Construction Considerations
- Mitigating water types
  - Brown water
  - Mossy water
  - Scummy, smelly



# Natural Ponds.....native plants

Native plants provide valuable functions of protecting shorelines and cleaning the water



- Terrestrial plants above the shoreline
- Emergent plants 0'-2' deep
- Submersed plants 2'-4' deep





# Beautifying Pond Treatments: Aquatic Plants

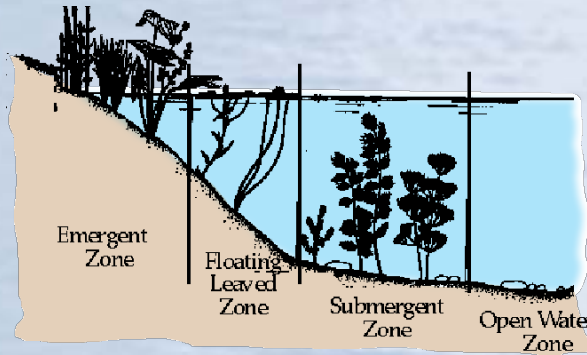
Not a cure all but applicable to all situations, even good ones

Aquatic Plants – the good, bad & ugly





# Aquatic Plants: the ugly



Common Name (Scientific Name)	Growth Form
Purple Loosestrife ( <i>Lythrum salicaria</i> )	Riparian
Yellow Iris ( <i>Lythrum salicaria</i> )	Riparian/Emergent
Common Reed ( <i>Phragmites australis</i> )	Emergent
Yellow Floating Heart ( <i>Nymphoides peltata</i> )	Floating Leaved/Emergent
Water Hyacinth ( <i>Eichhoria crassipes</i> )	Floating
Alligator Weed ( <i>Alternanthera philoxeroides</i> )	Emergent/Submersed
Parrotfeather ( <i>Myriophyllum aquaticum</i> )	Submersed/Floating Leaved
Curly-Leafed Pondweed ( <i>Potamogeton crispus</i> )	Submersed
Eurasian Watermilfoil ( <i>Myriophyllum spicatum</i> )	Submersed
Hydrilla ( <i>Hydrilla verticillata</i> )	Submersed

<https://plants.sc.egov.usda.gov/java/>



# Invasive Species TRIFECTA

## Kerr-McClellan waterway

- *Curly-Leafed Pondweed*
- *Eurasian Watermilfoil*
- *Alligator Weed*



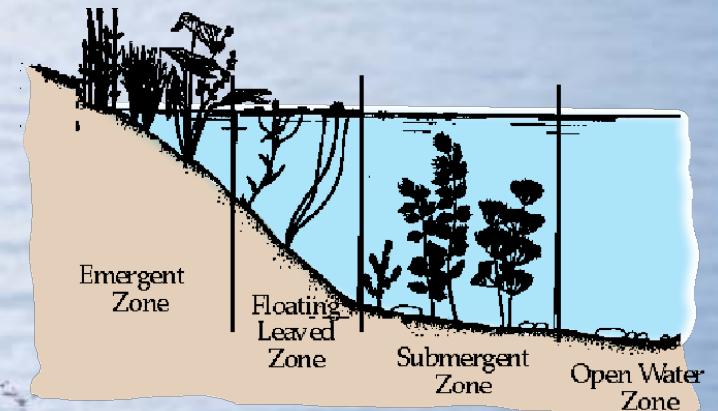


# Aquatic Plants: the bad



UGA1404068

Depth Zone	Color	F&W	Water Quality
0-6		✓	✓
0-24		✓	✓
0-----	✓	✓	

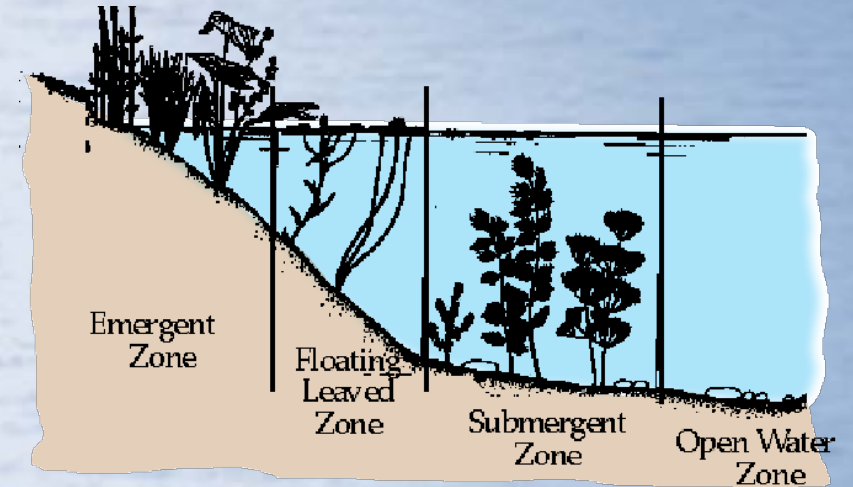


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# Aquatic Plants: the good

Native & Naturalized Aquatic Plants	Depth Zone	Color	F&W	Water Quality
Rose Mallow ( <i>Hibiscus</i> L. )	0-6	✓		
Alligator Flag ( <i>Thalia dealbata</i> )	0-24	✓	✓	✓
Cardinal Flower ( <i>Lobelia cardinalis</i> )	0+	✓		
Great Blue Lobelia ( <i>Lobelia siphilitica</i> )	0+	✓		
Iris - garden varieties	0+	✓	✓	
Virginia Iris ( <i>Iris virginica</i> L.)	0-6	✓		✓
Lizard Tail ( <i>Saururus cernuus</i> )	0-6	✓	✓	✓
Arrowhead ( <i>Sagittaria latifolia</i> )	0-24	✓	✓	✓
Bulltongue ( <i>Sagittaria graminea</i> )	0-24	✓	✓	✓
Flatstem Spikerush ( <i>Eleocharis</i> spp.) Riparian	0+		✓	✓
Flatstem Spikerush ( <i>Eleocharis</i> spp.) Emergent	0-6		✓	✓
Sweet Flag ( <i>Acorus calamus</i> )	0-6		✓	✓
lake sedge ( <i>Carex lurida</i> )	0-12		✓	✓
Squarestem Spikerush ( <i>Eleocharis quadrangulata</i> )	0-18		✓	✓
Chairmaker's Bulrush ( <i>Schoenoplectus americanus</i> )	0-24		✓	✓
Pondweed ( <i>Potamogeton</i> spp.)	6-36		✓	✓
American Eelgrass ( <i>Vallisneria americana</i> )	12-24		✓	✓



<https://plants.sc.egov.usda.gov/java/>



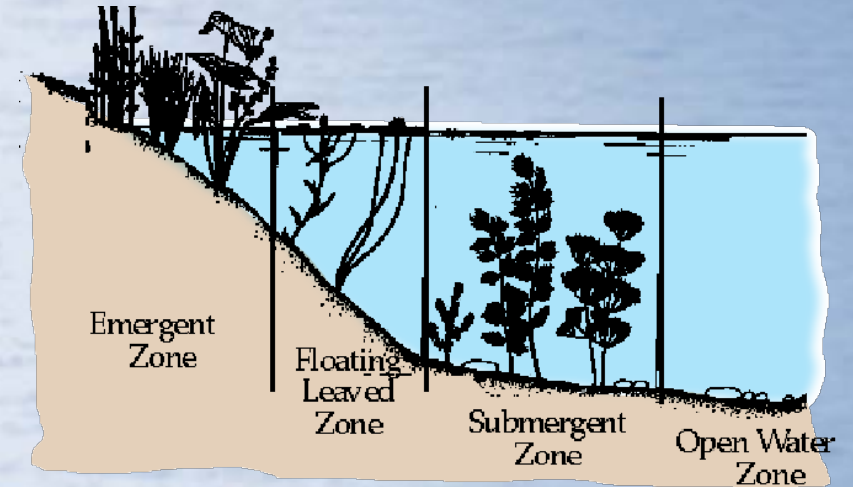
# Aquatic Plants: herbivory

Reduce, Exclude & Reuse


Turtles

Muskrats

Carp (Koi and Grass Carp)








Poor Paul's advice for shallow  
(muddy, mossy) ponds

**Make it a wetland!** Fragrant water lily for the open areas,  
beautify the shoreline to attract birds (green heron, hummingbirds,  
etc.) butterflies and bees

OR

Reshape (dredge) your water feature





# Planning for a better pond

1. Set Primary and secondary objective
2. Physical modifications
3. Shoreline treatment
4. Beautifying plants
5. Long-term maintenance
  1. Herbivory
  2. Thinning and nuisance plants
  3. Dredging or wetland?





