

Establishing Aquatic Plants in Reservoirs



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Why Establish Plants?

- **Aquatic vegetation is beneficial to fish communities**
 - “Grass = Bass”

- **No existing vegetation**

- Provide habitat for fish and other aquatic wildlife
- Improve water quality
- Reduce erosion

- **Limited existing vegetation**

- Improve habitat & diversity
- Improve esthetics

- **Excessive vegetation (exotic)**

- Planting after control to replace lost habitat
- Fills empty niche to reduce re-infestation

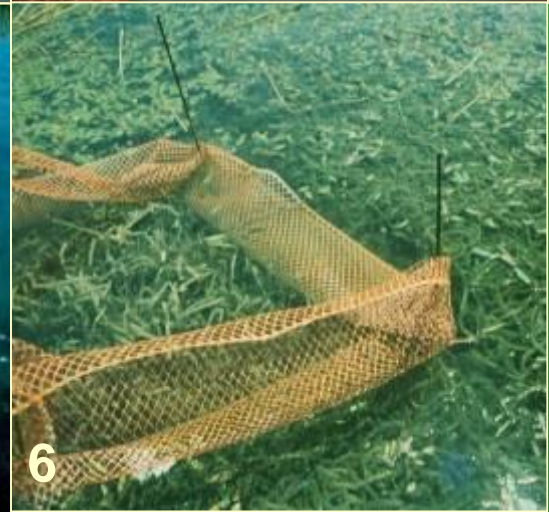


Overcoming Obstacles

- **Lack of propagules**
 - introduce seed / shoot fragments
- **Water level fluctuations**
 - mature transplants, depth
- **Turbidity / light limitation**
 - mature transplants, depth
- **Herbivory / biotic disturbance**
 - protective exclosures



Approach: Founder Colonies



Species Selection:

A diversity of species and growth forms to maximize habitat diversity and resilience.

Native aquatic plants including submersed, floating-leaved, emergent species.

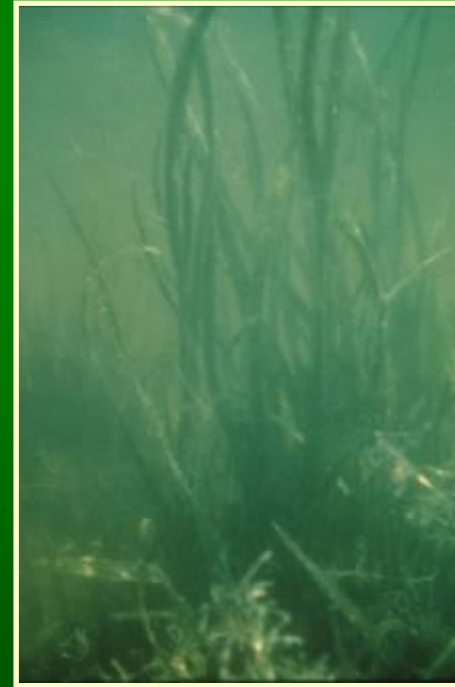


Species Selection: growth forms

Emergent



Floating-leaved



Submersed

Emergent Species



Smartweed

Polygonum spp.

- Shoreline (moist soil) to 2 ft deep, depending on species
- Anchored to sediments, emergent leaves
- Structure/habitat fish & invertebrates
- Food for wildlife
- Deter invasive species (occupy niche)
- Improve water quality, control erosion

Emergent Choices



Water willow

Justicia americana

Floating-leaved Species



- 1 to 6 ft deep
- Anchored to sediments, floating leaves
- Structure/habitat fish & invertebrates
- Food for wildlife
- Deter invasive species (occupy niche)
- Improve water quality, control erosion

Submersed Species



Wild celery/Eel Grass

Vallisneria americana

- 1 to 10 ft deep
- Anchored to sediments, leaves & stems submersed &/or at the water surface
- Structure/habitat fish & invertebrates
- Food for wildlife
- Deter invasive species (occupy niche)
- Improve water quality, erosion control

Propagule Acquisition:

Where to get them.....?



Propagule Acquisition:

- Limited commercial sources
- Avoid using bare root transplants
- Use local ecotype
- Contamination with exotics, etc.



Propagule Acquisition:

DIY



Site Selection: Location

•Substrates

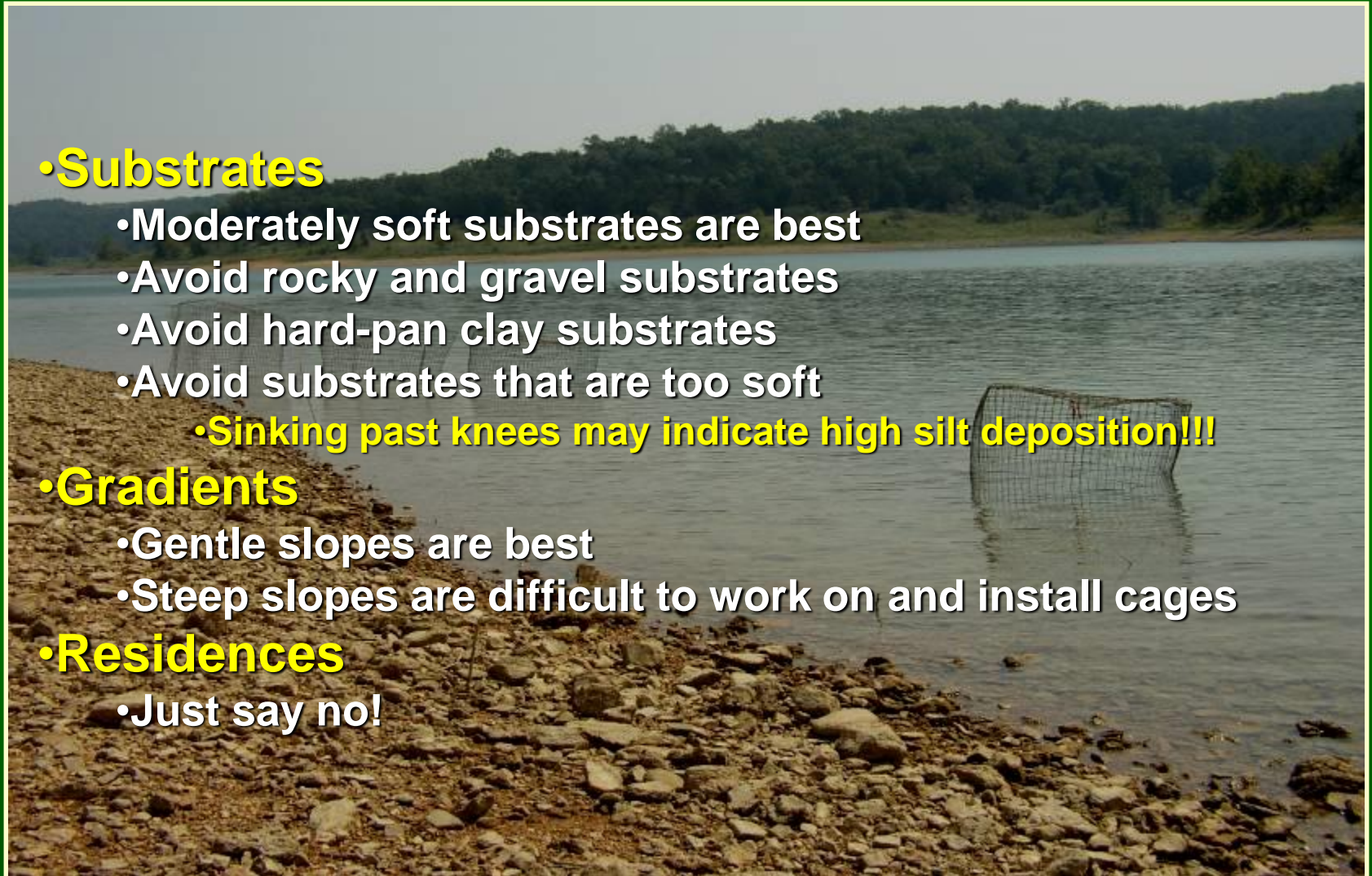
- Moderately soft substrates are best
- Avoid rocky and gravel substrates
- Avoid hard-pan clay substrates
- Avoid substrates that are too soft
 - Sinking past knees may indicate high silt deposition!!!

•Gradients

- Gentle slopes are best
- Steep slopes are difficult to work on and install cages

•Residences

- Just say no!



Site Selection: planting depth

•Emergent

- Establish best from moist soil to 2 ft deep
- Most “drown” in water 3 ft and greater



•Floating-leaved

- Establish best between 1 ft and 3 ft deep
- Once established grow to 6 ft deep



•Submersed

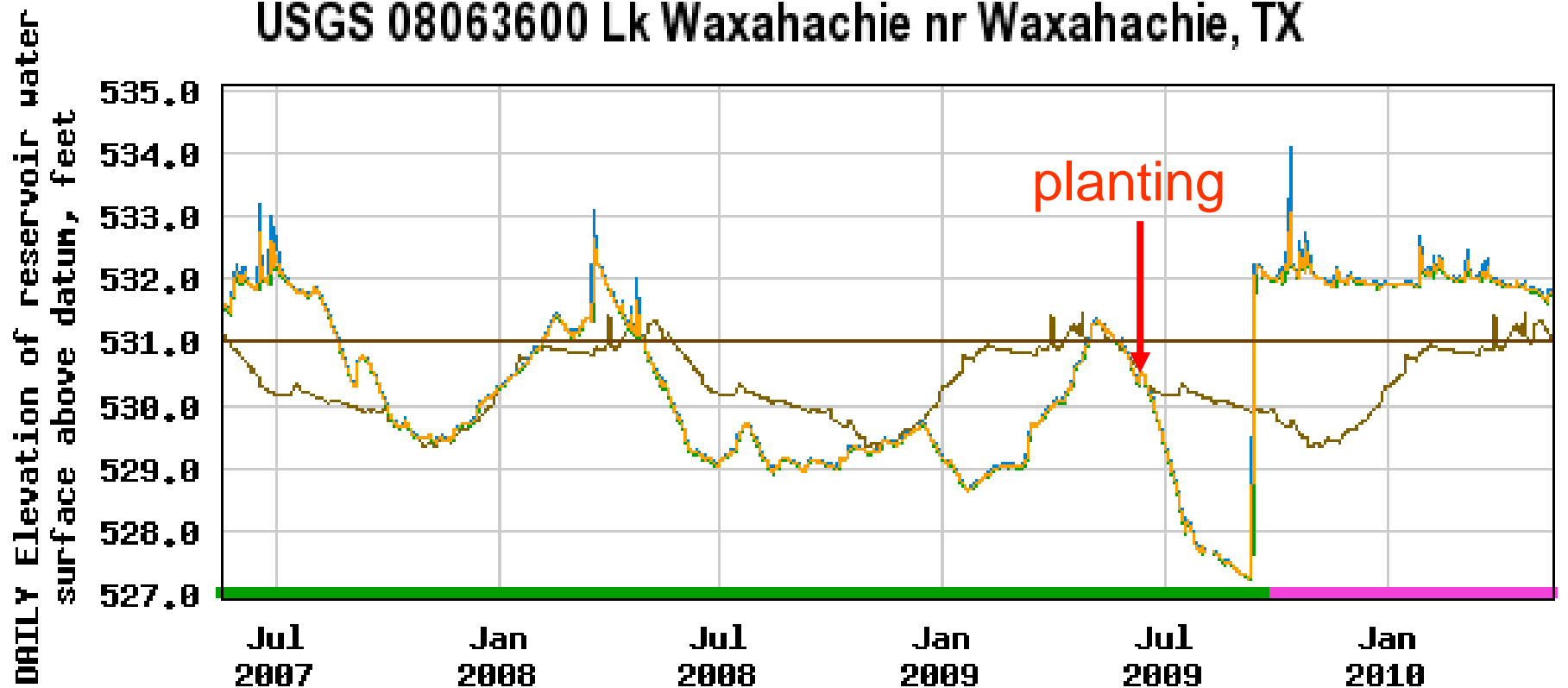
- Establish best between 1 and 4 feet deep
- Once established can grow to 10 ft or greater
- Turbidity is critical



Site Selection: Fluctuation



USGS 08063600 Lk Waxahachie nr Waxahachie, TX



— Median daily statistic (8 years)

— Daily maximum elevation of reservoir water surface above datum

Site Selection: fluctuation



Dry enclosure in Lake Waxahachie, TX

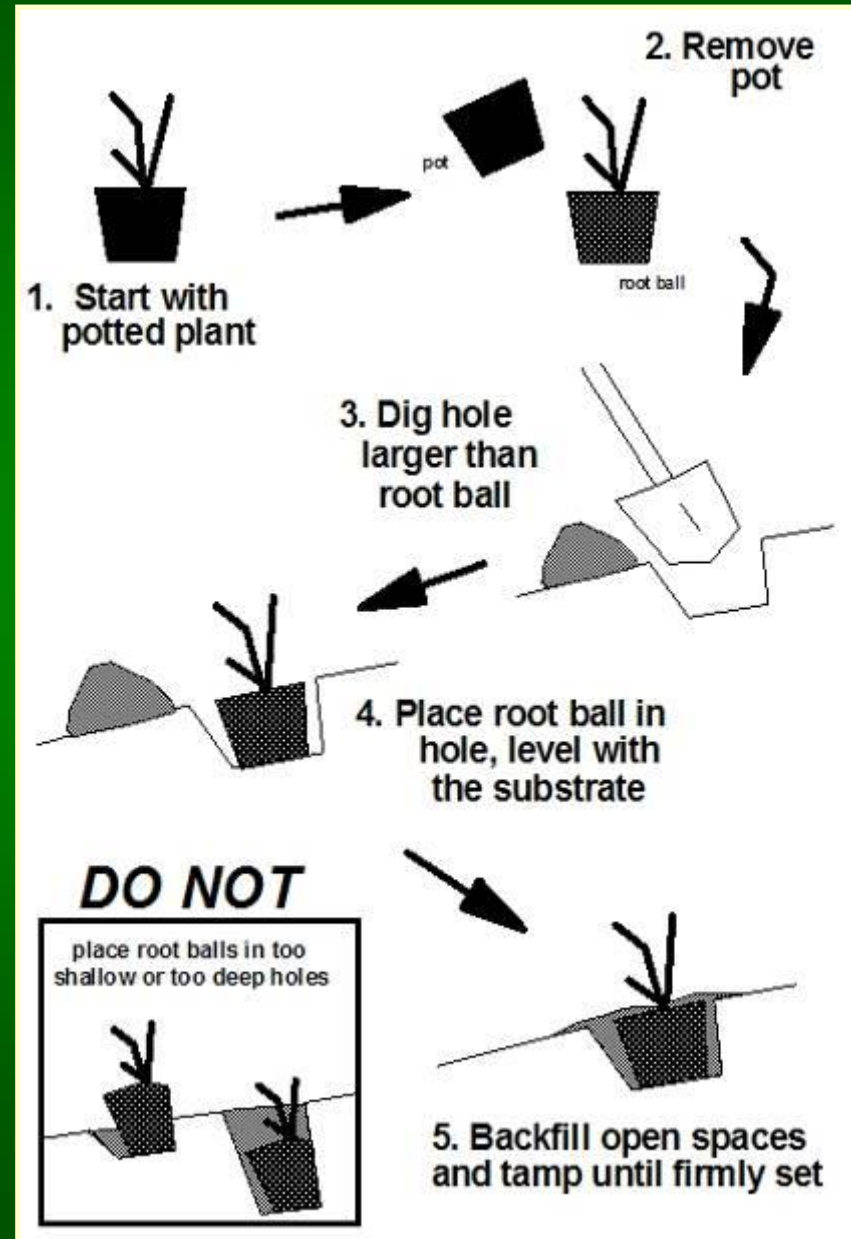
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Planting Technique's:



Transportation

- Covered containers
- Avoid drying, esp. submersed species
- Avoid excess heat, damage to plants



Planting Technique's:

Remove plant from pot



*Dig hole, place (green side up),
backfill*



Place enclosure

Managing Herbivory:

Fish

Turtles

Waterfowl

Aquatic mammals

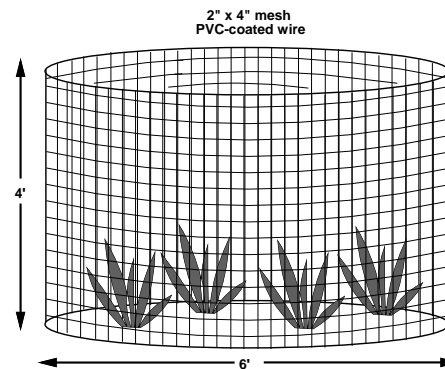
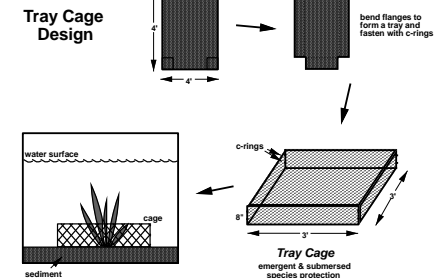
Terrestrial mammals

Invertebrates



Managing Herbivory: Initial protection

Exclosures



Managing Herbivory:

Hoop cages



Cove & Shoreline fences



Pens



Tray cages



Ring cages

Monitoring and Maintenance:

You might think you are done after planting...but noooooooo!!!

- Monitoring

- Evaluate plantings
- May take additional plantings
- Replace if necessary

- Maintenance

- Repair damaged or lost cages
- Vandalism



GPS “monitoring”

In Summary

Choose your plants wisely

- species, planting depth, function, aesthetics, robust propagules



Choose your site wisely

- water elevation, substrate, wave action, homes



Install your plants wisely

- too deep, smother your plant
- too shallow, dry out
- protect with exclosures
- monitor/maintain



We can't plant enough to improve bass recruitment on a lake-wide scale.

We must have natural expansion outside the exclosures.



The question then becomes....



Can we reach “Critical Mass?”