

Stream and Floodplain Vegetation



Eve Brantley, PhD, Water Resources Specialist
 Alabama Cooperative Extension System
 Auburn University, Dept of Agronomy and Soils
brantef@auburn.edu, @brantef Twitter
www.facebook.com/AlabamaExtensionWater

Planning for Vegetation

- Area that will be disturbed
- Vegetation inventory
- Typical species community
- Transplants available
- Invasive, nonnative species



Different Options for Vegetation

- Seeding
- Transplants
- Live stakes
- Bareroot plants
- Container plants



Temporary Seeding

Common Name	Rate per acre	Mountains	Piedmont	Coastal Plain
Wheat	25 lbs	Nov - Apr	Aug - May	Aug - Apr
Rye Grain	30 lbs	Nov - Apr	Aug - May	Aug - Apr
Millet (Browntop or German)	10 lbs	May - Sept	May - Aug	Apr - Aug

Temporary seeding minimizes erosion

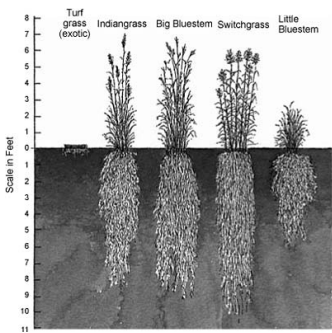
Check into season to get the best mix for the area (millet, winter wheat)

Ok to mix if you're between seasons



Permanent Seed Mix

- Wetland
- Upland
- Cool season grasses
- Warm season grasses



Permanent Seed Mix

Common Name	Scientific Name	% of mix	Planting Dates
Switchgrass	<i>Panicum virgatum</i>	10-15	Dec - April
Indiangrass	<i>Sorghastrum nutans</i>	10-30	Dec - April
Deertongue	<i>Dichanthelium clandestinum</i>	5-25	Dec - April
Little blue stem	<i>Schizachtrium scoparium</i>	10-30	Dec - April
Soft rush	<i>Juncus effusus</i>	1-10	Dec - May, Aug - Oct
Partridge Pea	<i>Chamaecrista fasciculata</i>	1-10	Dec - May
Sedges	<i>Carex (spp)</i>	1-10	Dec - May

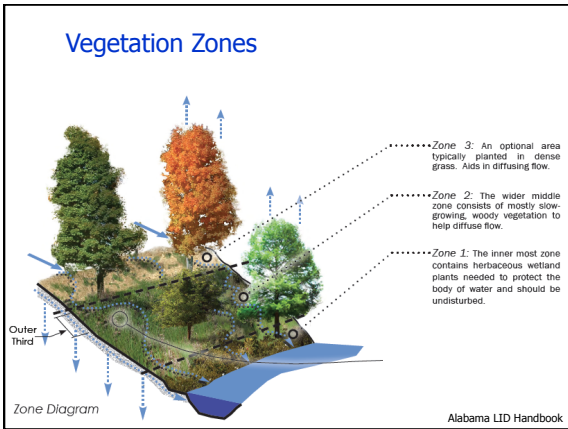
Plan different mixtures for different areas (moist vs. upland)





Recommended Rates

12-15 pounds per acre, pure live seed, broadcast



Transplants

Take advantage of native vegetation & equipment on site

Get as large a rootball as you can (2' – 3' of soil)

Plant as soon as possible

Locate on outside of bend (take advantage of roots on erosive area)

Transplants

Wetland plants transplant well – Sedges, Juncus

Collect marsh vegetation from nearby area (don't ransack it)

Keep transplants moist and plant as soon as possible

Live Stakes

A dormant hardwood stick, pushed into wet/moist soil

Best planted in dormant season

Not likely to be washed away

0.5 – 2" in diameter

2' – 3' long

Live Stakes

Install 2 to 4 feet apart, triangular spacing

Drive stakes into the ground using a rubber hammer – may have to use leader (rebar)

At least 2 buds should remain above ground

Green side up ... cut bottom at an angle



Live Stake Species

Salix nigra, black willow

Salix sericea, silky willow

Cornus amomum, silky dogwood

Physocarpus opulifolius, ninebark

Sambucus canadensis, elderberry

Itea virginica, Virginia sweetspire



Bare Root Seedlings

Bare root seedlings dug and stored without soil around their roots

Missing >90% of root hairs - plant's water absorbing structures

Keep plants moist and cool



Bare Root Seedlings

Ideal to plant when vegetation is dormant, winter or early spring

Benefits –

- Less expensive
- Don't need much expertise to plant (green side up)
- May be more diverse nursery selection

Drawbacks –

- May experience higher mortality than container plants
- Purchase 10 – 15% more than needed, plant additional plants in holding area



Container Plants



Container Plants

Benefits:

- Well established root system
- Higher survival than bare root
- Can be planted just about any season
- Instant tree or shrub

Drawbacks:

- Expensive
- Requires more labor in planting



Trees and Shrubs

Bare root, container, transplants, live stakes
Number planted may depend on requirements (mitigation), project goals, aesthetics

Type	Spacing	# per 1,000 sq ft
Shrubs (<10 ft)	3-6 ft	25 – 110
Shrubs & Trees (10 – 5 ft)	6-8 ft	15 – 25
Trees (> 25 ft)	8-15 ft	4 - 15

From: NC Stream Restoration Guidebook

Plant Selection

- Native Plants
- Water Tolerance
- Light Tolerance
- Compatible with Soils
- Wildlife Value
- Aesthetics

What are the goals?



Mitigation Requirements

Tree:

- 10-15 species per acre
- Final coverage 200-300 stems/acre
- Basal area 250-325 ft²/acre

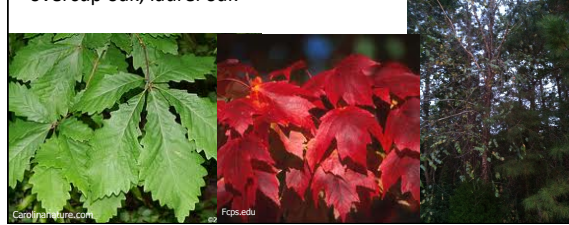
Shrub & herbaceous layer:

- Initiate after 3 years if limited natural recruitment
- Minimum of 3 shrub species
- Target shrub cover 20-60%
- Herbaceous layer depends on target forest type

Vegetation Examples

Depends on your region: North, Central, Coastal

Trees: river birch, sycamore, cypress, red maple, sweet bay, tulip poplar, green ash, swamp chestnut oak, overcup oak, laurel oak



Vegetation Examples

Consider your region ...

Shrubs / Small Trees – inkberry, Virginia sweetspire, alder, Spicebush, buttonbush, wax myrtle



USDA Plant Database

Vegetation Examples

Depends on your region ...

Herbaceous – cardinal flower, lizard’s tail, river oats, wild iris, purple cone flower, indian blanket, brown eyed Susan



Locating Plants

Purchase from reputable nurseries

Best to get local stock - greater wildlife benefit and better adapted to local climatic conditions

May have to work with several nurseries to get the plant diversity you wish



Considering your Vegetation



Plant Protection



The image shows two parts: on the left, a young tree in a blue nursery container; on the right, a stream with a stone crossing, a person in a white shirt and hat, and a sign on a post.

Managing Livestock (People) Access

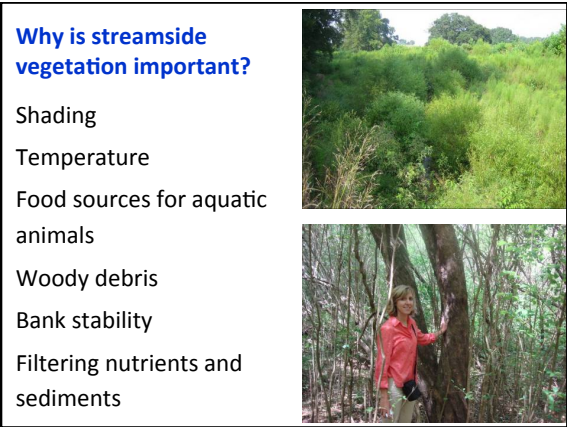
Encourage livestock (people) to access streams at reinforced crossings
 Consider alternative water and shade sources
 Protects livestock health and stream health



The image shows two parts: on the left, a stream with a stone crossing; on the right, a horse drinking water from a stream.

Why is streamside vegetation important?

Shading
 Temperature
 Food sources for aquatic animals
 Woody debris
 Bank stability
 Filtering nutrients and sediments



The image shows two parts: on the left, dense streamside vegetation; on the right, a person in a red shirt standing by a stream.

Invasive, Nonnative Plants



The image shows two parts: on the left, a person in an orange shirt pulling a plant; on the right, a stream with a stone crossing.

Invasive, Nonnative Plants


Chinese privet
 Japanese honeysuckle
 Popcorn tree
 Cogon grass
 Japanese climbing fern
 Nepalese stilt grass



The image shows two parts: on the left, dense streamside vegetation; on the right, a person in a white shirt holding a plant.

Invasive, Nonnative Plants

Remove and replace with native vegetation
 Low habitat value
 May not be providing erosion control



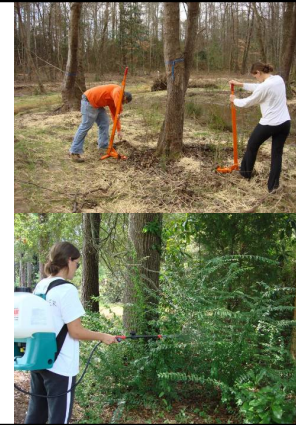
The image shows two parts: on the left, a stream with dense vegetation; on the right, a stream with a stone crossing.

Streams = Conveyor Belts



Invasive Removal

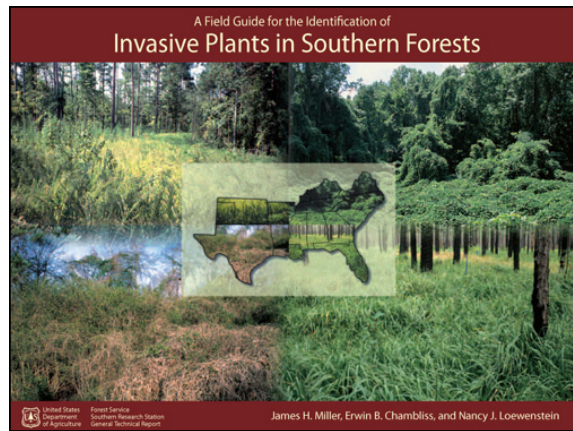
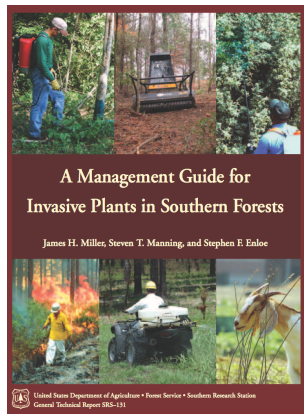
- Physical removal
- Foliar Application
- Basal spray
- Cut and paint



- Mitigation requirements
- < 1% cover
- No seed bearing plants

Recipes for management

Available online





Vegetation Resources

USDA Plant Database
<http://plants.usda.gov/>

National Native Plant Nursery Selector
http://www.plantnative.org/national_nursery_dir_main.htm

Lady Bird Johnson Wildflower Center
www.wildflower.org/plants/

