# STRUCTURE, FUNCTION AND ROLE OF RIPARIAN VEGETATION

Jim Rogers, NRCS Wildlife Biologist

# EAST TEXAS RIPARIAN AREAS

- Bottomland Hardwood Forests
- Willow oak, green ash, overcup oak with water oak, cherrybark oak, and sweetgum in upper flood plains
- Bald cypress/water tupelo (blackgum)
- Lots of woody debris
- Herbaceous wetlands
- Woody wetlands

# BENEFITS OF HEALTHY RIPARIAN VEGETATION

- High quality habitat for both aquatic and riparian species
- Dissipation of flood energy and reduced downstream flood intensity and frequency
- Higher, longer-lasting and less variable baseflow between storm events
- Deposition of sediment in the floodplain, stabilizing it and maintaining downstream reservoir capacity longer
- Debris and nutrient use and filtering in the floodplain to improve water quality and dissolved oxygen levels in the aquatic system
- Riparian vegetation canopies to shade streams and reduce their temperatures, providing a food base for aquatic and riparian fauna
- Fewer invasions of exotic undesirable riparian species
- Higher biodiversity than terrestrial uplands
- "Stabilized" banks, which reduce erosion and protect ownership boundaries
- Increased economic value through wildlife, livestock, timber, and recreational enterprises
- Improved rural land aesthetics and real estate values

# WHAT IS A FUNCTIONAL CREEK?

- Dissipate Stream Energy
- Protect Banks/Stabilize Channel
- Reduce Erosion
- Slow velocity of floodwaters
- Sediment dropped
- Sediment trapped, and stabilized
- Build floodplains
- Provide floodwater retention
- Enlarge riparian sponge
- Improve groundwater recharge
- More water for sustained flow

# IN A NUTSHELL

- Slows Water Down
- Stabilizes soil
- Creates habitat along the way

# AT THE RIPARIAN FRONT

- Soil
- Water
- Vegetation

# TYPES OF RIPARIAN PLANTS

- Sedges/Rushes
- Grasses
- Forbs
- Shrubs
- Trees

# DUAL PURPOSE

- Above ground slows water
- Below ground holds the soil

# DISSIPATES ENERGY

- Dissipation of flood energy and reduced downstream flood intensity and frequency

# SEDIMENTATION

- Deposition of sediment in the floodplain, stabilizing it and maintaining downstream reservoir capacity longer
- Debris and nutrient use and filtering in the floodplain to improve water quality and dissolved oxygen levels in the aquatic system

# INFILTRATION

- Let's the "Riparian sponge" go to work
- Recharges groundwater (aquifers and available for plants)
- Drought insurance
- Sustained flow

# DEAD VEGETATION IS IMPORTANT TOO

- Might not have the roots
- Dissipates flow

# STABILIZATION

- "Stabilized" banks, which reduce erosion and protect ownership boundaries
- Root mass 2 to 5 times that of above ground mass
- Intercepting rainfall/reducing splash erosion

# HABITAT AND CORRIDORS

- Increased economic value through wildlife, livestock, timber, and recreational enterprises
- Improved rural land aesthetics and real estate values
- High quality habitat for both aquatic and riparian species
- Riparian vegetation canopies to shade streams and reduce their temperatures, providing a food base for aquatic and riparian fauna
- Higher biodiversity than terrestrial uplands

# NO ROOM FOR INVASIVES

- Nature's gonna put something there

# HOW DOES DESTABILIZATION OCCUR?

- Cattle (trampling and overgrazing/hanging out)
- Overbrowsing
- Hog rootings
- Human disturbance (atv, channelization, disturbance upstream, cement, development, mowing, farming, timber) Farming, mowing, or spraying weeds too close to the bank
- Manicured landscapes next to the creek
- Grazing concentrations in creek areas
- Excessive populations of deer, exotics, or feral hogs in creek areas
- Burning in riparian area
- Removal of large dead wood and downed trees
- Artificial manipulation of banks / sediment
- Excessive vehicle traffic in creek area
- Poorly designed road crossings / bridges
- Excessive recreational foot traffic in creek area
- Excessive alluvial pumping or other withdrawal

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047
S 20° 55' 57.6" E 148° 04' 50.2"
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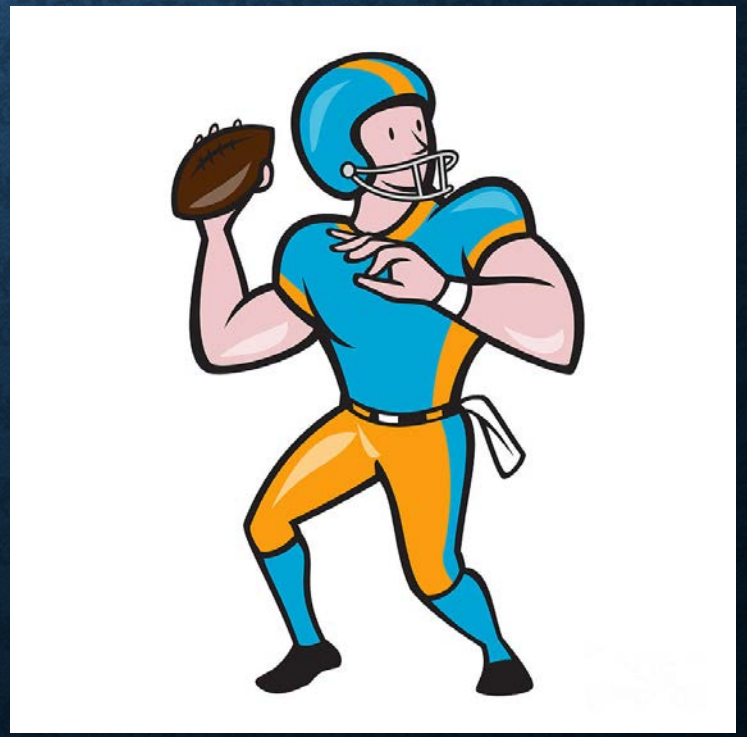
# POSITION PLAYERS IN HEALING GAME

- Colonizers
- Stabilizers



# STABILITY RATINGS OF RIPARIAN PLANTS SCALE OF 1 - 10

1 = Bare ground

10 = Anchored rock or large anchored logs

6/7 = Acceptable riparian stability *

# FIVE WETLAND INDICATOR CATEGORIES

1. Obligate Wetland OBL
2. Facultative Wetland FACW
3. Facultative FAC
4. Facultative Upland FACU
5. Obligate Upland UPL

# OBLIGATE WETLAND OBL

Almost always occur in wetlands

99% probability

# FACULTATIVE WETLAND FACW

Usually occur in wetlands

66-99% probability

Occasionally occur in non-wetlands.

# FACULTATIVE
# FAC

Equally likely to occur in wetlands and non wetlands

# FACULTATIVE UPLAND FACU

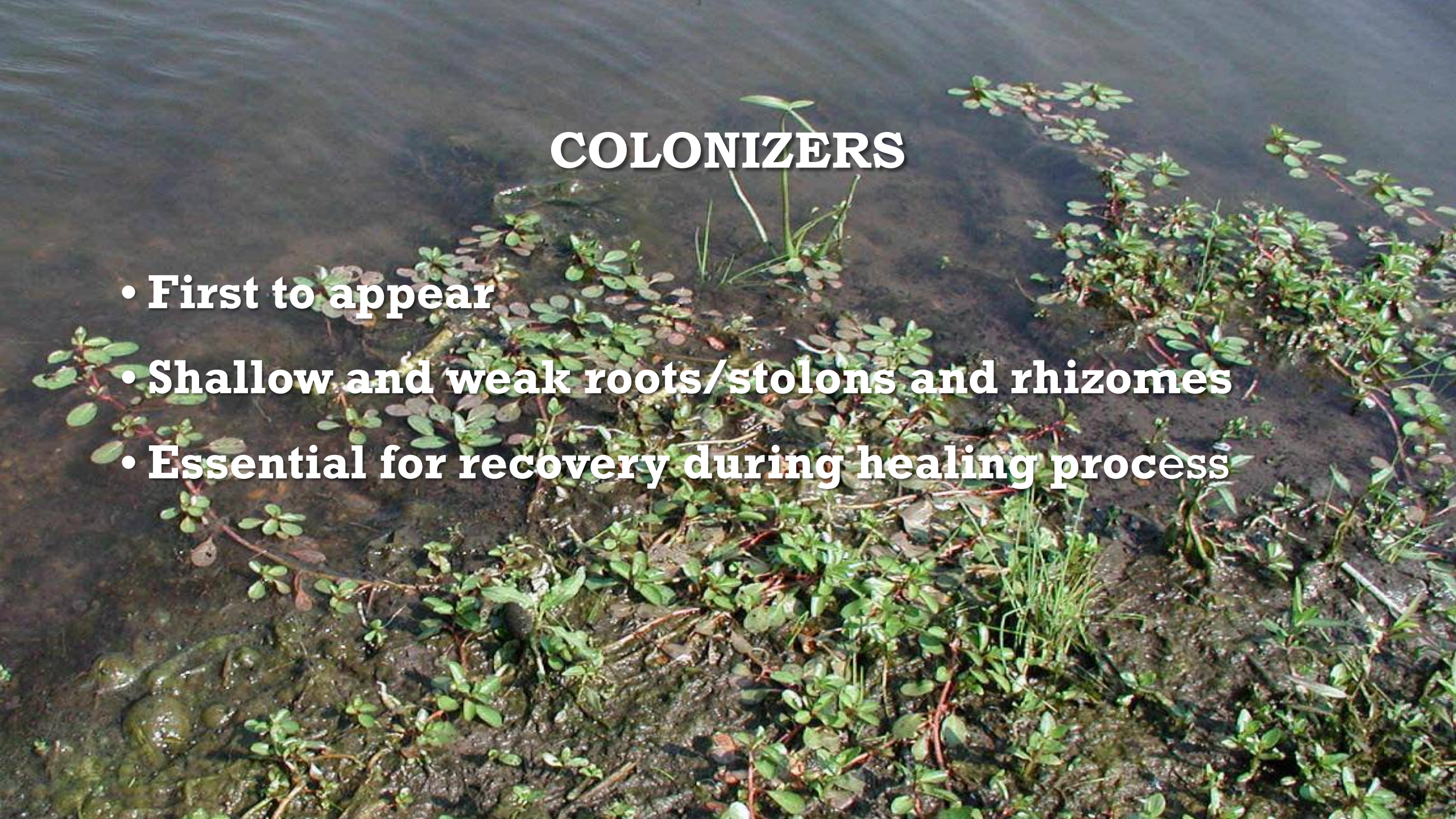
Usually occur in non wetlands

66-99% probability

Occasionally occur in wetlands.

# OBLIGATE UPLAND
# UPL

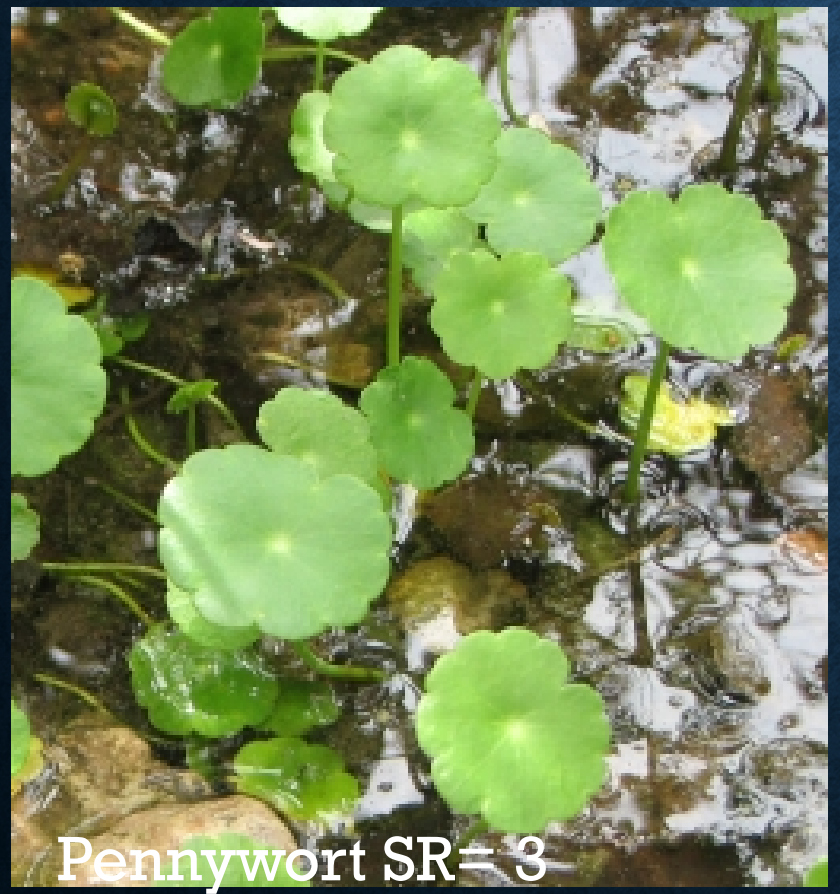
Almost always occur in
Non-wetlands
99% probability



# COLONIZERS

- First to appear
- Shallow and weak roots/stolons and rhizomes
- Essential for recovery during healing process

# COLONIZERS

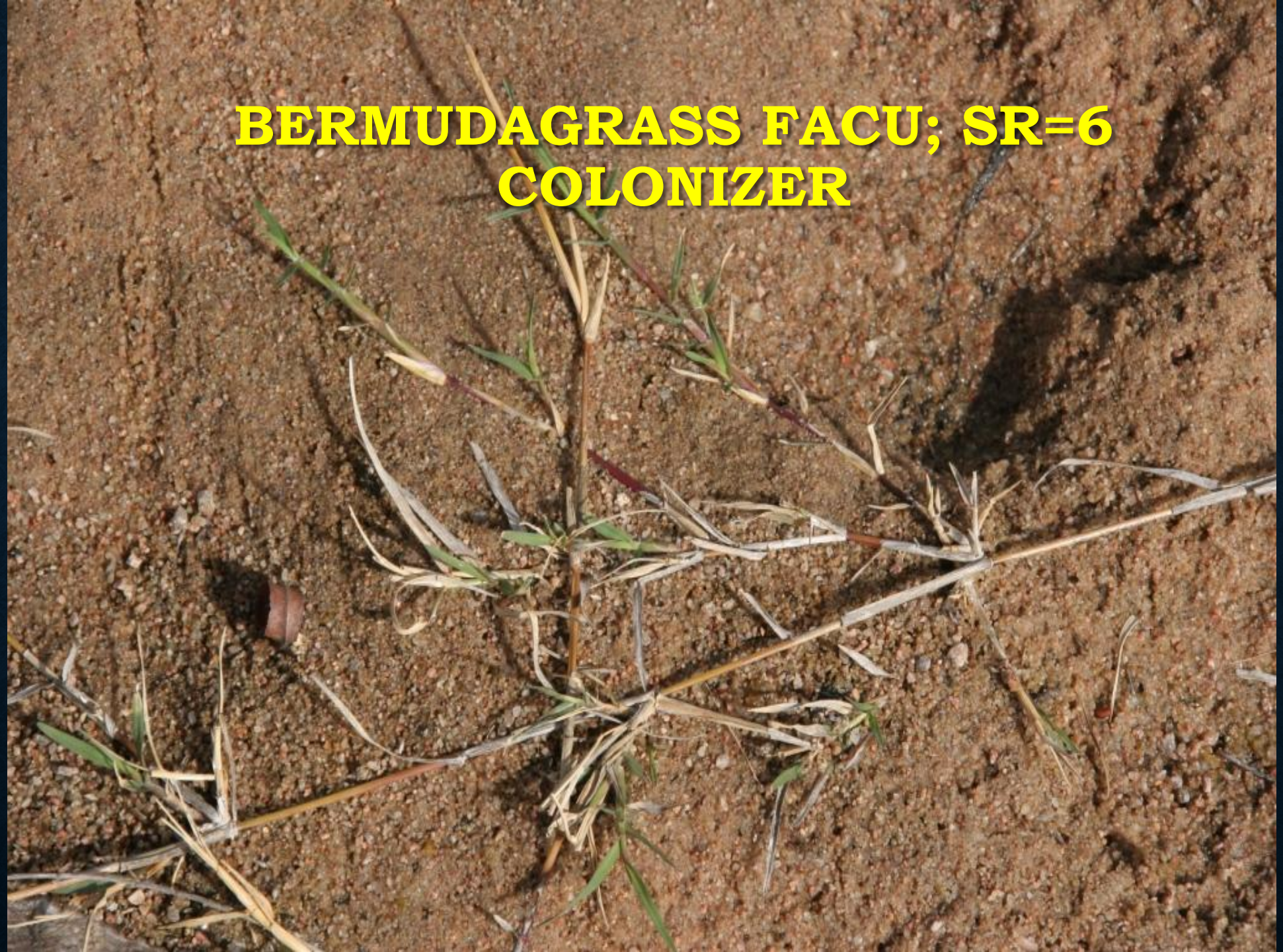


Pennywort SR= 3

Water Primrose SR = 3


FROGFRUIT – COLONIZER
FAC; SR = 4


Broad-leaf wood-oats *Chasmanthium*
Colonizer, FAC, SR = 5


BERMUDAGRASS FACU; SR=6
COLONIZER

# STABILIZERS

- Strong, robust plants that dissipate energy from flow

- Protects bank with strong, deep root systems

# STABILIZERS

- Herbaceous
- Woody

Eastern gammagrass *Tripsacum*
Stabilizer, FAC, SR = 9

Canada wildrye, Virginia wildrye, Stabilizer, FAC, SR=5/6


BUSHY BLUESTEM – WEAK STABILIZER
FACW; SR = 5/6


BLACK WILLOW *SALIX*
STABILIZER; FACW; SR = 7


American Elm
FAC
SR = 6
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DWARF PALMETTO
FACW; SR = 8


CYPRESS
OBL; SR = 10

# BULRUSH
# (SCIRPUS)
# OBL SR = 9

# BUTTONBUSH
# (*CEPHALANTHUS*)
# STABILIZER OBL; SR = 7


Box elder maple *Acer*
Stabilizer, FACW, SR = 6

# GREEN ASH
# STABILIZER, FACW, SR = 6

Roughleaf dogwood *Cornus*
Stabilizer, FAC, SR = 6

Japanese honeysuckle *Lonicera*
Stabilizer, FAC, SR = 6

Rusty blackhaw *Viburnum*
Stabilizer, FACU, SR = 6


American beautyberry *Callicarpa*
Weak Stabilizer, FACU, SR = 4

Chinese privet  Ligustrum
Stabilizer, UPL, SR = 5

# HEALTHY INDICATORS/EVALUATION

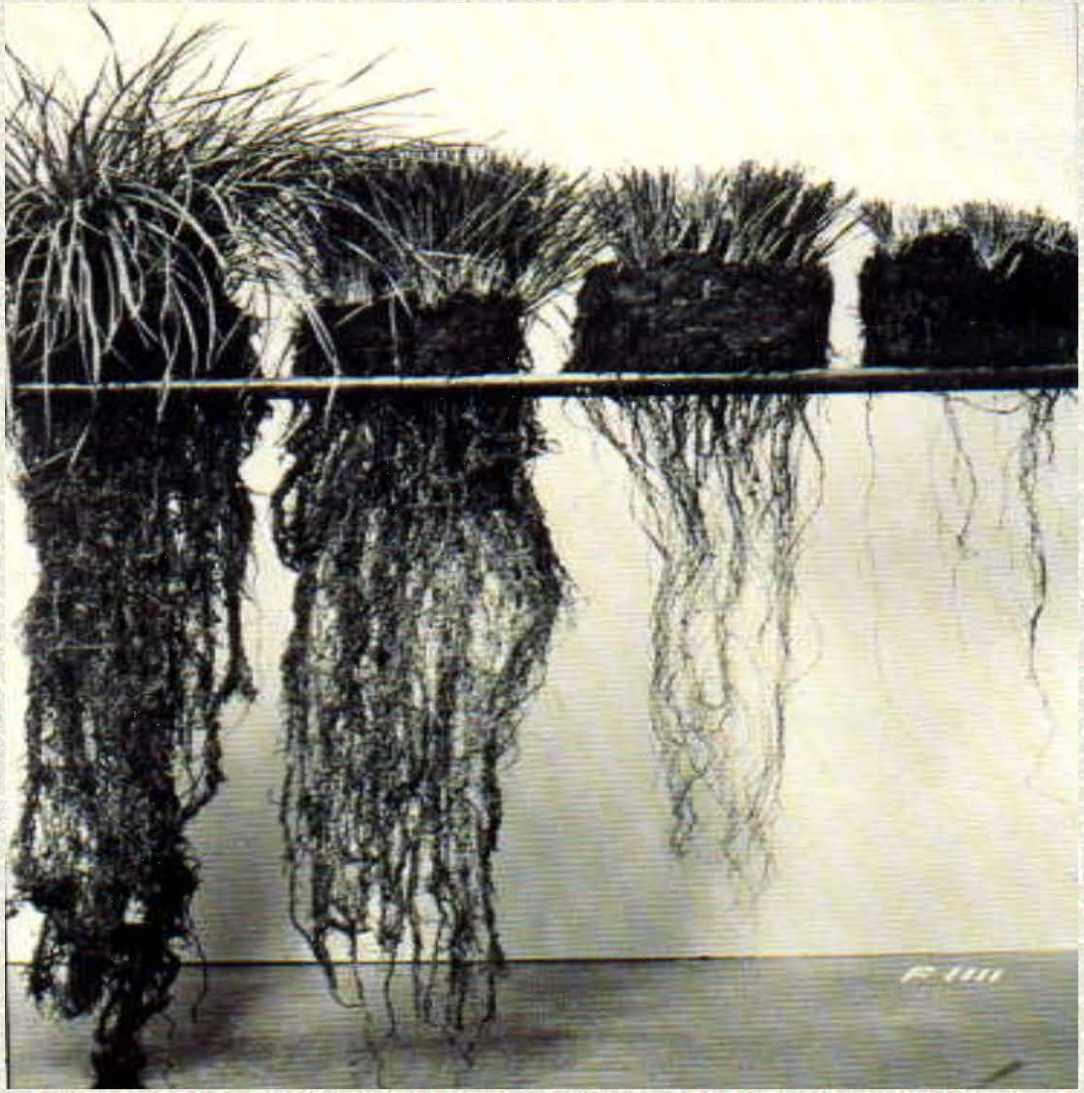
- High amount of plant cover
- High amount of plant diversity
- Stabilizing root mass
- Multiple age classes of plants
- Plant Vigor

# Healthy Indicators????

# Plant Vigor-Leaves and Roots

*Caring for the Green Zone, Riparian Areas and Grazing Management*

**Alberta Riparian Habitat Management Project, "Cows and Fish Project"**



# Plant Vigor


Mid age
Mature
Young age

# SOLUTIONS

- Riparian pasture (abbreviated grazing, long rest)
- Off site water/mineral sites
- Riparian buffers
- SMZ (streamside management zones)
- Population management
- Upstream management
- Time
- Water catchment not watershed


The End