Wildlife Habitat Restoration in the Eagle Ford Shale Play

Forrest S. Smith
Director

South Texas Natives & Texas Native Seeds Projects
Caesar Kleberg Wildlife Research Institute
What do we do?

- **Mission:** *Develop native seed sources for Texas*
  - 20 native seed sources in 11 yrs
- **What we do:**
  - Collect native plant seeds from natural stands
  - Test, select, and increase
  - Provide seed stock to commercial growers
  - Figure out the best ways to restore native plants
Texas Native Seeds

- Cooperators
  - Caesar Kleberg Wildlife Research Institute
  - Borderlands Research Institute
  - USDA Plant Materials Centers
  - Texas AgriLife Research
  - Tarleton State University
- [http://ckwri.tamuk.edu/research-programs/texas-native-seeds/](http://ckwri.tamuk.edu/research-programs/texas-native-seeds/)
Why the Eagle Ford area is important:

- Forest and woodland systems
- Shrubland, steppe and savanna systems
- Grassland systems
- Riparian and wetland systems
Environmental concerns?
Two paths to go down:

Before exploration:
native plants & sporadic exotic grasses

After:
75% exotic grass

After:
75% native plants

Soil disturbance only

Good disturbance +
good restoration
Exotic grass cover—with and without restoration effort after soil disturbance

Why do we care about native plants?

Native habitat

Exotic grass dominated habitat
Trouble on the horizon?
Why work to restore habitat?

- Protect your land resource
- Minimize effects on wildlife
- Maximize available habitat
- Enhance degraded sites
- Maintain habitat connectivity
- *Limit exotic grass invasion and spread into adjacent native habitats*
Primary concerns related to wildlife habitat & Eagle Ford E&P:

- *Habitat loss*
- Habitat degradation
- Soil erosion
- Exotic grasses
- Restoration methods
Habitat loss
Habitat loss-how to mitigate?

• Avoid the sweet spots (lose non-habitat)
• Development in previously disturbed areas only
• Development along existing boundaries
• Use existing roads
• Restrict entry into sensitive areas
• Site selection is critical
Eagle Ford Shale Concerns

- Habitat loss
- *Habitat degradation*
- Soil erosion
- Exotic grasses
- Restoration methods
Habitat degradation-how to mitigate?

- Pay attention to site characteristics
- Always salvage & store topsoil
- Don’t mix soil layers
- Pre/post disturbance soil testing
- Aggressively control exotic species introduction
- Reseed using adapted native seed
Where is very important!

Example: Frac tank dam with sand

Example: Easement through saline site
What will happen in most of the Eagle Ford to wildlife habitat:
The alternative...with good restoration:
Do you need to reseed?

- These kinds of disturbances are not “natural”
- Soils are often changed such that natural seed bank is lost, damaged, or no longer capable of colonizing these sites
- Rapid cover is very important
  - Prevent soil erosion
  - Limit exotic species invasion
What to plant?

- **South Texas Natives released native seeds are the only adapted native seed source for the Eagle Ford area**
- **Cover crops o.k. for temporary erosion control**
  - Spring/summer-millet & grain sorghum
  - Fall/winter-wheat & oats
21 Native Seed Releases for South Texas

- Demand exceeds current supply
  - *Plan to pre-order*
- Seed cost will range $80-200/acre
- Planting cost will range $25-55/acre
Seed mixes?

- **50% Early-successional grasses & forbs**
  - Slender grama
  - Hooded windmillgrass
  - Green sprangletop
  - Sand dropseed
  - Tallow weeds
  - Deer pea vetch
  - Indian blanket
  - Huisache daisy

- **25% Mid-successional grasses & forbs**
  - Arizona cottontop
  - Plains bristlegrass
  - Pink pappusgrass
  - Whiplash pappusgrass
  - Awnless bush sunflower

- **25% Late successional grasses and forbs**
  - Trichloris
  - Little bluestem
  - Sideoats grama
  - Big sacaton
  - Prairie acacia
Eagle Ford Shale Concerns

- Habitat loss
- Habitat fragmentation
- *Soil erosion*
- Exotic grasses
- Restoration methods
Lose the soil, lose the habitat

- Erosion problems throughout the Eagle Ford area
- Result of poor or no reclamation practices
- Seed planted in the soil is not erosion control
- Soils often mixed such that few plants can grow on many sites
Erosion control?

- **Soil handling**
  - Don’t mix soil layers
  - Re-contour
  - Pack/track/mound

- **Cover crops**
  - Millets-spring/summer
  - Wheat & oats-fall/winter

- **Physical barriers**
  - Hydro mulching
  - Mats
  - Vegetative mulches (hydro-axed materials)
Eagle Ford Shale Concerns

- Habitat loss
- Habitat fragmentation
- Soil erosion
- Exotic grasses
- Restoration methods
Exotic grasses—the biggest concern

• #1 DON’T PLANT THEM!!!!
• Make an effort to limit introduction
  • Wash equipment
  • Limit travel
• Control invading exotics early & often
  • Spot spray and re-spray with roundup
What NOT to plant for wildlife!

- Buffelgrass
- Bermudagrass
- Blue panicum
- Wilman lovegrass
- Kleingrass
- Old World bluestems
  - Kleberg
  - King Ranch
  - Caucasian
  - WW-Spar, B-Dahl
Eagle Ford Shale Concerns

- Habitat loss
- Habitat fragmentation
- Soil erosion
- Exotic grasses
- Restoration methods
Restoration Methods

• *How you plant is as important as what you plant*

• Plant when success is likely— not necessarily according to the calendar
  • Good soil moisture *before*
  • Good chance of precipitation *afterward*

• Know your site
  • Do a soil test
  • Use the right species of plants for your site

• *Know the contractor*
Reseeding methods?

$25-50/acre

$200+/acre

$20/acre

$10-20/acre
Natural Progression:
It is your backyard—look after it!
Forrest S. Smith
Director-South Texas Natives & Texas Native Seeds
Caesar Kleberg Wildlife Research Institute
Phone: (361) 593-4525
Email: forrest.smith@tamuk.edu

-STN and TNS are funded 100% by grants and donations-