

Wildlife Habitat Restoration in the Eagle Ford Shale Play

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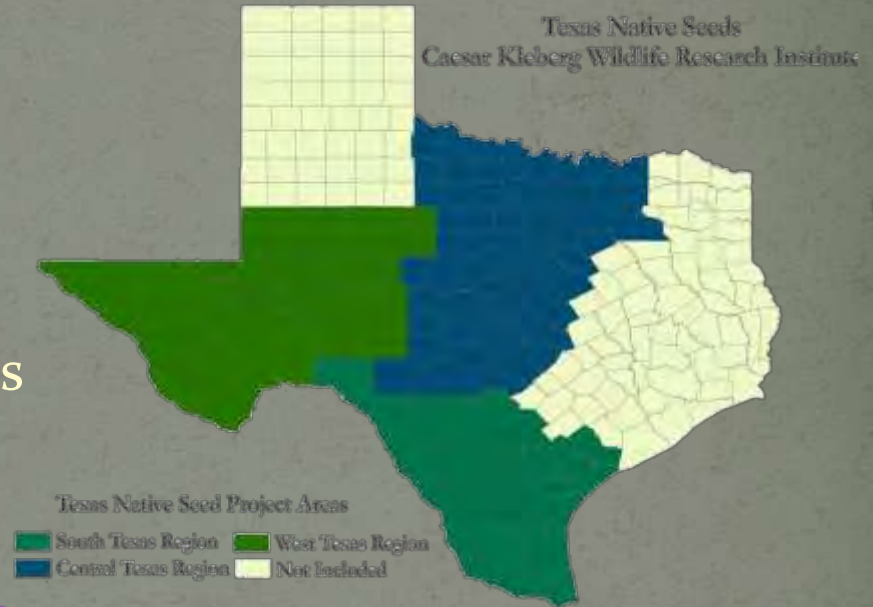
What do we do?

- 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

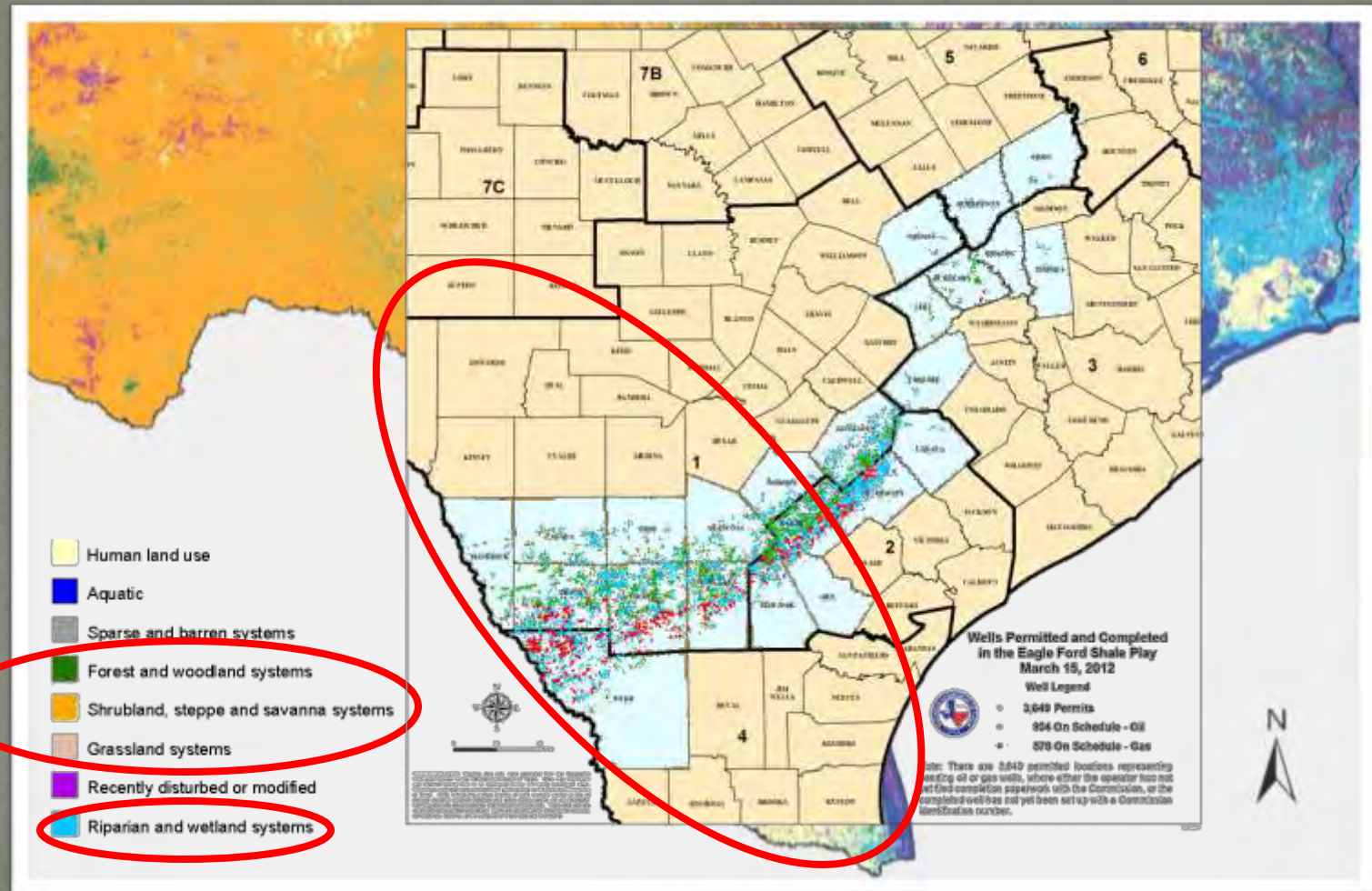


Texas Native Seeds

- 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/>



Why the Eagle Ford area is important:



Environmental concerns?



Two paths to go down:

Before exploration:
native plants & sporadic exotic
grasses

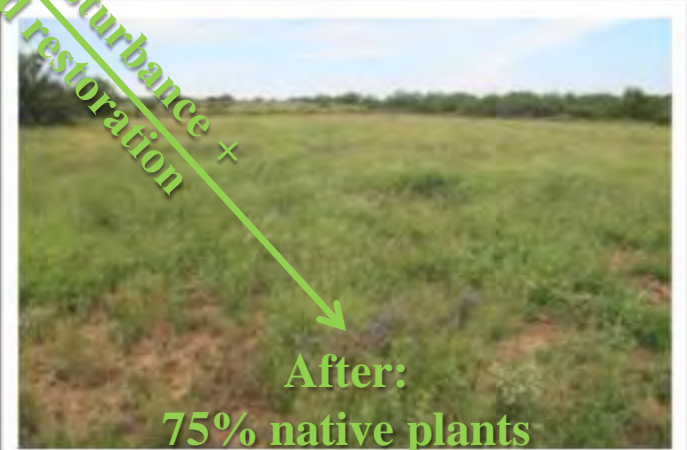


Soil disturbance
only



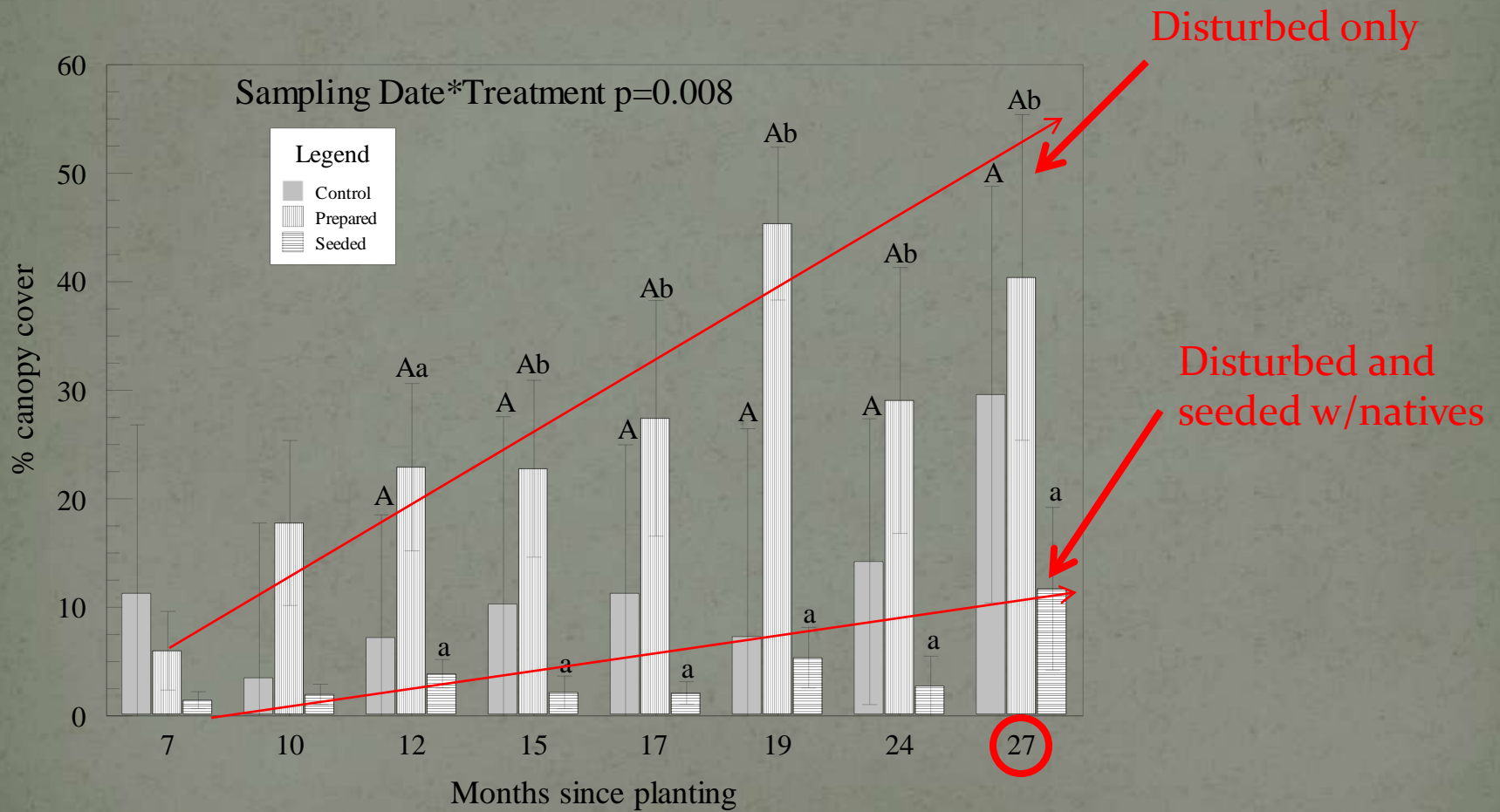
After:
75% exotic grass

Soil disturbance +
good restoration



After:
75% native plants

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

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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

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- ~~Soil erosion~~
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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!



For more information or to help:

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