

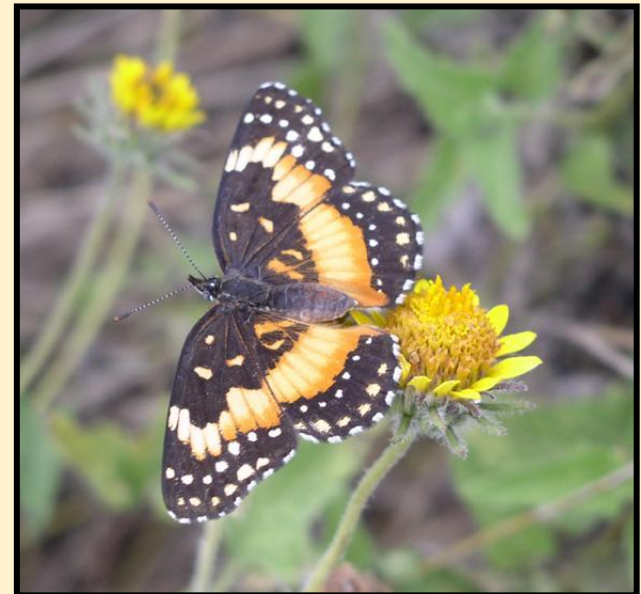
# South Texas Natives A Collaborative Approach in Native Seed Solutions



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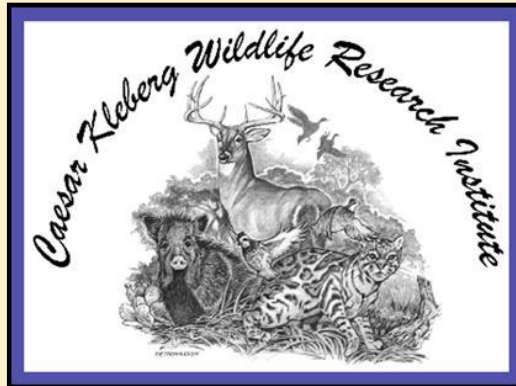
# Problems

- Lack of commercially available native seeds and plant materials for restoration
- Increasing invasive plant encroachment on private ranches
- TxDOT: Interstate 69
- Energy reclamation



# Caesar Kleberg Wildlife Research Institute

- Texas A&M University-Kingsville
- Director: Dr. Fred Bryant
- Strong and active Advisory Board
- Trust and relationship with private ranches
- Proven Record of Delivery



# South Texas Natives Goal

- Initiated in 2001 as a collaborative effort between private, state and federal entities to develop and promote native plants of South Texas for restoration and reclamation of habitats on private and public lands.



# Oversight and Advocacy

- Advisory Group
  - Conservation and political leaders
  - Agency advisors
  - Donors
- Technical Committee
  - Land Managers
  - Research Partners
  - Subject matter experts
  - Seed industry



# Collaborators

- Private Landowners and Foundations
- USDA NRCS E. “Kika” de la Garza PMC
- Texas AgriLife Research– Beeville
- TxDOT
- Rio Farms
- Douglass King Seed Company and other cooperating industry partners



# External Support

- Over 10 Million Dollars
  - 50% private/50% state administered resources
- Landowner Support
  - Active interest & involvement
  - Demonstration plantings
  - Politically & financially influential
  - Seed consumers





# Commercialization Process


- Seed Collections
- Evaluations
- Seed Increase
- Seed Dealers





# Early Steps

- Plant Species List
  - One of the first steps in formulating an ecological restoration plan
- Securing plant materials – Next Step
  - Much more complex decision
    - Commercially available?
    - Multiple sources?
    - Genetically appropriate?



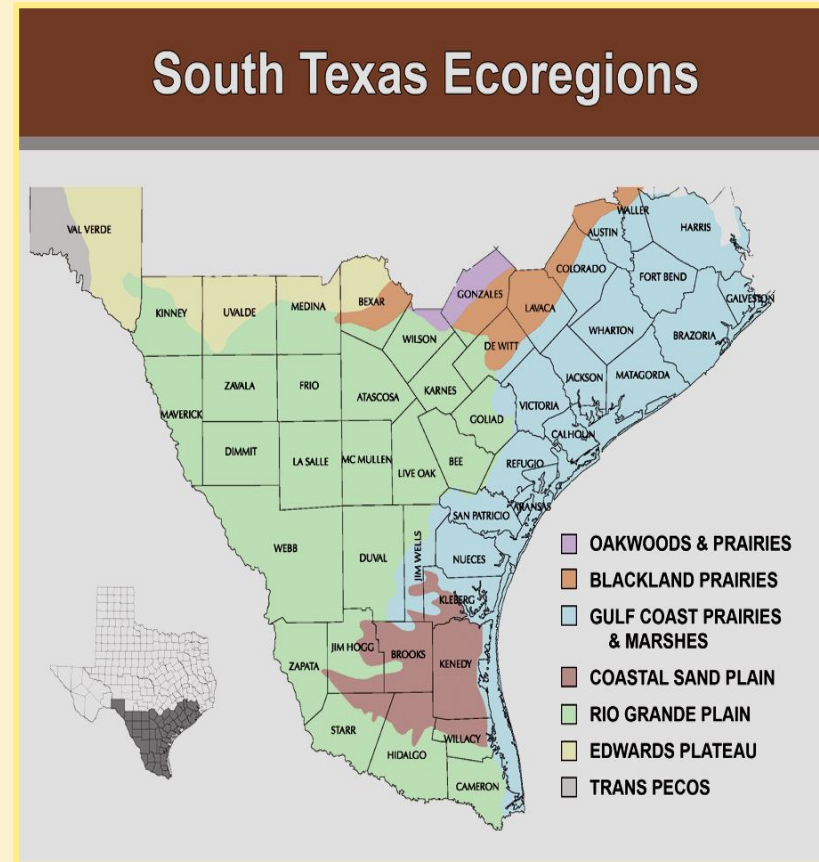
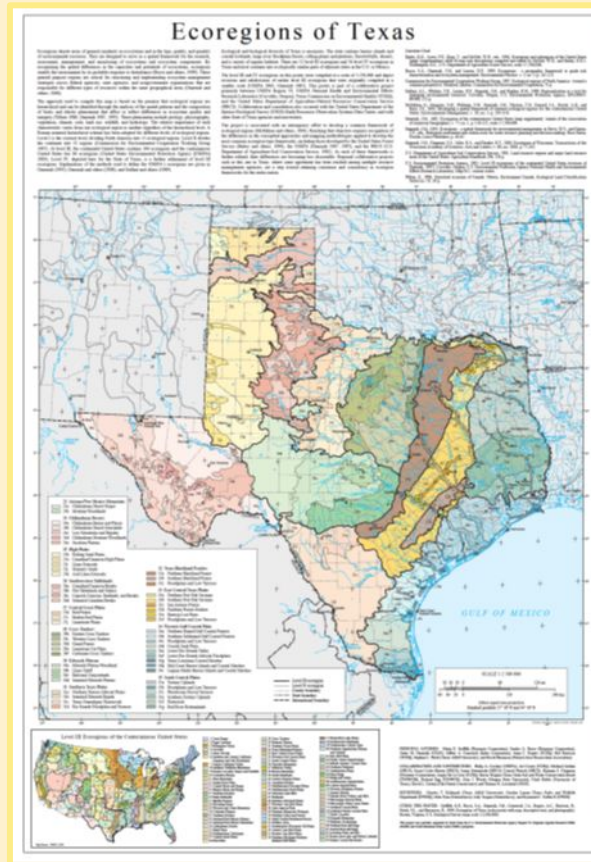
# Regional Ecotype Approach

- A Seed Mix with Broad Genetic Base from a Similar Ecoregion which provides for On-Site Natural Selection
  - Model – Iowa Ecotype Project (Ecol. Rest. 2000)
  - Study on Genetic Variation in Blue Wildryes in California (Knapp, 1996)



# Geographic Divisions


EPA -III vs. Ecoregions



# Seed Collections

- South Texas Natives
  - Brought in over 1,700 collections within the first couple of years.





# Evaluations - Nursery Plantings

- Accession Selection:
  - 50 plant groupings of each accession
  - 1-2 replications per site
  - Multiple sites, 3-4
  - Multiple years, 2-3
  - Factors:
    - Survival, Regrowth, Vigor, Foliage Density, Uniformity, Resistance, Development stage, Seed shatter, Origin
    - Quantitative: Seed Yield & Seed Germination

# Evaluations

- Field Plantings



# Seed Increase

- Seed Harvested from Selected Accessions in the Nursery Evaluation plots
- Planted in Production Fields for Mechanical Harvesting



# Commercial Seed Production

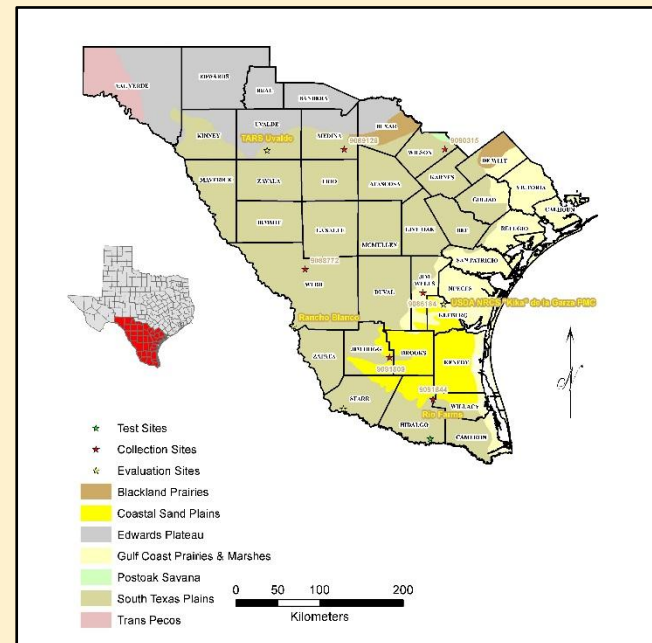
- Seed Released to Growers
- Minimum – enough to establish at least a 5 acre field.





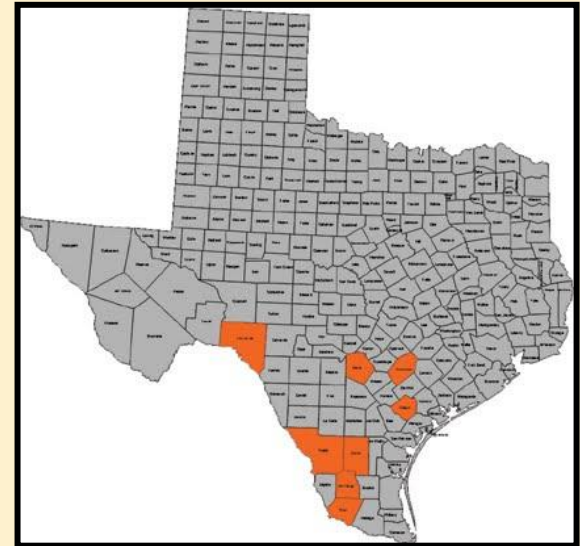
# Example: Orange Zexmenia

- 42 accessions collected
- 3 Evaluation Sites/Years Evaluated
  - PMC Kingsville/1994-2003
  - TAMU Uvalde/2005-2006
  - Rio Farms/2005-2006



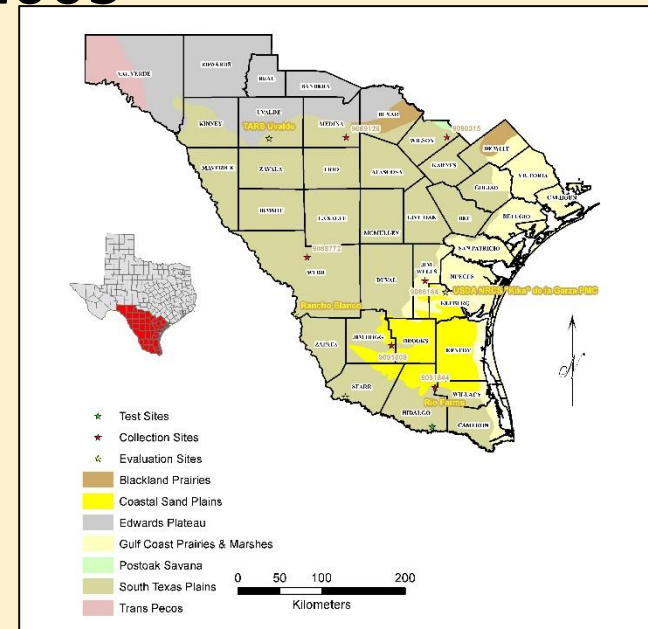
# Example: Orange Zexmenia

- 8 Accessions Chosen
  - From across the Rio Grande Plain
    - 4 top performers on a clay site
      - Root rot resistance
    - 4 top performers on a sandy site
- Commercial Availability
  - 500# PLS



# Example: Catarina Bristlegrass Blend

- 130 Accessions Collected
- 3 Evaluation Sites/Years Evaluated
  - PMC Kingsville/1984-2004
  - TARS-Beeville/2003-2005
  - PMC Knox City/2003-2005



# Example: Catarina Bristlegrass Blend

- *Seteria leucopila* & *Seteria vulpisetata*
  - A blend of 4 accessions, 2 species
  - 2 high active germination, but lower seed production
  - 2 high seed producers, but very high dormancy (<2% active germination)
- Commercial Availability
  - Over 100 acres in Production
  - 10,000#PLS



# Accomplishments

- In 2007, 7 species were co-released to the commercial seed trade
- In 2011, Seed Companies were producing 2,400 lbs of seed from 18 species



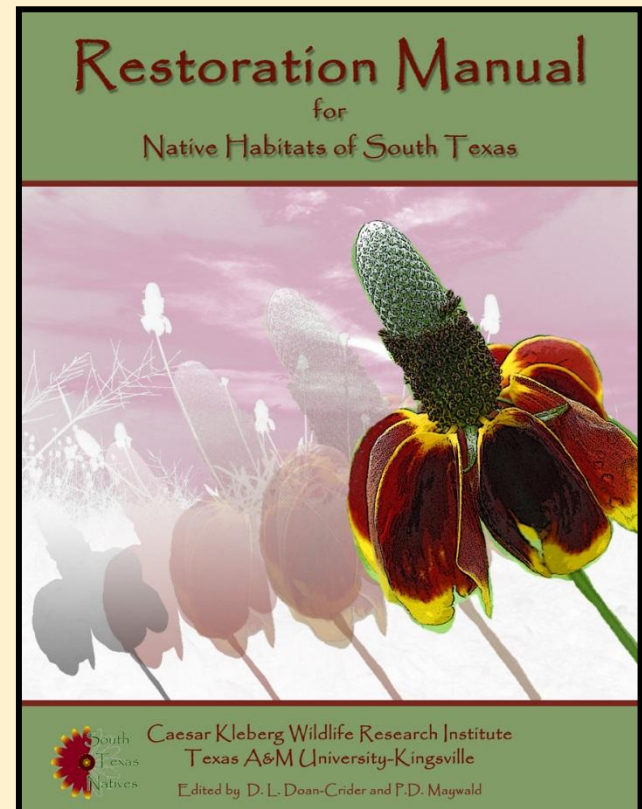
# Accomplishments

- By 2014, 25 STN cooperative releases were producing over 47,000 lbs of seed per year worth over \$1.5 million
- Production from 2011-2016 has ranged 30,000-55,000 lbs PLS/year
- Adapted native seeds are today available for planting annually 20-30,000 acres



# Accomplishments

- Popular & Scientific Articles
- YouTube Videos
- Restoration Manual
- Website





# Accomplishments

- In 2014, TxDOT changed its South Texas species list to 100% native
- Based on the success of STN, a statewide initiative called Texas Native Seeds was launched
  - Seeding specifications changed throughout the state based on research results
    - Many PMC Program releases incorporated



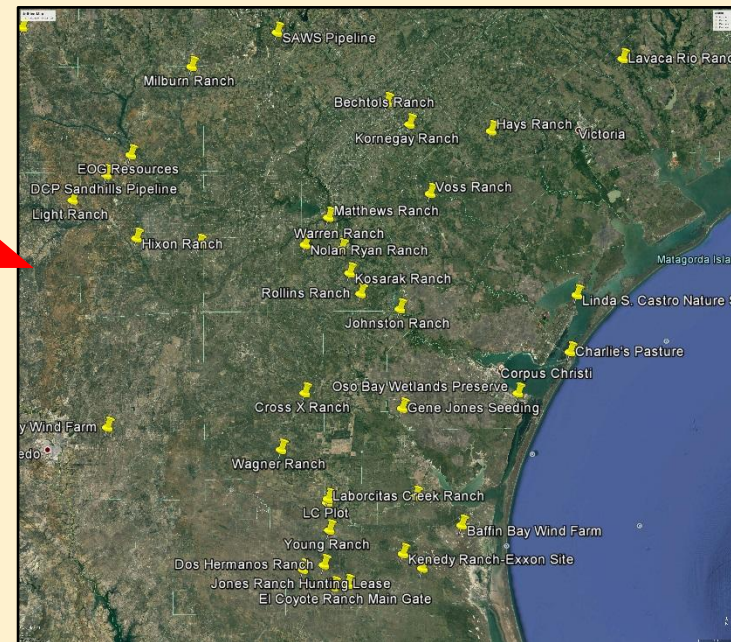
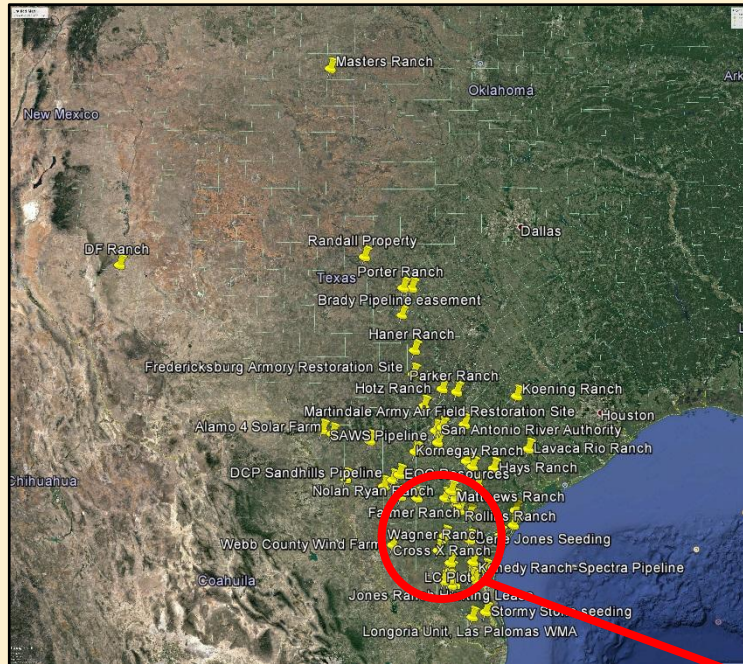


# Accomplishments

- Energy Reclamation
- Active role with industry and landowners: Eagle Ford Shale
- Published research results
  - Pad site reclamation
  - Pipeline reseeding
- Assist with recommendations
  - wind, solar, oil and gas, uranium
  - Pipeline and electric rows

# Example of Impacts: STN Assisted Projects

Consultation on  
~200 projects  
per year.




# South Texas Natives

## Critical Points:

- Active Involvement of Stakeholders
- Stated Goals & Measureable Objectives
- Strong Oversight and Focus of Project Operations to Ensure Delivery of Seed to Consumers





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