Introduction of Ecological Site Descriptions and their Component Parts

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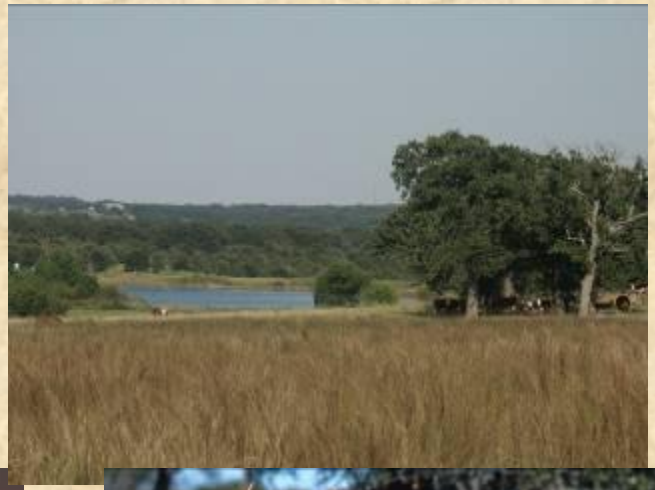
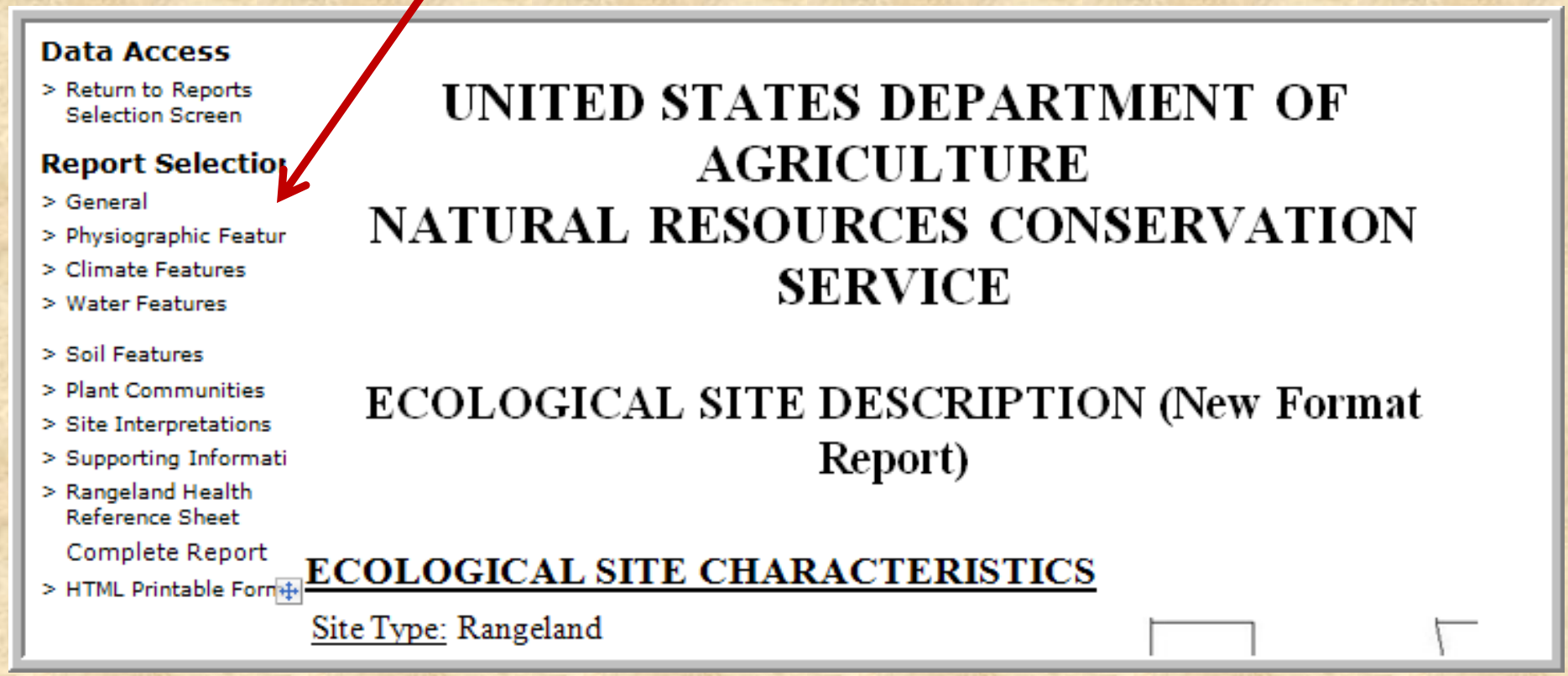
Ecological Site



Product of all the environmental factors responsible for its development.

- Soils
- Topography
- Climate
- Hydrology
- Vegetation
- Natural Disturbances
  - Animal Community
  - Fire Regime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ECOLOGICAL SITE DESCRIPTION (New Format Report)
ECOLOGICAL SITE CHARACTERISTICS
Site Type: Rangeland

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ECOLOGICAL SITE DESCRIPTION (New Format Report)

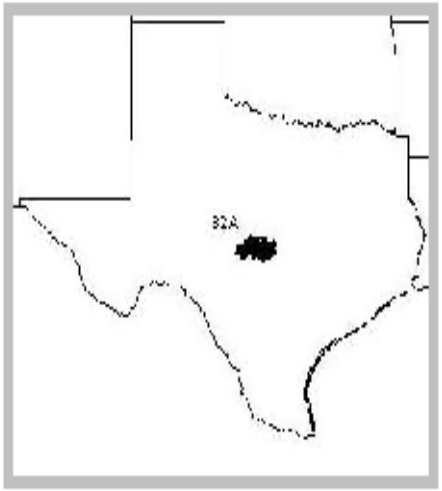
ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site Name: Red Sandy Loam 25-32" PZ

Site ID: R082AY369TX

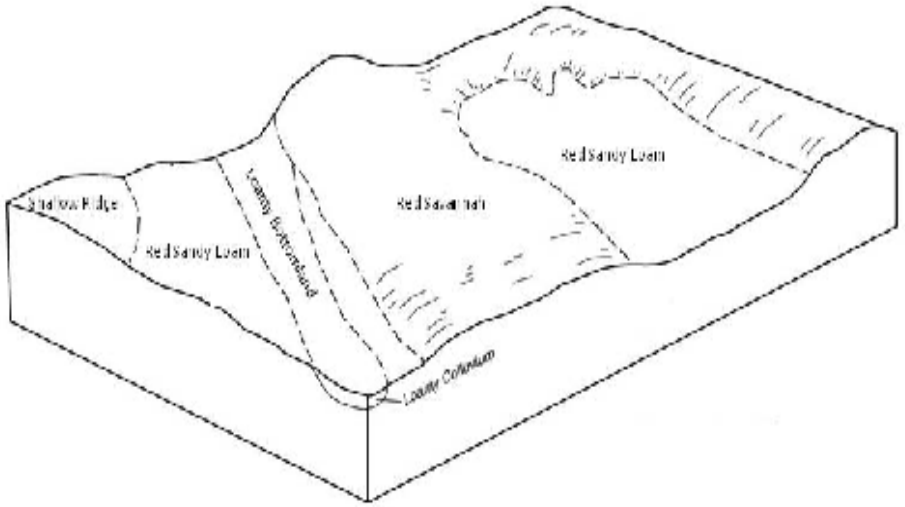
Major Land Resource Area: 082A-Texas Central Basin



Physiographic Features

These soils associated with the Red Sandy Loam ecological site are on gently sloping to moderately sloping uplands. Slopes range from 1 to 8 percent. Elevation ranges from 850 to 2,200 feet.

Physiographic Image



Formed in material weathered from schist, sandstone and limestone on uplands

Climatic Features

The climate for MLRA 82A is humid subtropical and is characterized by hot summers and relatively mild winters. The average first frost should occur around November 11 and the last freeze of the season should occur around March 21.

The average relative humidity in mid-afternoon is about 50 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 70 percent of the time possible during the summer and 50 percent in winter. The prevailing wind direction is from the south.

Approximately two-thirds of annual rainfall occurs during the April to September period. Rainfall during this period generally falls as thunderstorms, and fairly large amount of rain may fall in localized areas for a short period of time.

	Minimum	Maximum
Frost-free period (days):	215	235
Freeze-free period (days):	265	276
Mean annual precipitation (inches):	25.0	32.0

Monthly precipitation (inches) and temperature (°F):

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Precip.	0.47	0.7	0.87	1.11	2.34	2.13	0.67	0.91	1.18	1.55	0.93	0.58

Representative Soil Features

Red Sandy Loam soil series consists of shallow, moderately deep, and very deep well drained, moderately permeable soils that formed in residuum from reddish colored sandstone. The soil formed in loamy reddish sediments of the Hickory Sandstone member of Upper Cambrian Age.

The site generally does not receive additional water from outside the site. There is little bare soil in this community, with plant basal cover, litter, and rock fragments comprising the ground cover. The site will have large rock fragments (cobbles, stones and boulders) on the soil surface, even in the reference state. Soils are fertile and hold moderately high amounts of soil moisture. This is a productive site with moderately high yields of good quality forage.

Associated soils for Red Sandy Loam ecological site include Hye, Oben, and Pontotoc.

Parent Materials:

Kind: Residuum

Origin: Sandstone

Surface Texture: (1)Stony Fine sandy loam

(2) Fine sandy loam

(3)Stony Sandy loam

Subsurface Texture Group: Loamy

Plant Communities

Ecological Dynamics of the Site

DEFINITIONS (From the National Range and Pasture Handbook (1997), unless otherwise noted.)

Plant Communities

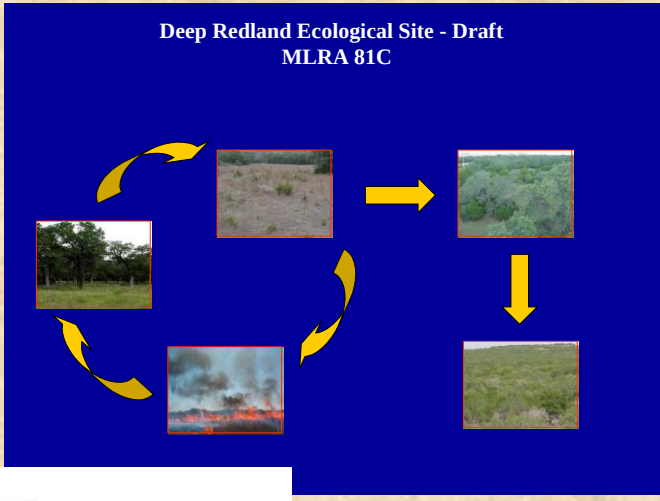
Ecological Dynamics of the Site:

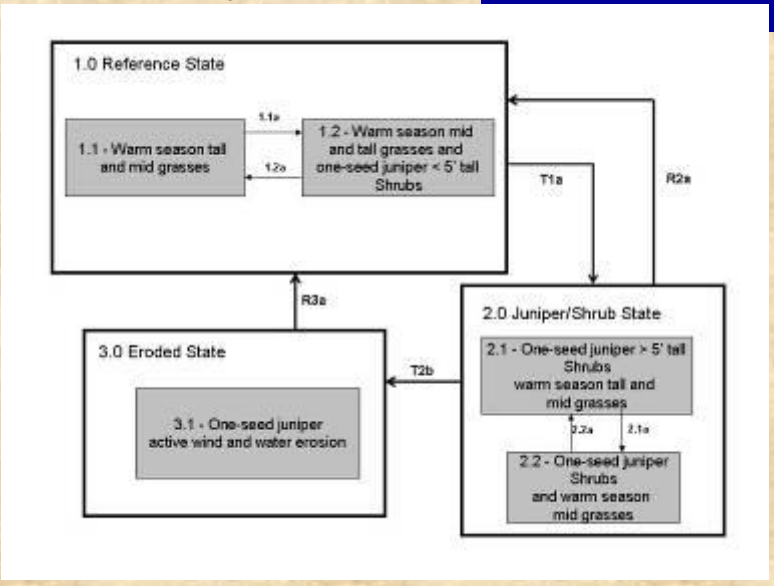
The Red Sandy Loam 25-35" PZ reference site is a fire-influenced Little Bluestem/Oak Savannah interspersed with perennial forbs and mixed shrubs. The site consists of two stable states: the Savannah State (1.0) and Shrubland State (2.0), each containing two communities.

The Texas Central Basin (MLRA 82A) is a unique geological region within Texas. It is composed largely of Pre-Cambrian granite, gneiss and schist (Bureau of Economic Geology 1981). Depending upon the parent material and topography, a great variety of soils have developed that vary from shallow, fissured, rocky outcrops with minimal soil development to relatively deep, well-developed soils with textures that vary from fine sandy loams to sands to gravelly clay loams to cobbly clay loams and stony clay loams (Goerdel 2000).

Ecological Site Description Components

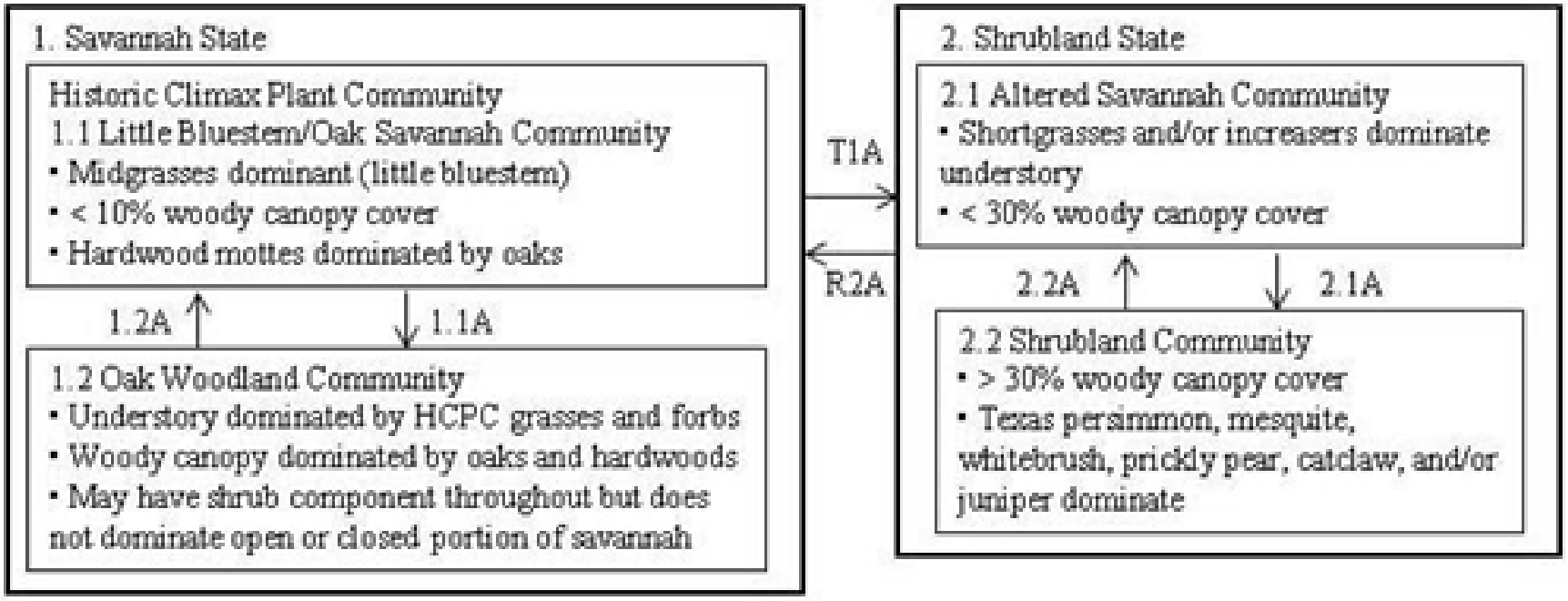
- Plant Communities
  - Ecological Site Dynamics
    - Narrative Description
    - State and Transition Model
      - Narrative
      - Diagram





Red Sandy Loam 25-32" PZ

R082AY369TX



Legend

1.1A Lack of Fire and/or Brush Control
1.2A Proper Grazing Management, Fire (Natural or Prescribed), Brush Management
2.1A Lack of Fire and/or Brush Management
2.2A Brush Control, Fire
T1A Overgrazing, Lack of Fire, Tree Removal
R2A Range Seeding, Mechanical Brush Management

Little Bluestem/Oak Savannah Community - Community Phase 1.1

1.2 Oak Woodland Community (1)

Altered Savannah Community - Community Phase 2.1

Shrubland Community - Community Phase 2.2

Supporting the STM

- **Reference State**
- **Alternative Community Phases**
- **At-Risk Community discussions**
- **Triggers and drivers**
- **Threshold discussions**
- **Restoration activities to a previous state**
- **Management and disturbances discussion**

Community Phase Pathway 1.1A

The driver for community shift 1.1A is lack of fire and/or brush control to maintain the woody component as mottes of mature oak and other hardwoods. Native woody species canopy will continue to increase without fire or brush control. Once it exceeds 20 percent, this indicates a shift to the Oak Woodland Community (1.2).

Because the woody species that dominate in the Oak Woodland Community (1.2) are native species that occur as part of the reference community, the shift to the Oak Woodland Community is a linear process with shrubs increasing soon after fire or brush control ceases. This is a continual process.

The Little Bluestem/Oak Savannah Community requires fire and/or brush control to maintain the savannah appearance with woody species cover below 10 percent. Regardless of the composition and vigor of the herbaceous component, this community will shift to the Oak Woodland Community without effective brush control. This shift can occur even with proper grazing management and if the herbaceous component remains vigorous. Brown and Archer (1999) concluded that even with a healthy and dense stand of grasses, woody species would populate the site and eventually dominate the community.

Little Bluestem/Oak Savannah Community Plant Species Composition:

	Grass/Grasslike				Annual Production in Pounds Per Acre		Foliar Cover Percent	
Group	Group Name	Common Name	Symbol	Scientific Name	Low	High	Low	High

Little Bluestem/Oak Savannah Community Plant Species Composition:

Grass/Grasslike					Annual Production in Pounds Per Acre		Foliar Cover Percent	
Group	Group Name	Common Name	Symbol	Scientific Name	Low	High	Low	High
1	Warm-season midgrasses				1440	2150		
		Grass, perennial	2GP		0	50		
		SIDEOATS GRAMA	BOCU	*Bouteloua curtipendula*	300	900		
		SILVER BEARDGRASS	BOLAT	*Bothriochloa laguroides ssp. torreyana*	200	600		
		ARIZONA COTTONTOP	DICA8	*Digitaria californica*	200	400		
		PLAINS LOVEGRASS	ERIN	*Eragrostis intermedia*	300	500		
		VINE MESQUITE	PAOB	*Panicum obtusum*	300	500		
		LITTLE	SCSC	*Schizachyrium*	750	1500		

Annual Production by Plant Type:

	Annual Production (lbs/AC)		
Plant Type	Low	Representative Value	High
Grass/Grasslike	1800	2250	2700
Forb	335	420	505
Shrub/Vine	25	30	35
Tree	240	300	360
Total:	2400	3000	3600

Structure and Cover:

Soil Surface Cover

Cover Type	Minimum	Maximum		Wood Type	Minimum	Maximum	Predominant Decomposition Class*
Basal Cover - Grass/Grasslike	10%	15%		Downed wood, fine-small (<0.40\" diameter; 1-hour fuels)			
Basal Cover - Forb	1%	2%		Downed wood, fine-medium (0.40-0.99\" diameter; 10-hour fuels)			
Basal Cover - Shrub/Vine	1%	2%		Downed wood, fine-large (1.00-2.99\" diameter; 100-hour fuels)			
Basal Cover - Tree	2%	3%		Downed wood, coarse-small (3.00-8.99\" diameter; 1000-hour fuels)			
Non-Vascular Plants				Downed wood, coarse-large (>9.00\" diameter; 10000-hour fuels)			
Biological Crust				Tree Snags** (Hard***)			
Litter	20%	30%		Tree Snags** (Soft***)			
Surface Fragments > 0.25" and <= 3"	1%	5%		**Tree Snags** per Acre**			

Structure of Canopy Cover

Height	Grasses/Grasslike		Forbs		Shrubs/Vines		Trees	
Above Ground	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
<=0.5 feet	1%	3%	0%	1%	%	%		
> 0.5 - < 1 feet	10%	15%	1%	3%	1%	3%		
> 1 - <= 2 feet	40%	55%	3%	5%	5%	8%		
> 2 - < 4.5 feet	8%	15%			3%	5%		
> 4.5 - <= 13 feet								
> 13 - < 40 feet							8%	15%

The Altered Savannah Community is characterized by woody canopy cover less than 30 percent. The Altered Savannah Community supports a lower diversity of uses than the Little Bluestem/Oak Savannah Community (1.1) it replaces. Native forbs occur at a low frequency, so that grazing management alone will not allow these species to reestablish as the dominant herbaceous species. Generally, the shrubs preclude establishment of remnant HCPC plants. Grazeable acreage is only 30 to 50 percent of the total area.

The Altered Savannah Community requires some form of brush control (fire, mechanical, chemical, or grazing) for maintenance. Without brush control it will shift to the Shrubland Community in a relatively short time (5-15 years). The open areas of the Altered Savannah Community will have shrubs sprout every year. As these plants mature, they will fill in the open areas. Once canopy cover of woody species reaches 30%, the site has shifted to the Shrubland Community.

Drought interacts with grazing to trigger midgrass to shortgrass transitions. Heavy continuous grazing will reduce plant cover, litter, and mulch. Bare ground will increase and expose the soil to erosion. Litter and mulch will move off-site as plant cover declines. Without brush control, woody canopy may increase until canopy cover approaches 50 percent.

Examples of the Altered Savannah Community within the Central Basin that have remained in this community have frequently been maintained with a combination of fire and goat grazing.

Community Phase Pathway 2.2A

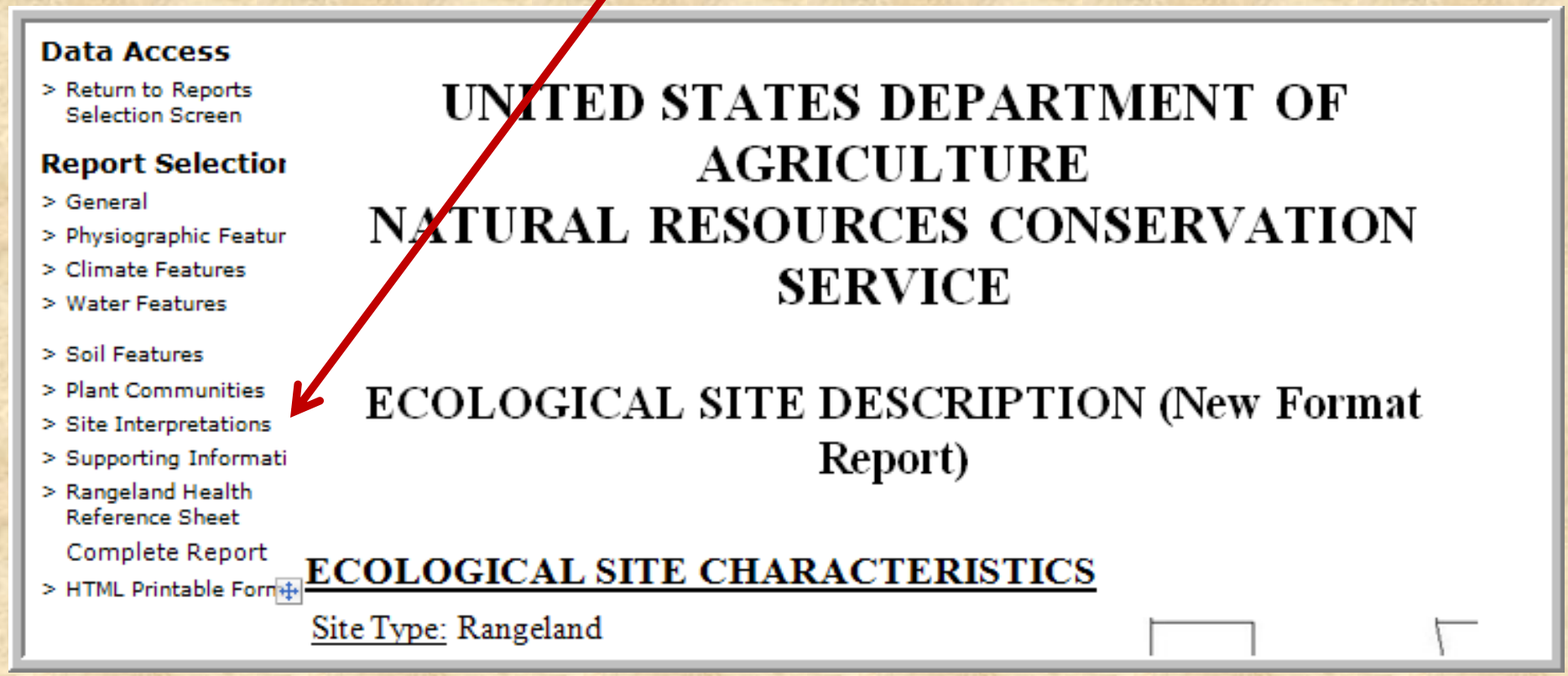
Extensive and selective brush management can reduce the woody component of the Shrubland Community (2.2) below the community shift level of 30 percent woody canopy cover. It may be difficult to shift back to the Altered Savannah Community (2.1) with fire alone due to the lack of fuel provided by the understory and height of the canopy cover. Fire can reduce seedlings of brush species if the seedling is younger than 2 years or the budding zone has not transitioned below the soil surface (Kramp et al 1999). Fire and/or brush management will be required to maintain woody canopy cover below the 25 percent level. The limitations with fire are amplified if the understory transitions to cool-season grasses.

Restoration Pathway - R2A

R2A. Restoration Pathway to Savannah State

The driver for Restoration Pathway R2A is fire and/or brush control combined with natural restoration of the herbaceous community or active management of the herbaceous restoration process (range seeding). Restoration may require aggressive treatment of invader species.

Restoration of the Shrubland State to the Savannah State (R2A) requires substantial energy input. An integrated approach of biological, mechanical and chemical brush control in combination with prescribed fire, proper grazing, and favorable growing conditions is expensive, but is generally the most economical means of creating and maintaining the historic plant community. A long-term prescribed fire program may sufficiently reduce brush density to a level below the threshold of the Savannah State (1.0). However, the fire program will have to be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Ecological Site Description

- Ecological Site Characteristics
  - Physiographic Features
  - Climatic Features
  - Water Features
  - Soils
- Plant Communities
- Site Interpretations
- Supporting Information

Ecological Site Interpretations

Ecological Site Interpretations

Animal Community:
The Red Sandy Loam site provides at least a portion of the habitat for many species of reptiles, birds, mammals, and insects. Game birds, songbirds, and birds of prey were indigenous or frequent users, and most are still plentiful. Quail and

Plant Preference by Animal Kind:

Animal Kind: Cow/calf Cattle

Common Name	Scientific Name	Plant Part	J	F	M	A	M	J	J	A	S	O	N	D
WESTERN RAGWEED	*Ambrosia psilostachya*	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
threeawn	*Aristida*	Leaves	U	U	U	U	U	U	U	U	U	U	U	U

Hydrology Functions:

Red Sandy Loam sites tend to be well vegetated with high levels of canopy cover and low level of bare ground in all communities. Therefore, most examples are functioning hydrologically. Abusive management can create bare soils

Recreational Uses:
Recreational uses include recreational hunting, hiking, camping, equestrian, and bird watching.

Wood Products:
Honey mesquite and some oak are used for firewood, charcoal, and other specialty wood products.

Other Products:
Jams and jellies are made from many fruit bearing species, such as algerita. Seeds

Supporting Information

Associated Sites:

Site Name	Site ID	Site Narrative

Similar Sites:

Site Name	Site ID	Site Narrative
Sandy Loam 25-32" PZ	R082AY373TX	The Sandy Loam site has fewer oaks and higher percentage of grasses than the Red

State Correlation:

This site has been correlated with the following states:
TX

Inventory Data References:

Information presented was derived from the site's previous Range Site Description, NRCS clipping data, literature, field observations, and personal contacts with range-trained personnel.

Reviewers:
Joe Franklin, ZRMS, NRCS, San Angelo, Texas
Justin Clary, RMS, NRCS, Temple, Texas
Mark Moseley, ESI Specialist, NRCS, Boerne, Texas
Kent Ferguson, StRMS, NRCS, Temple, Texas

Type Locality:

Relationship to Other Established Classifications:

Other References:

1. AgriLife. Wildlife. "Managing Feral Hogs Not a One-shot Endeavor." Press release. AgNews. 01 Jan. 2009. Texas Cooperative Extension. 23 Apr. 2009 http://agnews.tamu.edu/showstory.php?id=903.

2. Appel, D. N. 1995. The Oak Wilt Enigma: Perspective from the Texas Epidemic. Ann. Rev. Phytopathol. 33:103-118.


THANKS