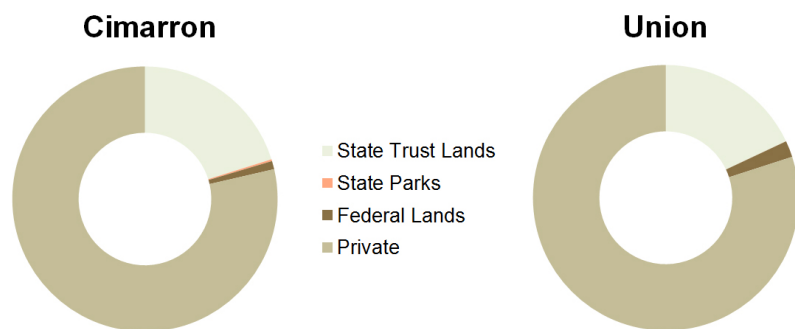


LAND TENURE AND LANDSCAPE CHANGE IN CIMARRON COUNTY, OK & UNION COUNTY, NM

Land Tenure



Cimarron County, OK and Union County, NM have similar mixed land tenure systems. In both, public lands are interspersed among private lands. These public lands, in particular State Trust Lands* are an essential part of the economic operations in the two counties, with families often leasing these lands to sustain and/or expand their ranching operations.

Within Cimarron County, approximately 1% of the lands are federal grasslands and 20% are State Trust Lands. Similarly, approximately 2% of the lands in Union County are federal grasslands and 18% are State Trust lands. Despite these and other similarities, the manner in which these lands are managed differs considerably in the two states.

Since a 1982 State Supreme Court decision, Oklahoma has maintained an opening bidding system and removed caps on maximum lease prices. This policy has driven leasing prices beyond many ranchers' affordability. By contrast, New Mexico preference rights are often attached to a households' deeded land, effectively giving families access to lease lands in perpetuity unless the family sells the rights to the land, breaks the lease, or fails to meet a competitive bid. Additionally, New Mexico offers financial incentives for practicing sustainable agricultural practices, whereas Oklahoma does not.

* Officially, these public lands are called “State School Lands” in Oklahoma and “State Trust Lands” in New Mexico

About the Project:

On-going regional drought in the Southern High Plains presents challenges to the ways farmers and ranchers manage their land use and herds.

This study presents results from a comparative analysis of two adjacent counties, Cimarron County, OK and Union County, NM. Since 2000, both have experienced what the U.S. National Drought Mitigation Center classifies as a “severe” (D2) to “exceptional” (D4) drought.¹ Our research explores the political, social, and environmental factors that influence socio-environmental vulnerability and resiliency to drought.

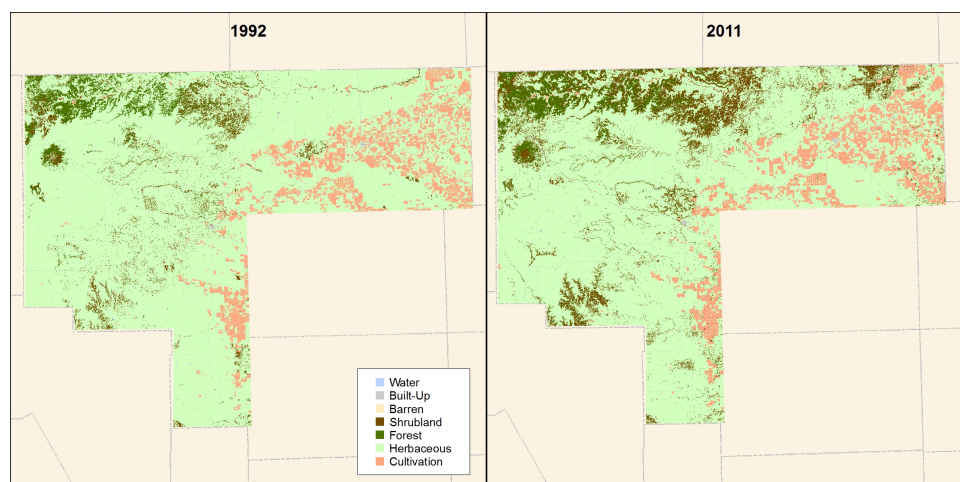
Methods:

- 120 household surveys selected from random geographic coordinates, geographically stratified to account for changes related to topography with 45 rural and 15 urban respondents per county
- Qualitative coding of drought data
- Statistics used to explore differences in adaptation by county
- Key informant interviews (n=40) with local stakeholders
- Oral histories with long term residents
- Remote sensing analysis and Geographic Information Systems (GIS)

Overall Lessons Learned

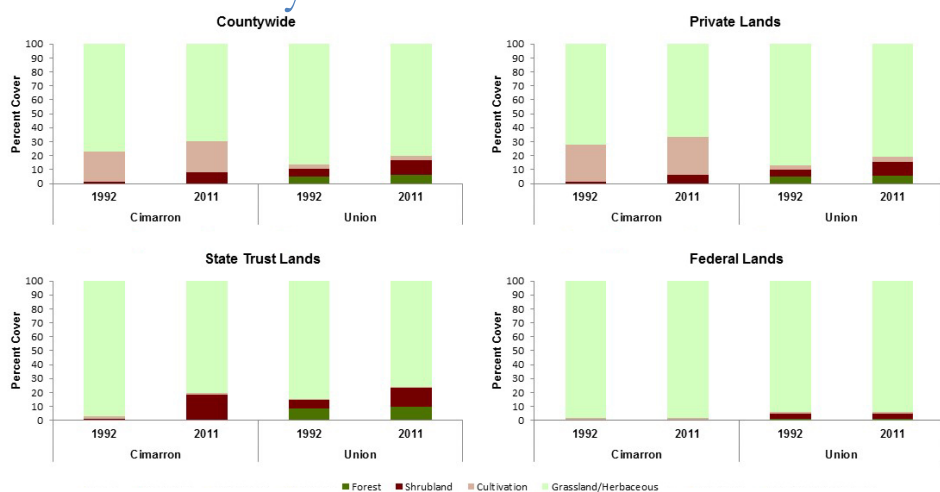
- Landscape change is on-going throughout the study area and likely exacerbated by extended drought.
- Habitat fragmentation from woody plant encroachment and expansion has resulted in almost 250,500 acres of lost grassland ecosystems in the study area.
- Shrubland (i.e. juniper and cholla) coverage increased by over 213,500 acres, and cultivated areas increased by approximately 3,000 acres.
- Due to differences in state regulations and governance policies, State Trust Lands were more likely to experience landscape change than other land tenure regimes.
- Overall, State Trust Lands in Oklahoma experienced greater woody plant encroachment than those in New Mexico.

Landscape Change



Based on previous research in the area, we hypothesized that differences in land governance related to State Trust Lands may lead to differences in land management practices, particularly during periods of extended drought. To test this, we compared classified land cover to compare differences in landscape composition and structure between 1992 and 2011. In particular, we used woody plant encroachment in grasslands as a measure of the degree of land degradation across the various land tenure regimes. We also analyzed growth in center-pivot irrigation.

Woody Plant Encroachment



The landscape of the two counties was dominated by herbaceous rangelands during both years under investigation. However, when viewed across land ownership and governance, different patterns emerged. For instance, less than 1% of the 1992 State Trust Lands in Cimarron County were classified as forest or shrubland, whereas over 15% of Union County State Trust Lands were. This represents pre-drought conditions and, likely, natural controls on woody plant distribution.

State Trust Lands in both counties saw an increase in woody vegetation by 2011, but to a much greater degree in Cimarron County, where forest and shrubland combined increased to 18% coverage. By comparison, forest and shrublands increased moderately to 23% of Union County State Trust Lands. This indicates State Land Tenure policy may drive certain land management decisions that can contribute to woody plant encroachment.

Loss of grassland ecosystems is also attributable to increased acreage under center-pivot agriculture, primarily on private lands and federal lands.

References: 1) U.S. Drought Monitor. [online] <http://droughtmonitor.unl.edu>.

Produced By:

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Project Website:

Please visit our project webpage for more information, including maps, and fact sheets:

<http://biosurvey.ou.edu/Grasslands/main.html>

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