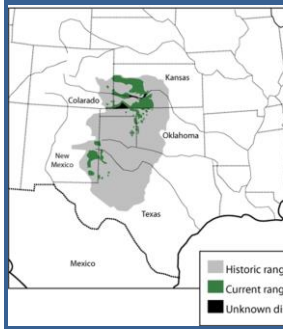


An Ecological Conundrum: Just What Makes Good Lesser Prairie-Chicken Habitat?



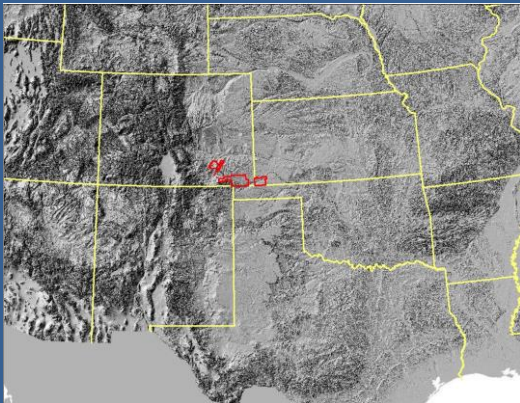
Steven Olson, Forest Botanist
Cimarron and Comanche National Grasslands

Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*)

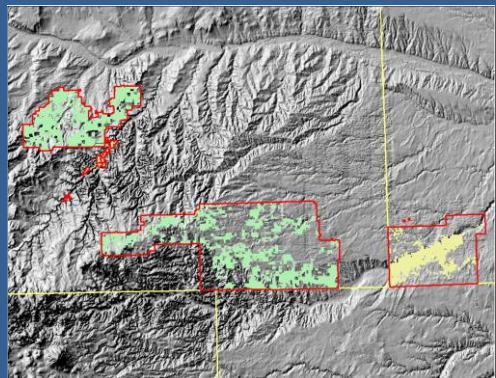


(map from: Birds of North America Online
<http://bna.birds.cornell.edu/bna>, maintained by the
Cornell Lab of Ornithology)

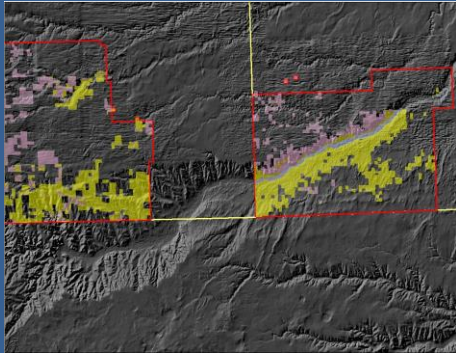
Cimarron and Comanche National Grasslands



Cimarron-Comanche USA Ownership



Prairie-Chicken Habitat on the Cimarron-Comanche



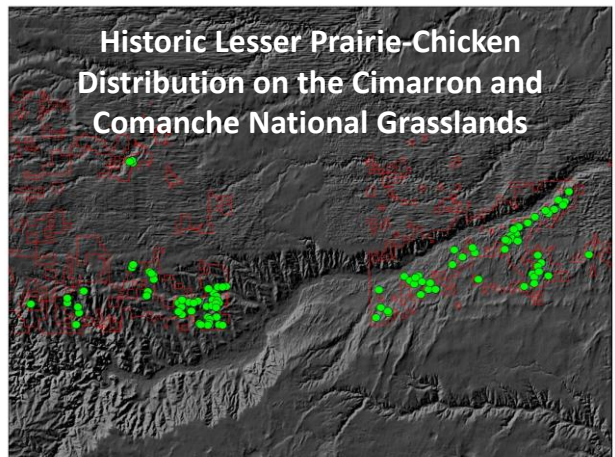
Geology, Soils, Hydrology, Climate

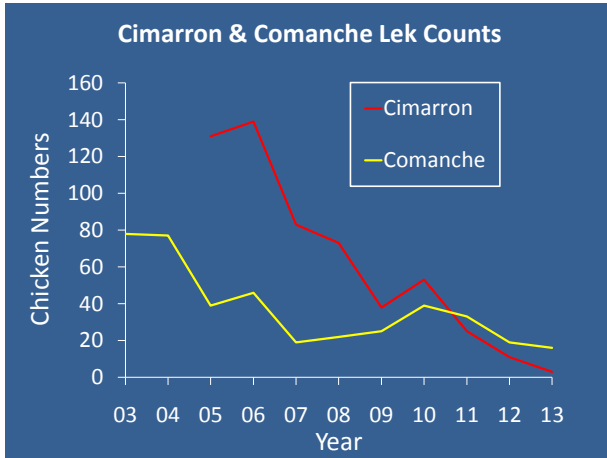
- Geology - Quaternary dunes and loess deposits
- Soil – developed in sand and loess: A-horizon fine sand; B/C-horizons fine sand, loam, clay-loam
- Hydrology – well-drained soil; little surface water (Cimarron River rarely flows in river bed); aquifer depletion from center-pivot irrigation
- Climate – warm (140 day growing season) and dry (17" precip./yr.)

Historical notes

- 1860's - Comanche Nation on the "Staked Plains"
- 1870's - bison herds cover 50 square miles
- 1880's – bison eliminated
- 1890-1930 – land speculators, great plow-up
- 1930's – Dust Bowl and abandoned lands
- 1937 – Bankhead-Jones Farm Tenant Act
- 1940's – Land Utilization Projects (SCS, now NRCS)
- 1960 – National Grasslands

Historic Lesser Prairie-Chicken Distribution on the Cimarron and Comanche National Grasslands





Lesser Prairie-Chicken Habitat Needs

- Lekking – short vegetation, some bare soil
- Nesting – vertical structure of grasses or shrubs, nests at bases of vegetation
- Brood-rearing – diverse vegetation height with abundant forbs for insects



Existing Lesser Prairie-Chicken Habitat



Ecological Site Descriptions (ESD)

NRCS products based on:

- Physiography
- Climate
- Soil Features
- Plant Communities



includes State and Transition Models

Sandy Ecological Sites

Blue grama, buffalograss, sand dropseed, purple threeawn, squirreltail, plains prickly-pear, sand sagebrush, soapweed yucca, tenpetal blazingstar, annual buckwheat



Sands Ecological Sites

Blue grama, sand dropseed, western wheatgrass, sideoats grama, soapweed yucca, sand sagebrush, annual buckwheat, whitemouth dayflower, toothed spurge



Sand Hills Ecological Sites

sand dropseed, squirreltail, sand sagebrush, soapweed yucca, plains prickly-pear, cuman ragweed, whitemouth dayflower, annual buckwheat, annual sunflower



From the Range-wide Conservation Plan for the Lesser Prairie-Chicken (2013)

- In northwest Kansas, LPC have expanded back into some of their historical range and new areas where they were not known to previously occur....

A CRP pasture in western Kansas



Conservation Reserve Program

- Administered by the USDA Farm Service Agency
- Conservation Reserve Program (CRP) pays a yearly payment in exchange for farmers removing environmentally sensitive land from agricultural production and planting species that will improve environmental quality.

From the Range-wide Conservation Plan for the Lesser Prairie-Chicken (2013)

- *The warm-season grasses planted in these CRP stands were a mixture of tall and mid-grasses....*
- *LPC populations are doing well in these planted fields with a generally expanding population.*

What was the area like prior to settlement?

1541 – Francisco Coronado
 “... an immensity of grass...”

1821 – Edwin James

Any “traveler who shall at any time have traversed its desolate sands, will, we think, join us in the wish that this region may forever remain the unmolested haunt of the native hunter, the bison, and the jackal.”

“... almost wholly unfit for cultivation...” uninhabitable due to “... scarcity of wood and water...”

Another historic description...

September 1845 - James William Abert

“The valley, *though sandy*, appeared fertile, being *covered with high grass and multitudes of yellow flowering plants*. The numerous beautiful autumnal flowers ... *recalled ... the time when we first struck the Missouri prairies...*”

“The trail led us through *four or five miles of high and rounded sand hills* The deep sand ... made our progress slow and toilsome...*Our sufferings were greatly alleviated by the refreshing fruit of the plum tree, which grew everywhere in great abundance...*”

1891 – GLO surveyors

“Cimarron River bottom is ... *not capable of producing reliable crops without irrigation*. There are a few cottonwood trees scattered along the river, but there is no other timber or water...”

“The soil along the Cimarron River produces a *good growth of sand grass...*”

“The surface of this township is from nearly level to broken. The soil is generally sandy and from 2nd to 4th rate quality. *It is entirely unfit for agricultural purposes...*There is a low range of sand hills in the northern part that are nearly barren.”



Giant sand reed
(*Calamovilfa gigantea*)

Sand bluestem
(*Andropogon hallii*)

The Chicken Plan – Protecting and Creating “Quality” Chicken Habitat

Conservation Measures to Avoid, Minimize, and Mitigate

- Livestock grazing, oil & gas development, altered fire regimes, fragmentation, climate change and drought

The Chicken Plan – Protecting and Creating “Quality” Chicken Habitat

Management and Recovery Goals

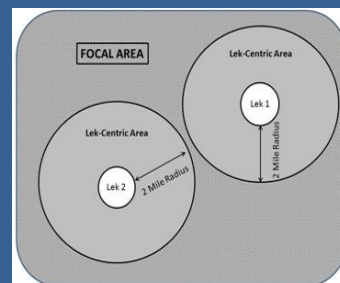
- Population goal = 5 year mean during the “peak”
- Habitat goal = manage vegetation to provide quality nesting and brood rearing habitat

The Chicken Plan – Protecting and Creating “Quality” Chicken Habitat

Habitat and Population Monitoring

- Lek and habitat surveys
- An “Experimental” approach to detect change

The Chicken Plan – Habitat Goals



Lek-Centric Habitat

- 15-20% coverage sand sagebrush
- 15-25 % cover of native forbs
- grass height 12-18 inches
- 40-50% cover native grasses
- VOR range 10 - 15 inches

What Sorts of Experiments?

- Alter livestock rotations, timing, and numbers
- Disking or plowing to prepare seed beds
- Seeding a variety of desired species
- Seed drilling vs. broadcast seeding
- Bailing known locations of desired species to be moved to appropriate locations
- Our own center-pivot irrigation until plantings are established?

Summary

- Decline in chicken numbers and habitat – listing impacts.
- Chicken plan provides long-term direction, but data gaps.
- Need to better characterize what is good chicken habitat.
- Monitoring with CNHP support.
- Use an experimental approach to improve habitat.
- Need to work with our neighbors to ensure success.

Acknowledgements

- USFWS CO & KS ES offices
- Colorado Natural Heritage Program
- Kansas Natural Heritage Inventory
- Colorado Parks and Wildlife
- Kansas Department of Fish, Wildlife and Parks
- Cimarron-Comanche district staff

Chicken Questions We Need To Answer

- Why did the chicken cross the road?
- What came first the chicken or the egg?
- Which is better – original or extra crispy?
- Was Chicken Little right about the sky falling?
- Is a prairie-chicken in the hand really worth two in the sand sagebrush?