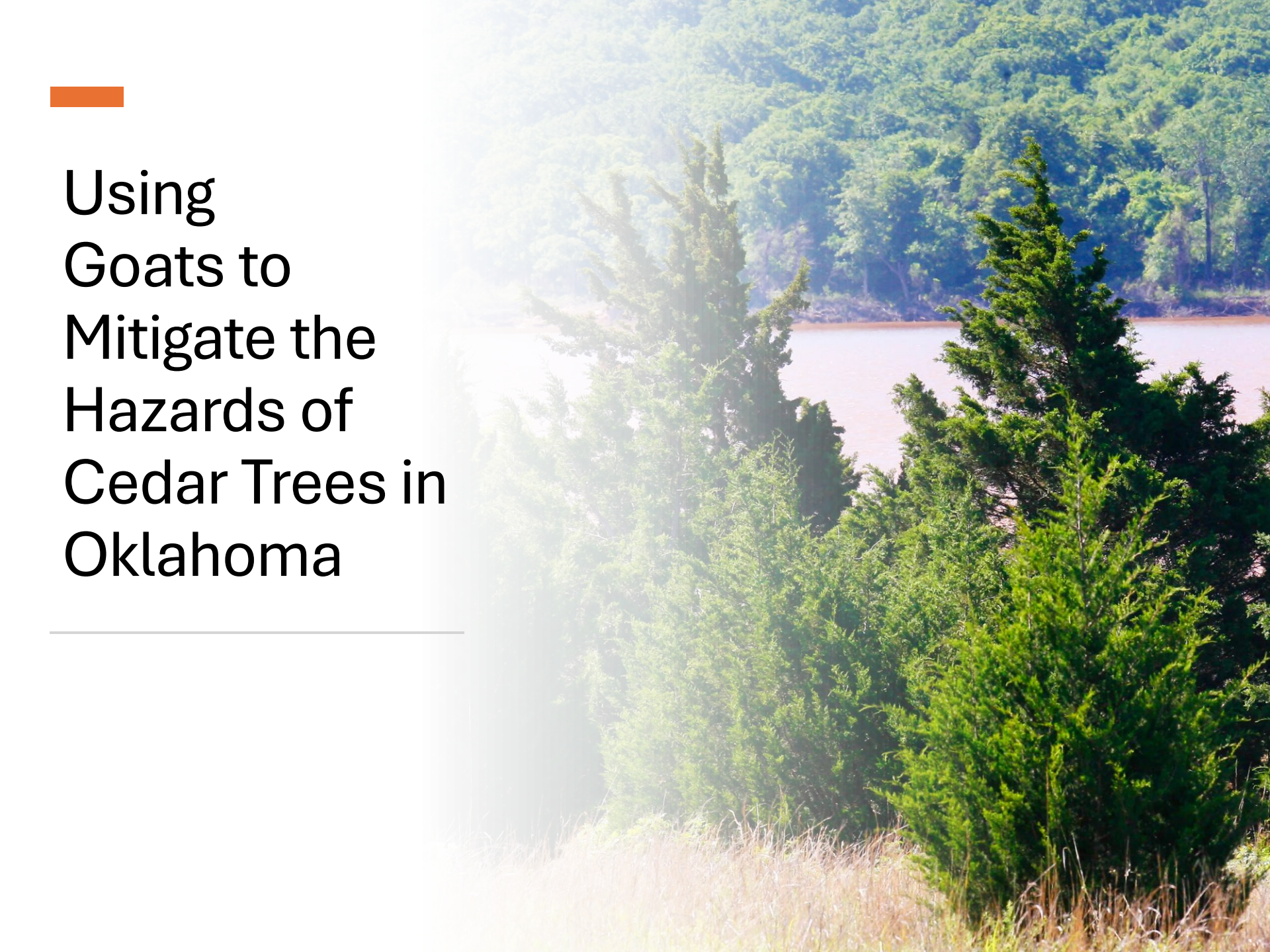
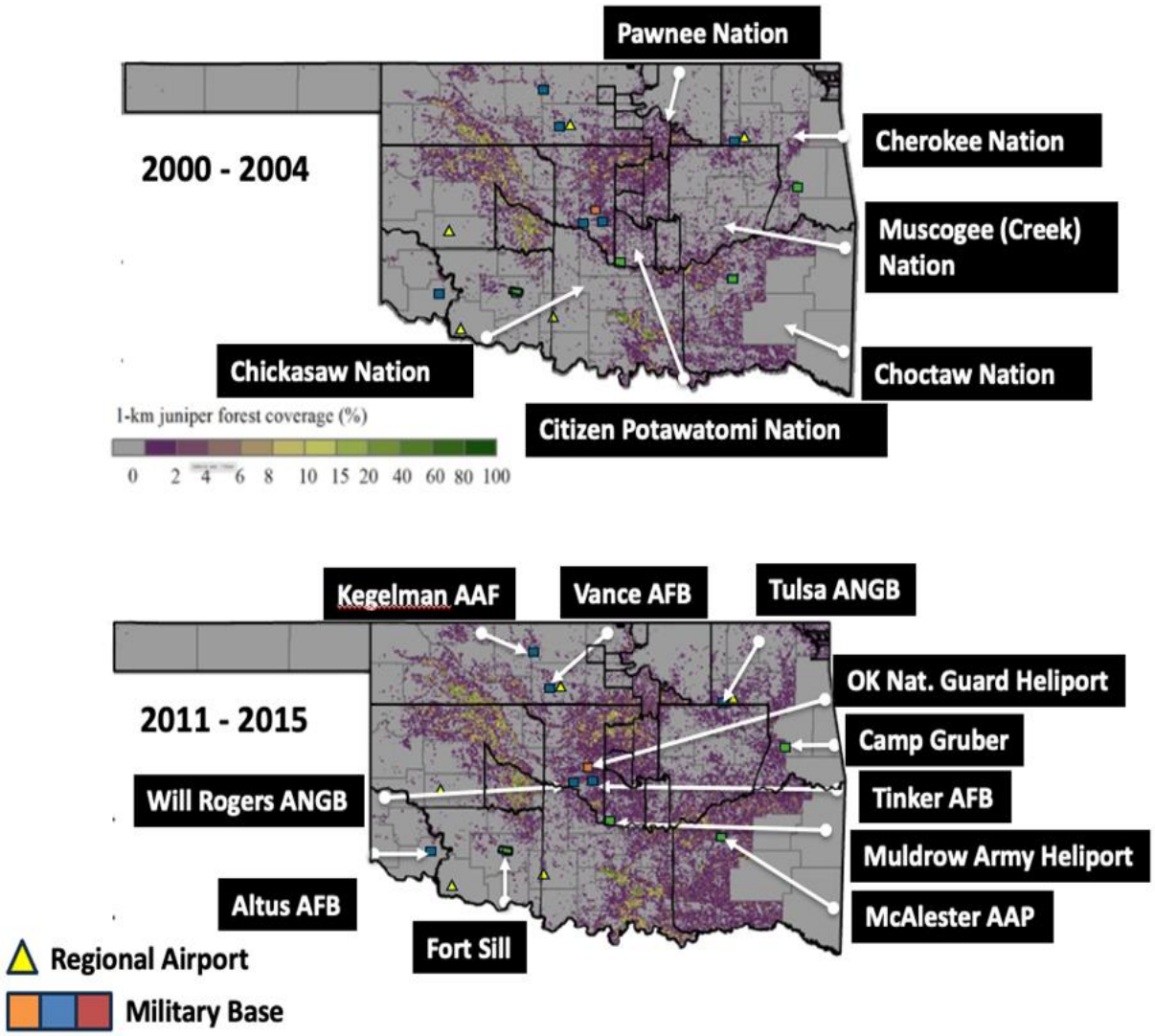
Using Goats to Mitigate the Hazards of Cedar Trees in Oklahoma

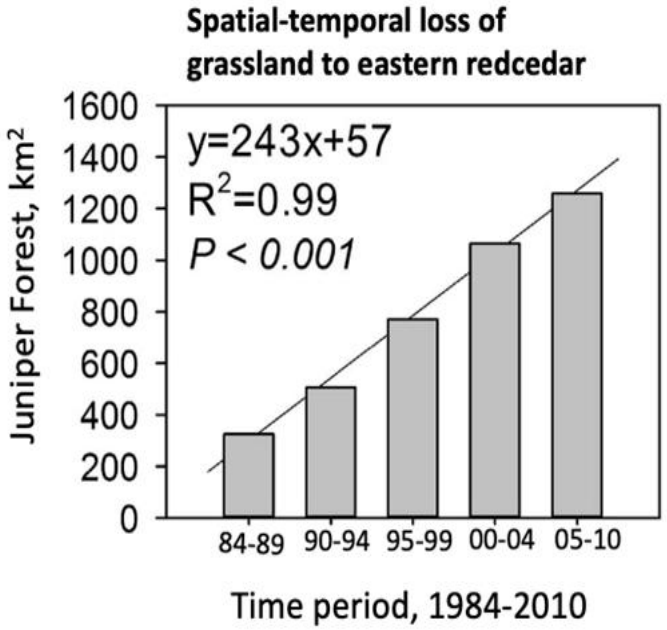


Cedar trees pose **several serious hazards** to Oklahoma's environment, economy, and public safety.

Case Study: University of Oklahoma

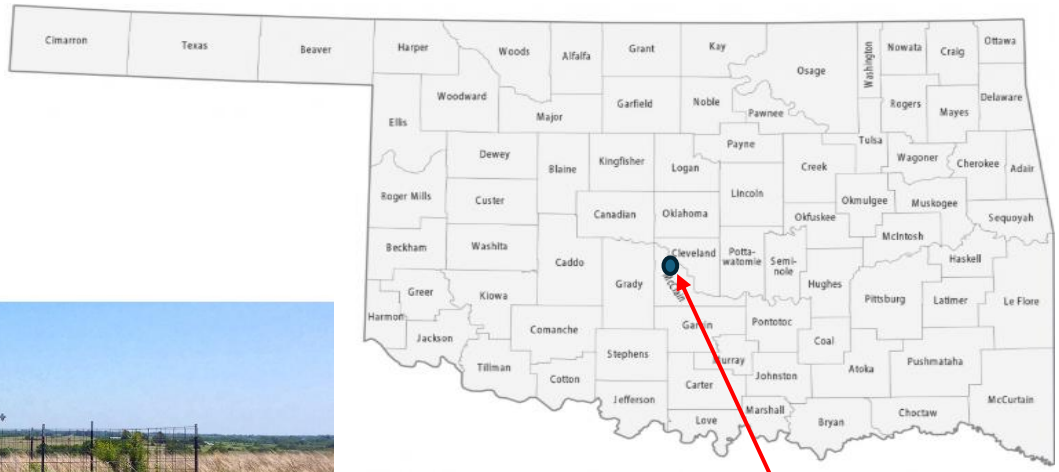
Assessing Grassland Loss to Eastern Red Cedar

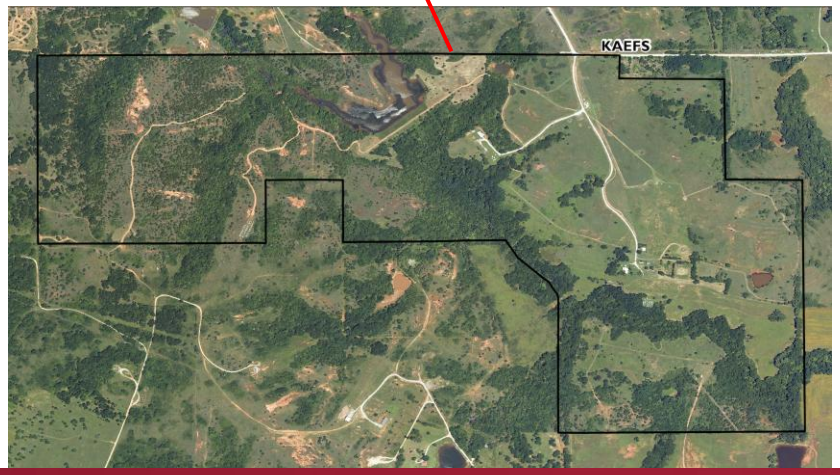




Data from: Wang, J., et al., 2018, RSE and Wang, J., et al., 2021, AFM

KESSLER ATMOSPHERIC AND ECOLOGICAL FIELD STATION
The UNIVERSITY of OKLAHOMA





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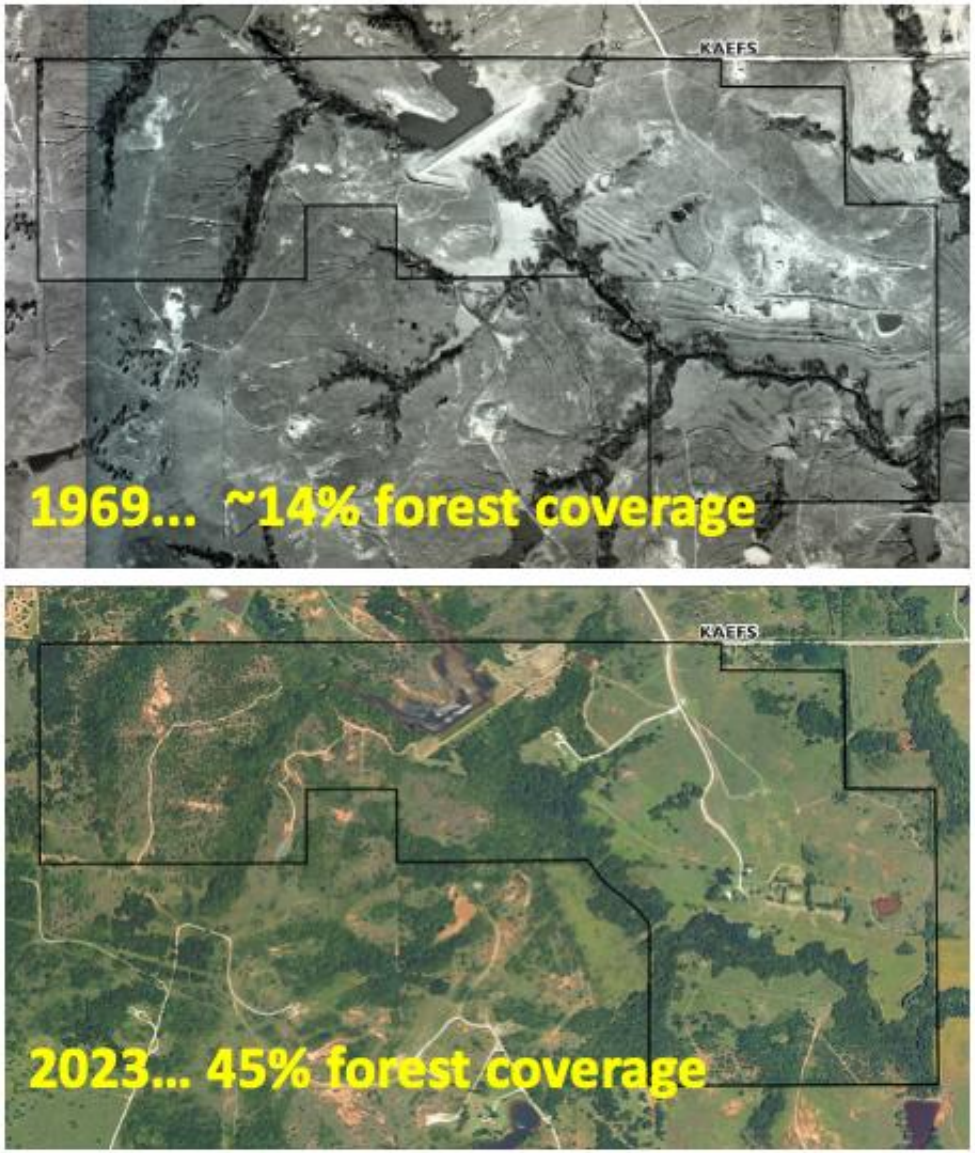
Welcome to Kessler Atmospheric and Ecological Field Station (KAEFS)

Kessler Atmospheric and Ecological Field Station (KAEFS) is a 360 acre (146 ha) environmental research and education facility located approximately 28 km southwest of the University of Oklahoma campus in Norman. KAEFS is home to a number of long-term meteorological and biological experiments. We welcome researchers, teachers, students, organizations, and laboratory groups to visit and to use our facilities for study of the south central Great Plains environment.

The mission of the Kessler Atmospheric and Ecological Field Station (KAEFS) is to provide a venue for integrative and transdisciplinary investigations of atmospheric, ecological, and human interactions in the southern Great Plains rural landscape and to share the knowledge and information gained with the scientific community and the general public.

Kessler Atmospheric and Ecological Field Station (KAEFS). Washinton, OK

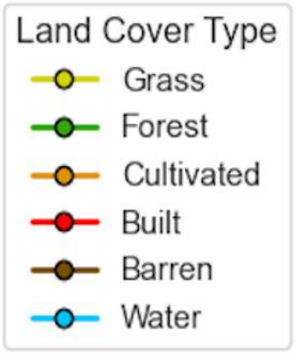


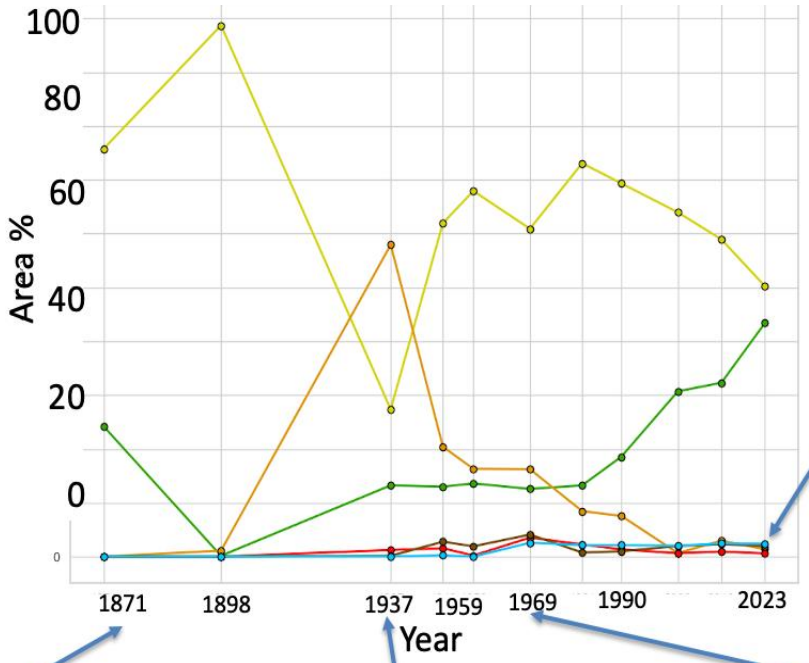
Kessler Atmospheric and Ecological Field Station (KAEFS). Washinton, OK

- Wildfire threat
- Carbon sequestration verification
- Biodiversity loss and shifts
- Invasive species monitoring
- Changes in pollen and VOC release
- New zoonotic disease vectors
- Changes to microclimate
- Changes to soil health and function

Modeling Land Cover Change at OU's KAEFS (1871 – 2023)

Past disturbance can dictate future use and value and aid in land response prediction.

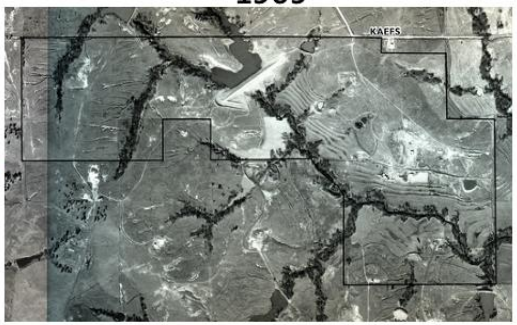




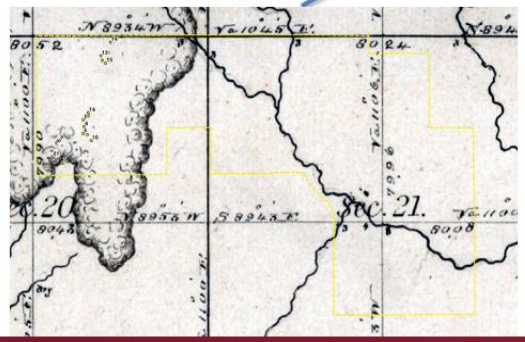
Anwar et al., 2025

2023

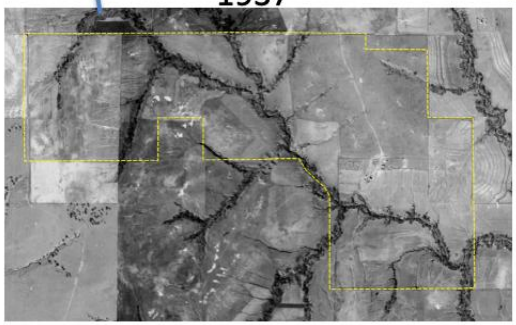
1969



1871



1937



WILDFIRE RISK

- High flammability
- Fuel buildup
- Urban interface danger

WATER CONSUMPTION

- High water usage
- Threat to aquifers
- Watershed degradation

LOSS OF NATIVE GRASSLANDS

- Outcompetes native vegetation
- Reduces forage
- Ecosystem shift

NEGATIVE IMPACT ON WILDLIFE

- Habitat loss
- Predator shelter
- Disrupts food chains

Economic Burdens

Increases land management costs

Lowers land productivity and value

Elevates wildfire insurance risks

Managing Cedar Trees with Goats

Goats as a Natural Solution

Eat woody, invasive vegetation

Navigate rugged terrain

Profit center vs. expense

How Goats Control Cedars

Eat saplings and young trees <6 ft

Continuous browsing prevents regrowth. As demonstrated at Noble Research Oswalt Ranch. 3 years to sustainably restore the soil.

Less effective for large trees. Eat low growth and ensure grass growing underneath which stabilizes soil.

Grazing Strategy

STOCKING: 3-5 GOATS/ACRE

TIMING: YEAR ROUND

TOTAL EAT DOWN 3-5 YEARS

USE OF PORTABLE FENCING

Ecological and Fire Benefits

REDUCED LADDER FUEL

ENCOURAGES NATIVE GRASS RECOVERY

IMPROVES BIODIVERSITY

LESS CHEMICAL/ MECHANICAL TREATMENT

SUPPORTS RESILIENT ECOSYSTEMS

REGENERATIVE GRAZING SOLUTIONS

Rejuvenating land with the help of livestock since 2016

Reduced Fire Load

There can be no life without soil and no soil without life: they have evolved together.

- Charles E. Kellogg, Soil and Society, 1938

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