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*Mead's milkweed is designated as a federally threatened species; this rare plant is only found on high-quality native prairies.*

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For information on how you can become involved in supporting ecological research, environmental education, and ecosystem conservation at the KU Field Station please contact:

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## Tallgrass Prairie Conservation & Restoration Initiative



University of Kansas  
Field Station

*Kansas Biological Survey*

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### **Native Ecosystems**

Natural ecosystems - prairies, forests, wetlands - are vital to the health and well being of the planet and its people. They provide food and fiber, retain nutrients, mitigate flooding, and improve air and water quality. Ecosystems support a suite of plants and animals that serve as pollinators, act as predators on pests, and provide aesthetic enjoyment. Native ecosystems are pieces of historical landscapes that have remained intact despite disturbances. They serve as reservoirs of genetic diversity, and harbor rare species that may provide yet undiscovered medicines and foods.



### **The Challenge**

Many native ecosystems have been destroyed and others degraded. It is imperative we protect remaining native ecosystems and learn how to restore those that are damaged.

### **Conservation and Restoration**

Strictly speaking, **conservation** seeks to preserve remaining native ecosystems, whereas **restoration** seeks to rehabilitate damaged or destroyed ecosystems. In practice, both methods are used to protect and enhance native ecosystems.

### **Historical Perspective**

Tallgrass prairie dominated northeast Kansas 200 years ago. In the 1850s, Douglas and Jefferson Counties were 95% prairie. Prior to European settlement, the Kansa Indians lived in and helped maintain a vast prairie-forest landscape. The interaction of fire, grazers (e.g., bison and elk), and climatic conditions sustained this native landscape.

Settlement by people of European origin rapidly altered native ecosystems. Forests were cut and wetlands drained. Prairies were destroyed directly by plowing, or indirectly through suppression of wildfires that allowed trees to invade. In addition, many non-native plants and animals were introduced.

### **Our Project**

We aspire to promote conservation and restoration of native ecosystems using a 3-pronged approach:

- 1. On-the-ground management** to protect high-quality prairie remnants, enhance degraded prairies, and create prairie where it was destroyed.
- 2. Research** to learn how ecosystems function and how to restore them.
- 3. Outreach** to provide knowledge and promote understanding of native ecosystems.



# Prairie Management

## Tree Removal:

Removing trees that have invaded former prairie areas is an initial step in full-scale restorations. Eliminating trees along prairie borders reduces barriers to wildlife and plant dispersal among prairie remnants. Heavy equipment removes large trees in non-sensitive areas while mowing is an effective, less intrusive management technique elsewhere.



## Burning:

Fire promotes the tallgrass prairie vegetation at the expense of trees and shrubs and is a principal management tool in prairie restoration and conservation.



## Planting:

Former prairie areas converted to cropland must be reassembled from scratch. A specialized mechanical seeder can plant native grass seed directly into the soil.



## Haying:

Annual cutting of native meadows for hay maintains prairie, but does not allow for seed production in some species.



## Grazing:

Historically, native grazers such as bison influenced the landscape. Future projects will incorporate cattle into prairie management.

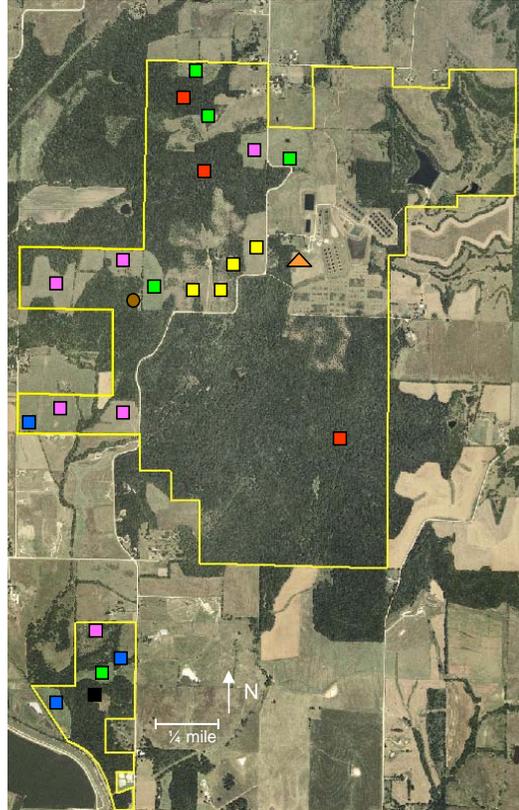


## Invasive Plants:

Noxious weeds are problematic when they crowd out native species. Careful use of herbicide helps control *Sericea lespedeza*, an exotic plant that invades grasslands.



# The Landscape



General location of activities and habitats on the KU Field Station north of Lawrence, Kansas. Research and training will extend to other sites in the Great Plains.

- Tallgrass prairie remnants
- Historic oak-hickory forests
- Long-term prairie studies
- Seeded prairies (CRP type)
- Wetland or wet prairie restorations
- Savanna restoration
- Rock outcrop
- ▲ Seed garden

# Ecology

**Seeds and Plant Stocks:** Supplies of locally-adapted seeds (local ecotypes) are central to restoration efforts. Seeds are collected from wildflowers in native prairies, and sown in plots to yield seeds for plantings.



**Animal Communities:** Restoration is focused on the plant community with the hope that animal communities will also reassemble once the habitat is restored. Populations of Regal Fritillary, a prairie dependent butterfly, may increase with the addition of restored native grasslands. The Eastern Meadowlark prefers open grasslands and its population may also expand.



**Landscape Diversity:** Variation in moisture, slope, depth to rock, and proximity to woods affects prairie biodiversity. Native forests, wetlands, streams, and other features complement the prairie landscape.

A rock outcrop, to be cleared of invading trees, will shelter many animals, including over-wintering reptiles.



Native oak-hickory forests are protected, and are a part of the historic landscape. Selective tree removal may help restore savanna ecosystems.



# Research and Education

**Monitoring:** Plant and animal responses to restoration activities are tracked to assess restoration progress and enable science-based adjustments in treatment levels (this process is termed "adaptive management").



**Research:** Field experiments test ecological theory and provide critical information for restorations. Faculty and students conduct diverse ecological studies. For example, one study investigates the effects of burning, soil disturbance, herbicide, and fertilizer on plant establishment; another examines the role of naturally occurring soil fungi in plant colonization.



**Education & Outreach:** Restoration sites are outdoor classrooms for students, and workshops provide information on techniques to preserve and restore native ecosystems throughout NE Kansas.

