

Oak Savanna Restoration At Whiterock Conservancy

Guthrie County, Iowa

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More Information
www.whiterockconservancy.org





Special Thanks to

**John Pearson
State Ecologist
Iowa Department of Natural Resources**

and

**Jim Nedtwig and Jon Judson
Mentors**

and

**Dr. Tom Rosburg
Drake University
Whiterock Conservancy's consulting ecologist**



Roswell and Elizabeth Garst



Nikita and Nina Khrushchev family visits Roswell and Elizabeth Garst family in September 1959.



Stephen Garst,
Farmer





The Garst Family, founders of Whiterock Conservancy.
Rachel, Sarah, Mary, Liz, Jen and Kate Garst

Whiterock Conservancy Facts

- Founded in 2004, with a total planned gift of 5,500 acres, mostly fee title.
- 501c3 non-profit Land Trust, governed by a 9 member Board of Directors.
- Board is controlled by the Iowa Natural Heritage Foundation, the Iowa Department of Natural Resources and the Leopold Center for Sustainable Agriculture.
- Income is derived from agricultural activities, guest service fees, donations, grants and endowment income.
- The mission of Whiterock Conservancy is to foster a resilient and self-renewing Iowa landscape by integrating economic, social and ecological land management strategies and engaging the public through outdoor recreation and education.
- * Major initiatives are savanna and woodland restoration, trail development, and research on and improvements to soil conservation and water quality practices on agricultural and grazing lands.



Middle Raccoon River Valley at Whiterock Conservancy

History of Land Management in the Forest Areas of Whiterock

- Archeological modeling and survey work indicate that Whiterock had a significant First Nation presence.
- Land was settled starting in 1870s with many 40 – 80 acre farms. Ridgelines were cleared, and timber was cut, but much of the Whiterock Valley remained forested.
- The area rapidly depopulated ... poor soils make a poor living.
- When the Garst Family started buying land as the earlier settlers departed, they used most of Whiterock Valley as cattle pasture. The timbers were grazed with a very light touch, and cattle kept the forest structure relatively open. Pastures and former farm fields were sprayed and converted to heavily fertilized brome grass.
- In 1993, Liz Garst started experimenting with prairie plantings and prescribed fire on both prairie reconstructions and on native timbers. She burned about 500 acres a year, until the inception of Whiterock Conservancy.
- Since 2006, Whiterock has burned 1000-2000 acres per year.
- Since 2006, approximately 200 acres of forest have been thinned.

Lack of a standard vocabulary has contributed to the obscurity of savanna

Prairie ... Meadow

Forest ... Grove, Woodland

Savanna ...

Historic words

Barrens, Oak Openings, Scattering Trees, Timber Barrens,
Part-Prairie-Part Timber, Timber-ScatteringTrees-Barrens,
Timber-ScatteringTrees-Openings

Liz's words

Grassy Woodlands, Woody Grasslands, Park-like, Parkland
30 to 70% canopy = 30 to 70% open

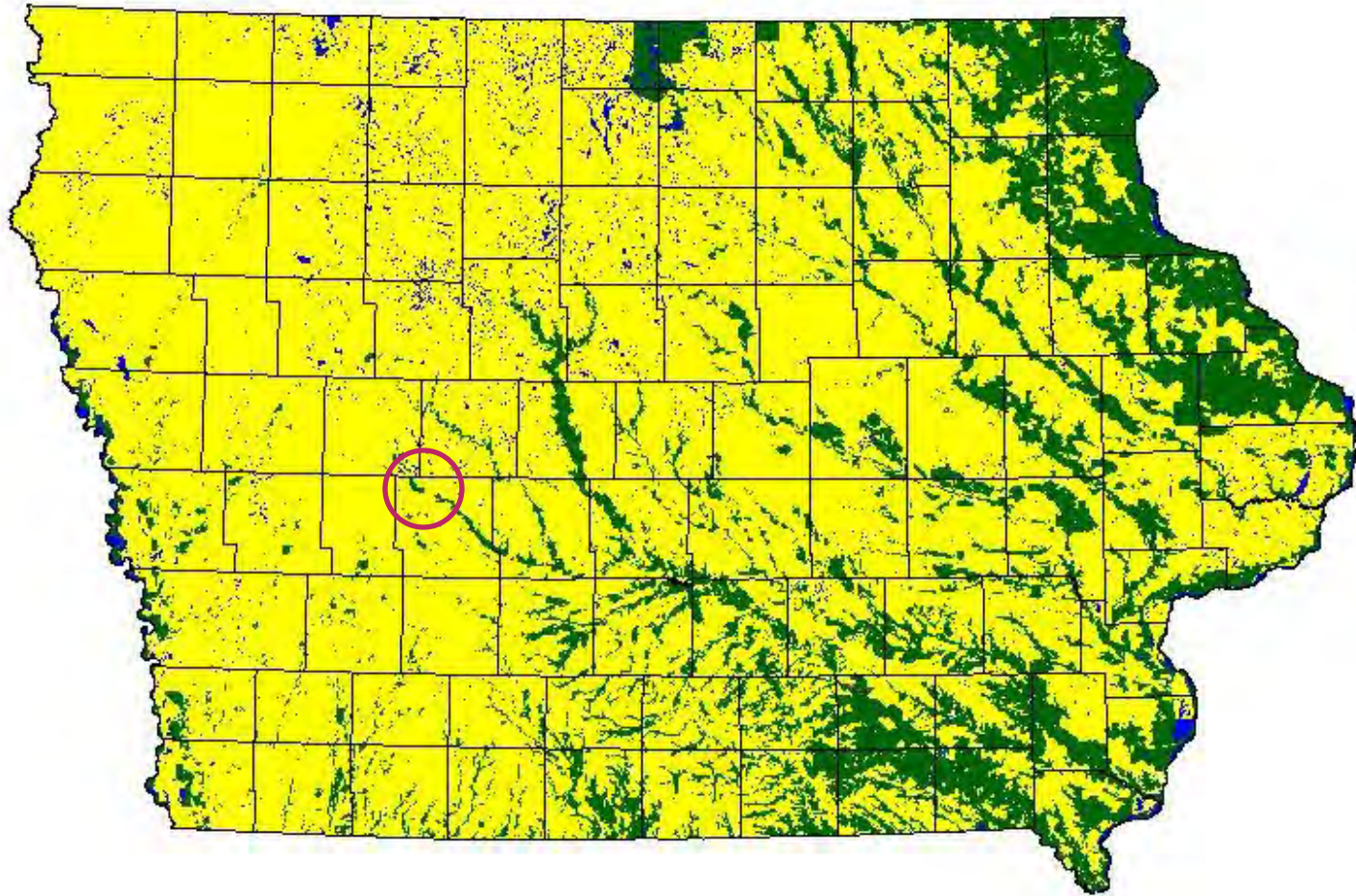
Savanna Indicators

Floristics

Soil

Historic
Maps





Historic Vegetation of Iowa, 1832-1859

Mollic Hapludalf Soils

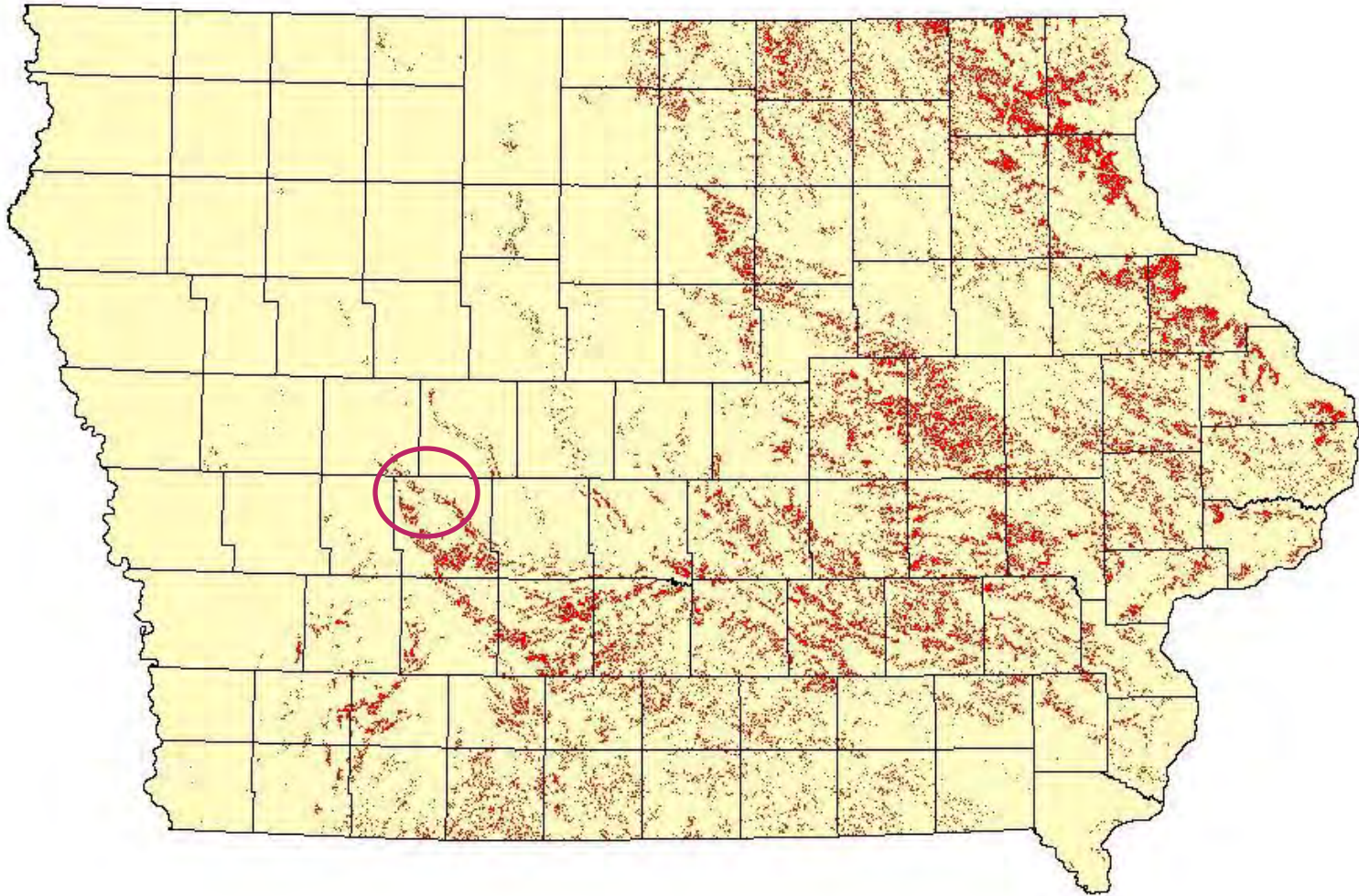
- Alfisol (order)** - forest
- Ud (suborder)** - humid climate
- Hapl (great group)** - “normal”
- Mollic (subgroup)** - grassland

Developed under “grassland with trees”

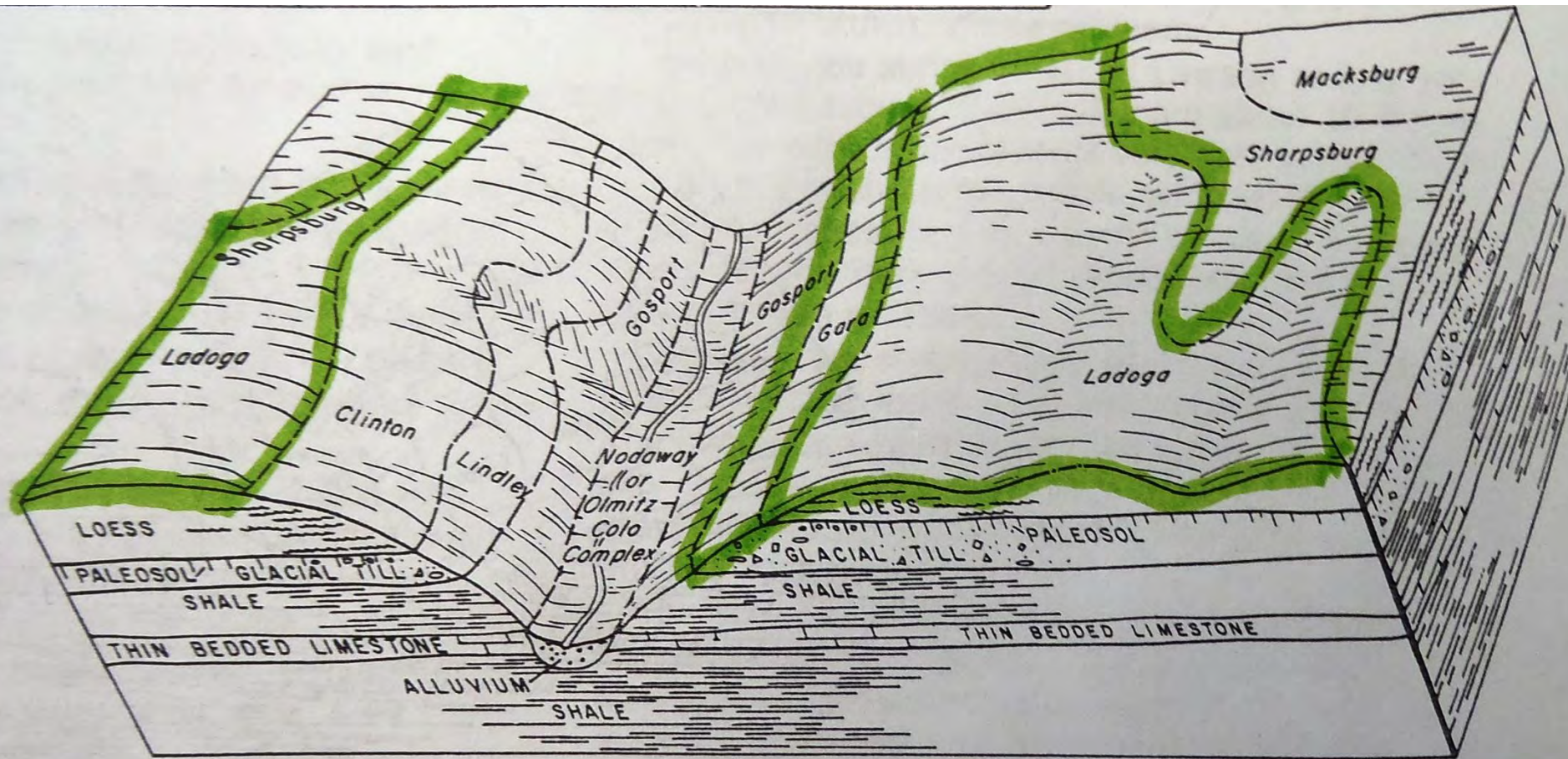
Mollic Hapludalf Soils: 26 series in Iowa

Allamakee, Angus, Backbone, Bassett, Billett, Caleb, Churchtown, Clanton, Dinsdale, Downs, Festina, Frankville, Gara, Hedrick, Ladoga, Lester, Newvienna, Orwood, Racine, Sattre, Wapsie, Watkins, Waubeek, Waucoma, Whittier, Winneshiek

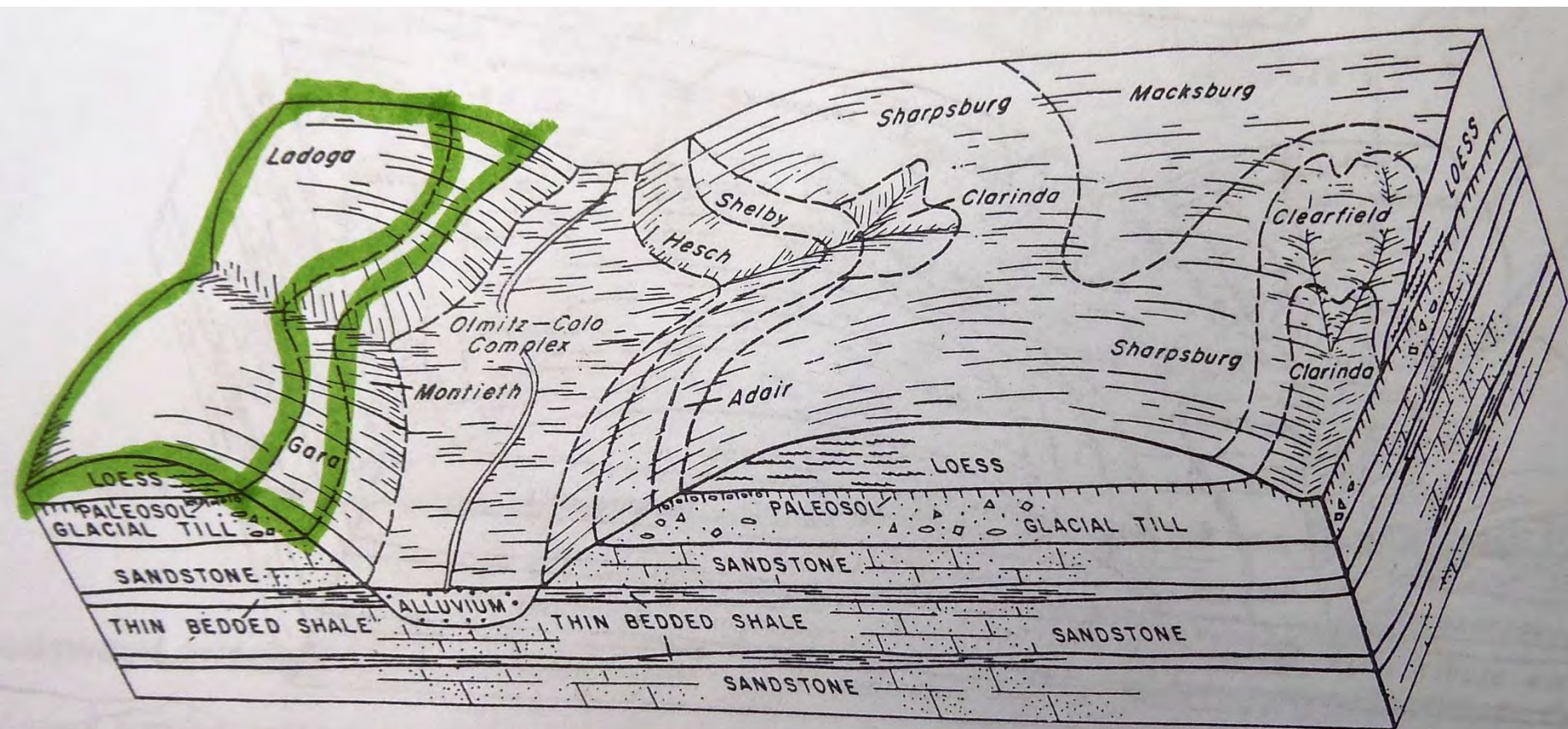
Distribution of Mollic Hapludalf soils in Iowa



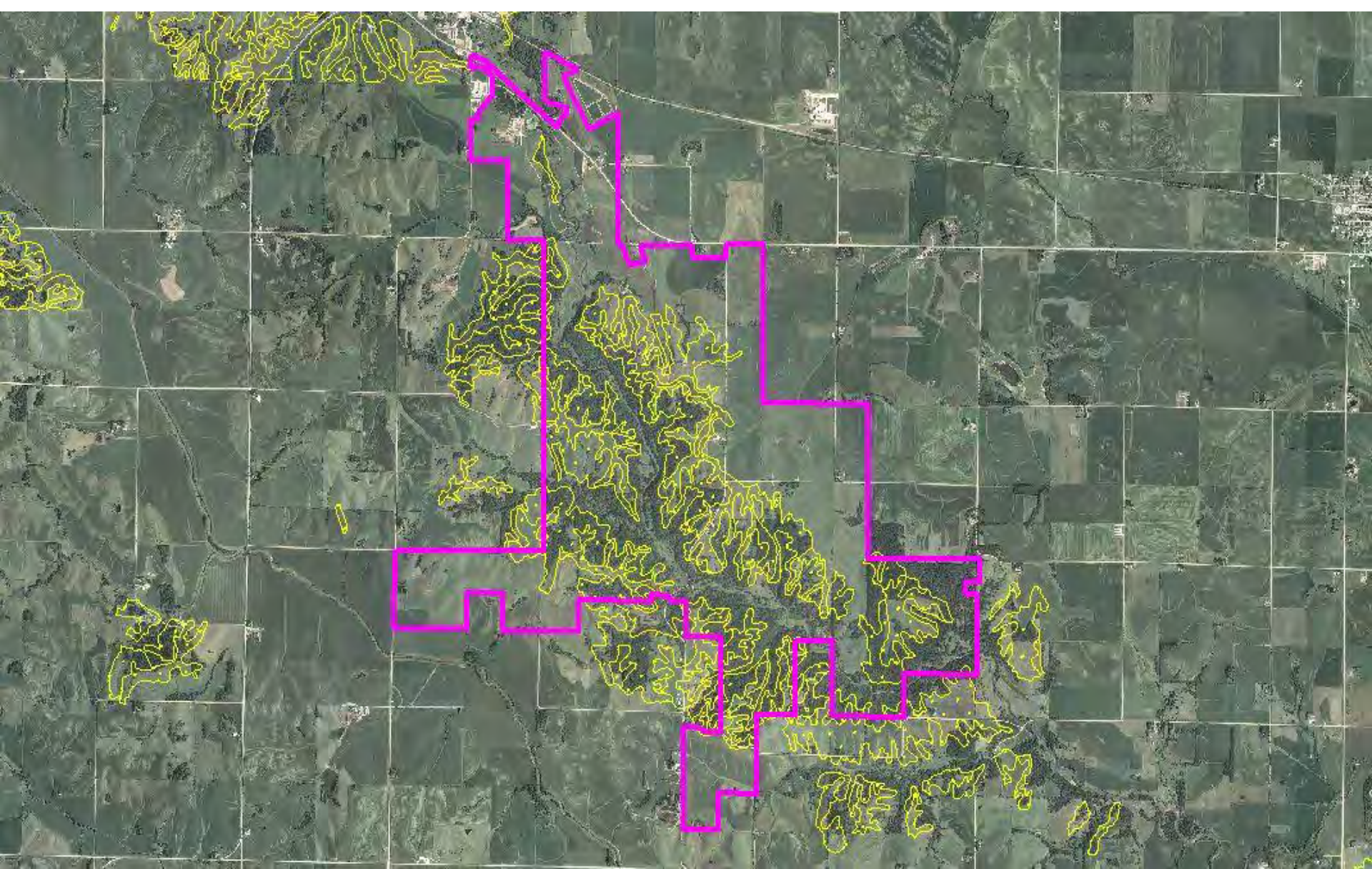
2.7 million acres



Guthrie County



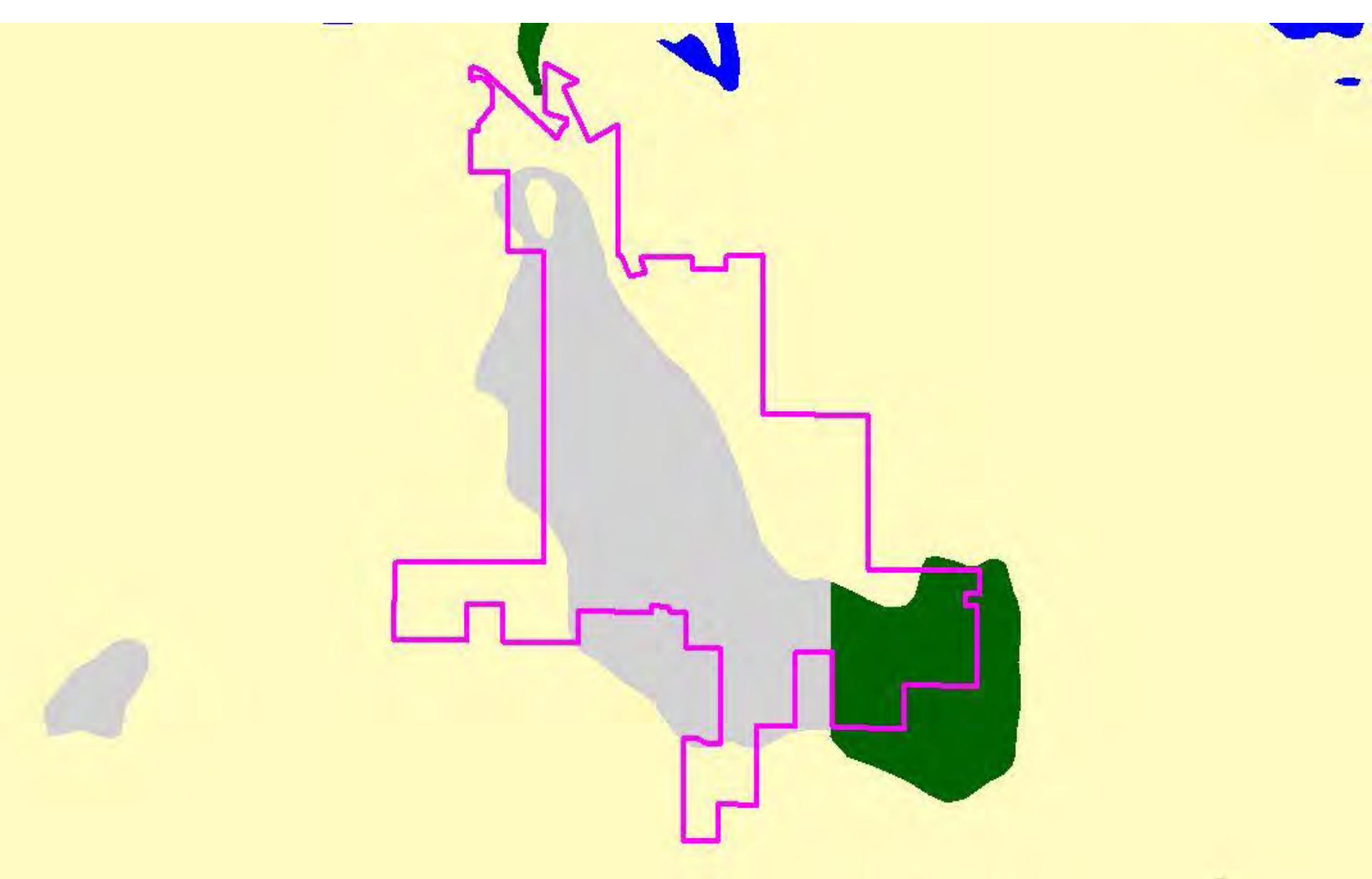
Guthrie County



Mollic Hapludalf soils at Whiterock Conservancy



Mollic Hapludalf soils on the slopes and shoulders of the Middle Raccoon river valley.



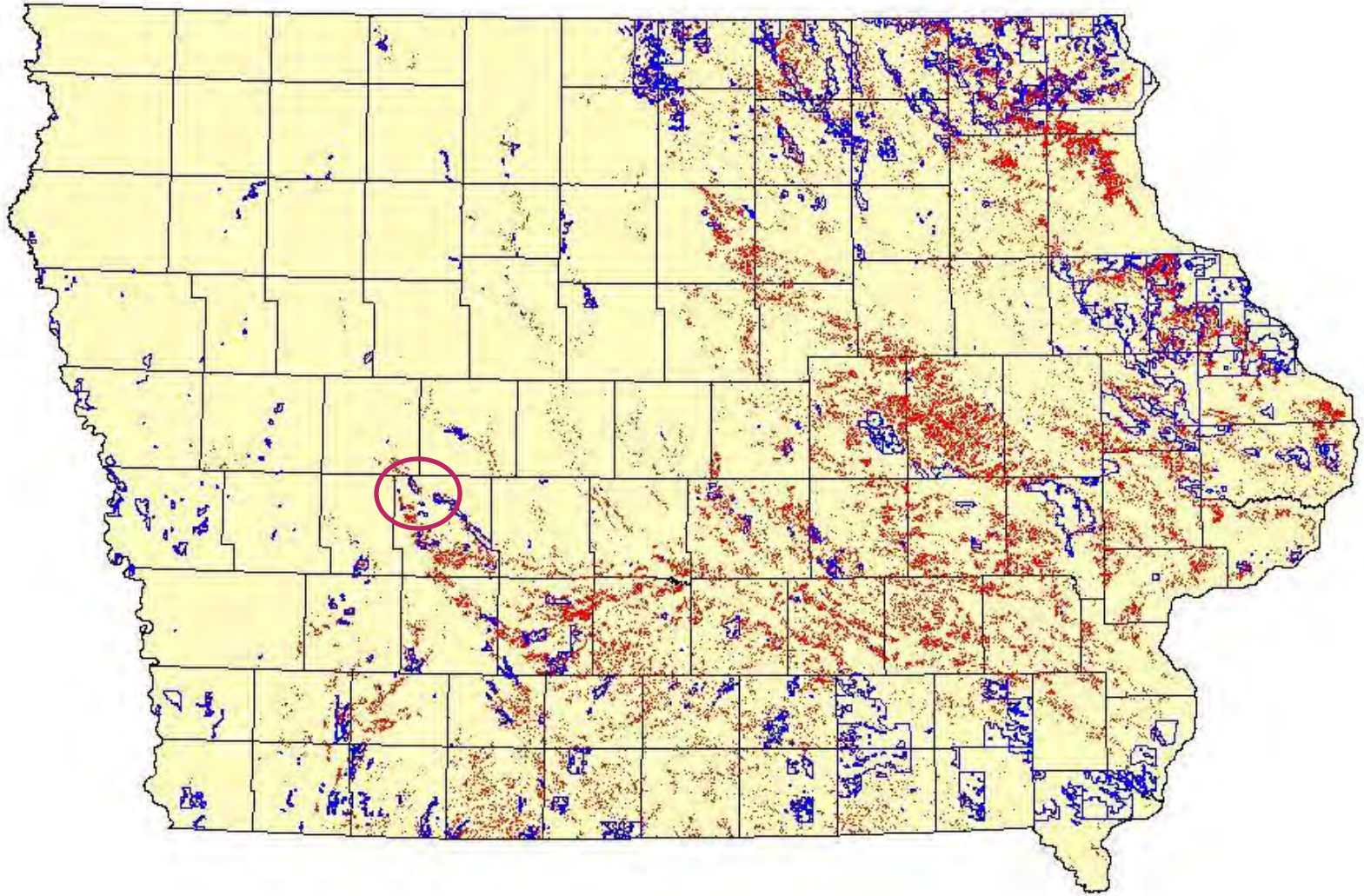
General Land Survey designations at Whiterock Conservancy.

Gray= savanna

Green = forest

Yellow = prairie

Comparison of GLO and Mollic Haplufalf distribution





Lightening-struck maple tree, which burned for approximately 20 hours, then fell down and started a 50 acre fire in August, 2012.



Un-burned split trunk indicates the tree burned, then fell, allowing time for the grass to dry after a 1 inch rain.



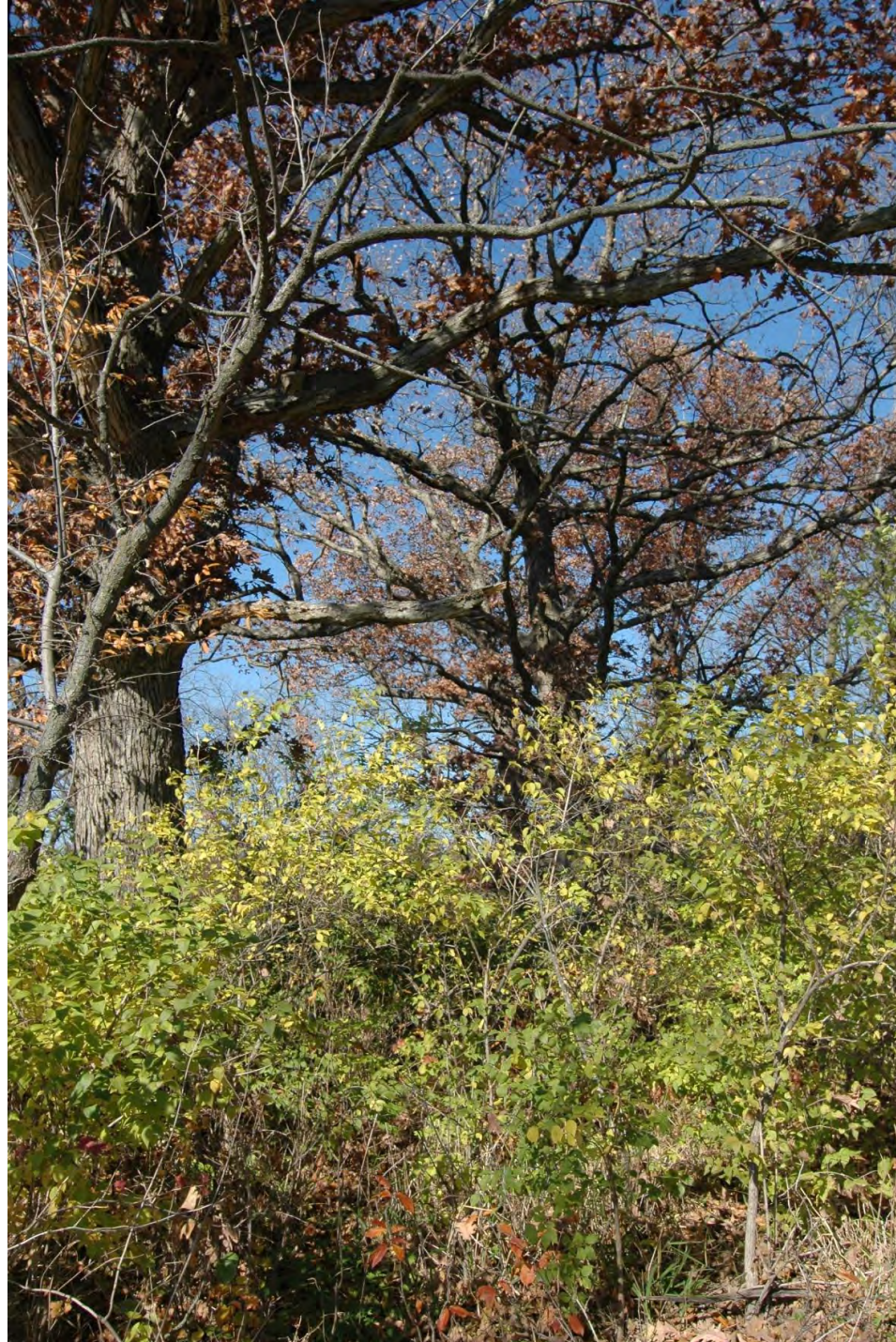
Wildfire killed many cedars in an area we could not otherwise burn.





Cedar infestations eliminate the herbaceous layer and strangle the oaks.

honey suckle
infestation





Un-managed cattle pasture



With hundreds of stems an acre, there are no young oaks and a very thin herbaceous layer.



Housing subdivisions, often located on the edge of river valleys, cover a significant portion of Iowa's savannah soils.



Savannah soils in Iowa are commonly row-cropped.

Historic and current vegetation in Iowa



Historic Acres

Current Acres

Forest

4 million

2.5 million

Savanna

3 million

~ 0



Carl Kurtz © 2004

Why Do We Care?

Savanna extends the range of both prairie and forest

Huge species lists

Obligate species

Preserve oaks which:

- *support the most insects
- mammals,
- *best carbon sink

Stop soil erosion by improving herbaceous layer

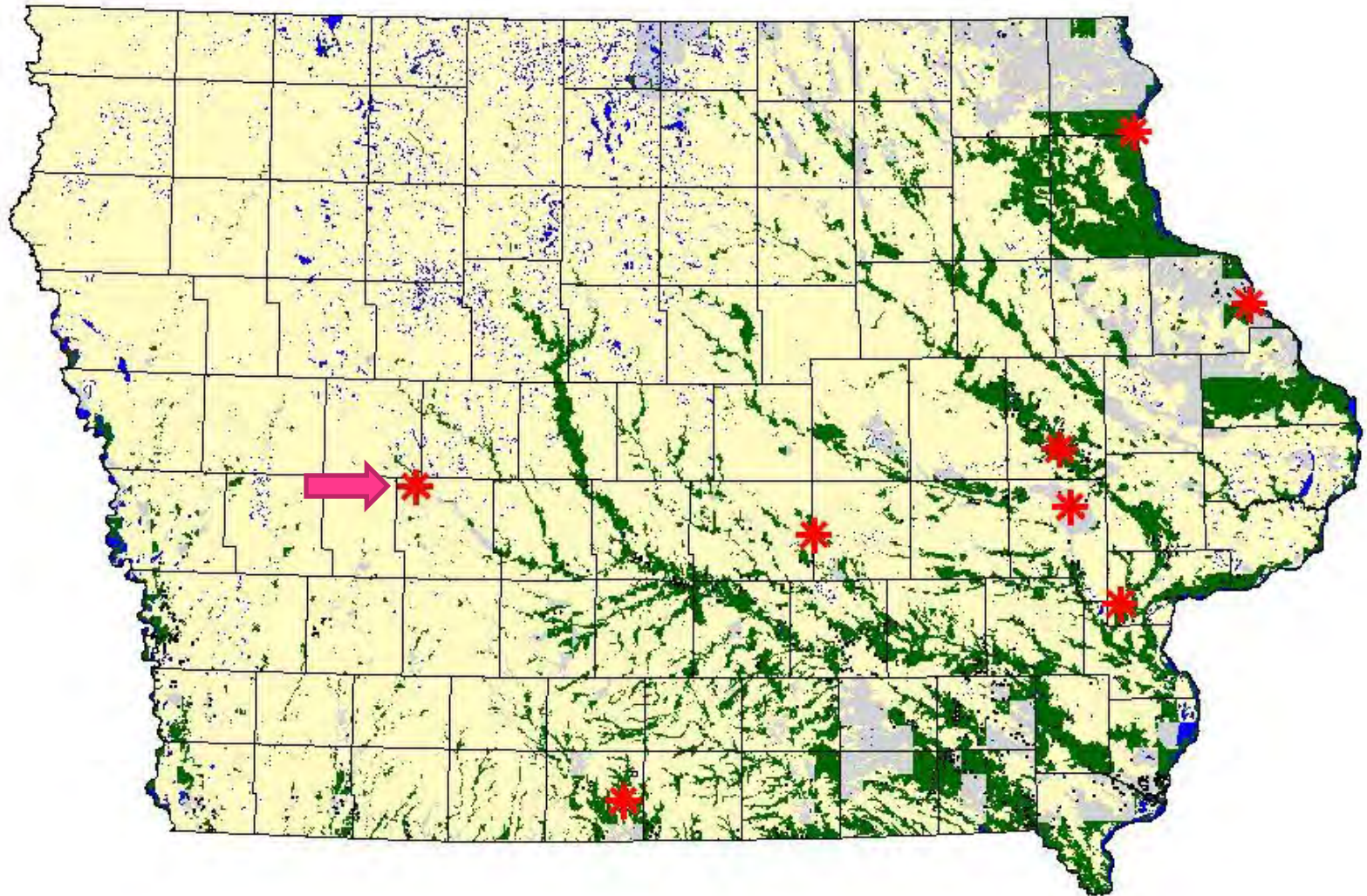
Beautiful

“...people across cultures gravitate open savanna-like terrain with scattered trees ... environments in which our species evolved over millions of years in Africa savanna forest (parkland) and transitional



forest,
looking out
safely over
a distance.

E.O. Wilson
Socio-
biologist



Savanna restoration projects in Iowa.
WRC is western outpost.



Light grazing has helped keep the understory open.



Recent pasture renovation. Hillslope and oak understory had been entirely infested with red cedar and locust.



Timber stand improvement crew



Timber stand improvement
is hard work and
expensive.

WRC current payment for
a NRCS brush
management and timber
stand improvement is \$200
to \$350/acre, an amount
generally sufficient to get
brush and trees cut, but
not to pile and burn. A
recent cut, pile and burn
project cost \$1000/acre.



NRCS Brush management project.



Slash, honey suckle and oak sprouts in an oak savanna timber stand improvement. It is not always pretty.



Burn piles are lots of work = lots of dollars.

Burn pile
sterilization ...
scars last only
a couple years.





To reduce spread of woody invasives through bird perching, and to reduce fire risk near neighbor's property, the slash has been cut to the ground and partially piled.



Prescribed Fire The other tool in savanna restoration.