

To: Fox Engineering and Associates, Inc. (Scott Renaud)\

Story County Conservation Board (Mike Cox)

From: Dr. Thomas Rosburg, Department of Biology, Drake University

Re: Gilbert Prairie Survey

Date: November 6, 2018

On October 15, 2018, at the request of Mike Cox, Director of Story County Conservation, I conducted a late-season plant survey on a 160 acre site located 2½ miles west of Gilbert, Iowa. The property, which lies on the south side of 170th street and the east side of 500th avenue, is adjacent to the Story and Boone county boundary. It occupies the northwest ¼ of section 7 in T84N R24W. The farm site included cool-season pasture land, cropland, hayfields and land in the conservation reserve program.

I was accompanied by Mike Cox and several representatives of Fox Engineering and Associates. The purpose of the field survey was to determine if any evidence of prairie remnants could be located on the pasture portion of the property.

Populations of prairie indicator species were observed at several locations (Figure 1, Table 1). Eight species were recorded, four grasses and four forbs. The highest quality prairie remnants were those that supported these species, in order of highest to lowest quality – hairy grama, side-oats grama, fringed puccoon, rough dropseed, false gromwell and prairie sage. Although prairie three awn and whorled milkweed are also native prairie species, they are less indicative of a good prairie remnant. It is very likely that additional prairie species are present on these remnants. Mid-October is fairly late in the growing season for collecting plant community data. Spring and early summer species may have been present but too inconspicuous to observe. The presence of hairy grama is quite significant. It's a prairie species that characterizes the short-grass prairie which is located in the western Great Plains. In order to occupy plant communities in the tallgrass prairie region of Iowa, it requires specialized microenvironments that provide similar growing conditions as in the short-grass prairie – a habitat that is very dry and low in fertility. Hairy grama is known from 35 counties in Iowa (about a third), but it is always limited in its abundance and frequency.

The GPS data for the map points are presented in Table 2. Map points 1 and 2 are provided as reference points. Map point 1 corresponds to the fence post at the north end of the fence the separates the hayfield from the pasture. Map point 2 corresponds to the corner fence post located at the southwest corner of the hayfield.

The pasture is a typical cool-season grass pasture for Iowa. Predominate species observed include Kentucky bluegrass, yellow foxtail, white clover, dandelion, hoary vervain and common ragweed. Two plant communities were mapped as a polygon feature (Figure 1). A wet swale supported sedge species, bulrush species, blue vervain, foxtail species, curly sour dock and lady thumb smartweed. It was saturated with shallow standing water among hummocks. This area was probably a sedge meadow on the native landscape. The other area mapped is a cottonwood grove. Several cottonwood trees (DBH of 30 to 40 cm) were present, as well as some green ash and Siberian elm (both DBH of 10 cm) Other woody species were sapling-size willow species, gray dogwood and wild grape. The herbaceous layer was dominated by smooth brome. Also present was common milkweed, tall goldenrod, giant goldenrod, stinging nettle and horsetail. Although there was no standing water observed, the soil appeared to be saturated. The presence of the horsetail indicates a fairly wet soil or shallow water table.

Historic aerial photos are presented in Figures 2 and 3, from 1930 to 1994. The pasture appears to be intact in the series of years depicted in the aerial photos. The presence of terraces on the far south end of the pasture is seen for the first time in the 1960s photo. The terraces suggest that row crop agriculture may have occurred here at some time. If so, it must have been short-lived since prairie plant populations were observed. The 1980 aerial photo utilized infrared imagery, which is ideal for identifying prairie remnants. On an infrared image, pink to reddish color indicates actively growing vegetation (green). When the image is made in the spring (the image date for this one is May 15), the difference in cool-season and warm-season growth is very apparent. Cool-season growth, which has been active for several weeks by late April or May, stands out as being very pink. In a cool-season pasture, pink to reddish color will dominate. If prairie remnants are present, the warm-season grasses of the prairie, which are still dormant, impart a grayish hue to the image. In Figure 3d, grayish patches can be seen throughout the pasture. These are mostly associated with dry south- or west-facing slopes. These grayish areas also correspond to the locations of prairie remnants mapped in Figure 1.

In conclusion:

- 1) There is a significant native prairie component on this site.
- 2) The south- and west-facing slopes are the most important locations supporting prairie remnant populations.
- 3) The full extent of the quality of the prairie remnants cannot be fully determined at this point due to the lateness in the growing season.

Table 1. Prairie species observed at map points on Figure 1. Presence at a point is indicated with an "x".

	Map Points										
	3	4	5,6,7	8,9,10,11	12,13	14	15	16	17	18	19
Grasses:											
Side-oats grama	x	x	x	x	x		x		x		
Hairy grama			x	x							
Prairie three awn	x			x		x	x	x			x
Rough dropseed							x	x	x		x
Forbs:											
False gromwell	x	x	x				x	x	x	x	x
Fringed puccoon	x			x							
Prairie sage	x	x	x	x							
Whorled milkweed			x					x			

Table 2. GPS data for point features in Figure 1. All points are UTM Zone 15T, map datum WGS 84.

Map Point	Waypoint	Easterly UTM	Northerly UTM	Feature
1	50	442688	4661876	Reference-north end of fence line
2	41	442684	4661631	Reference-south end of fence line
3	49	442427	4661690	prairie remnant populations
4	48	442323	4661697	prairie remnant populations
5	47	442320	4661647	prairie remnant populations
6	46	442314	4661631	prairie remnant populations
7	45	442330	4661617	prairie remnant populations
8	44	442390	4661608	prairie remnant populations
9	43	442430	4661592	prairie remnant populations
10	42	442467	4661573	prairie remnant populations
11	32	442553	4661520	prairie remnant populations
12	33	442610	4661524	prairie remnant populations
13	34	442644	4661516	prairie remnant populations
14	35	442719	4661506	prairie remnant populations
15	36	442767	4661424	prairie remnant populations
16	37	442766	4661338	prairie remnant populations
17	38	442790	4661197	prairie remnant populations
18	39	442865	4661304	prairie remnant populations
19	40	442864	4661413	prairie remnant populations



Figure 1. Aerial photo of Gilbert prairie site (outlined with blue boundary) with features (yellow) observed during a field survey on October 15, 2018. Imagery date is October 2, 2015 from Google Earth.



Figure 2. Aerial photo of Gilbert prairie site on April 15, 1994 from Google Earth. Point features on Fig. 1 are shown.

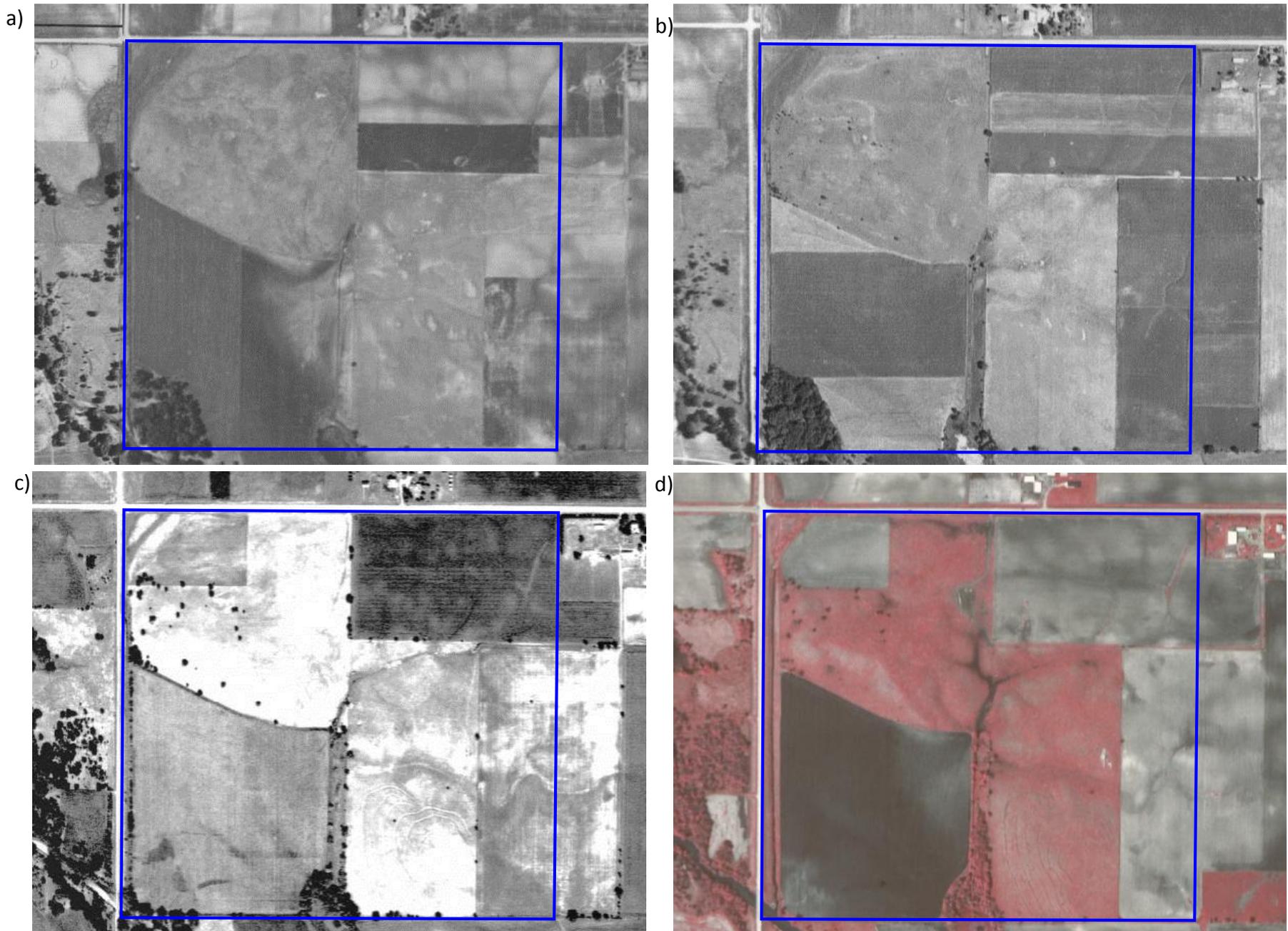


Figure 3. Historic aerial photos of Gilbert prairie site (blue boundary) on the following dates: a) 1930s, b) 1950s, c) 1960s and d) 1983. Images from the Iowa Geographic Map Server (<https://www.gis.iastate.edu/>).