Harden Savanna of MRCP

Baseline vegetation survey with photos

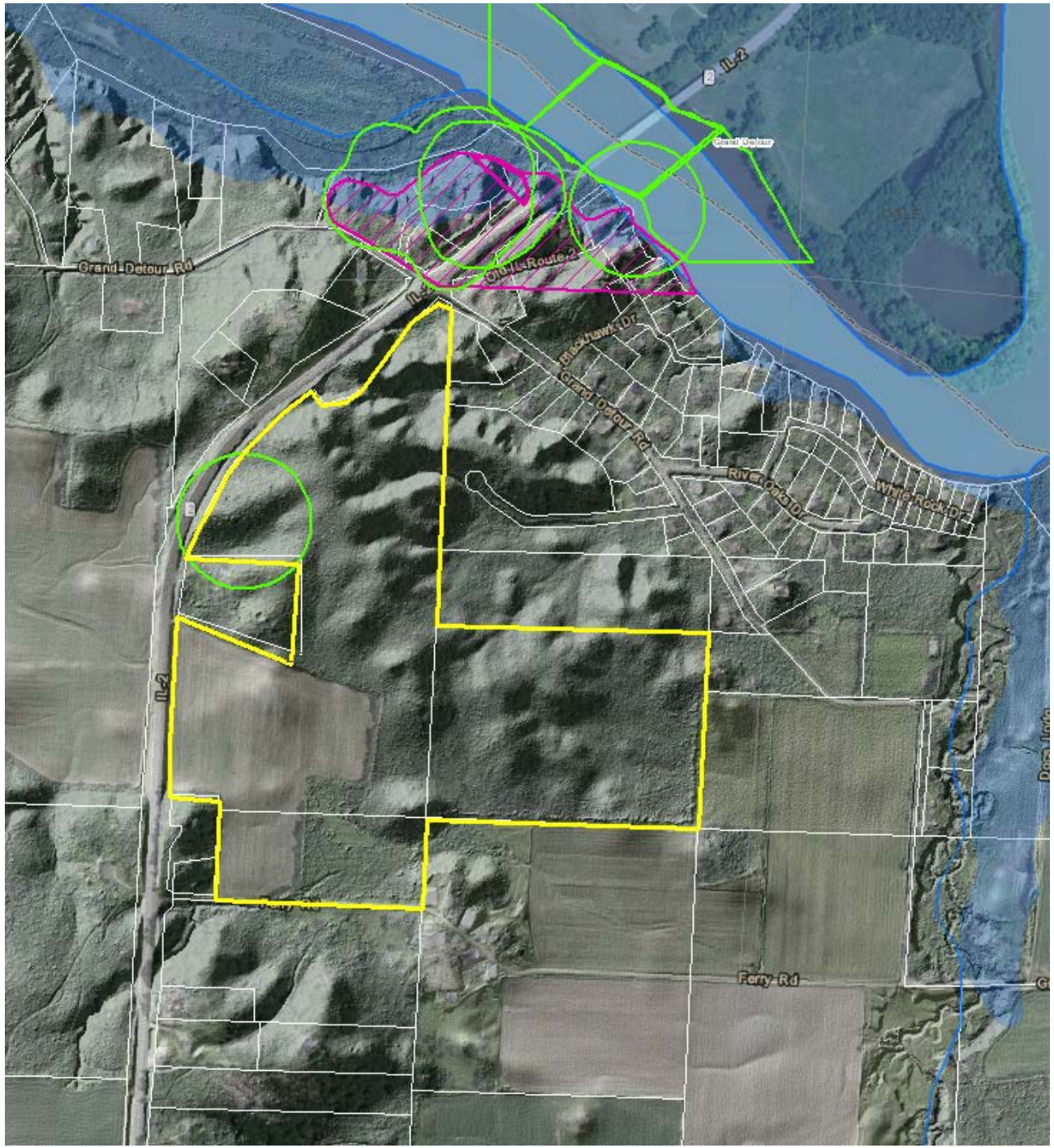
August 2019

Coordinated by Bill Kleiman, TNC

Team included Elizabeth Bach, Jenn Simons, Mike Jones

We met our goal to gather baseline vegetation data and photos so that ten years from now we can demonstrate the results of our good stewardship.

Harden Topography via lidar



1939 Harden Savanna

Current

Current Harden Savanna

1939 Harden Savanna

1939 Harden Savanna

- Before old world settlement the land was likely Native American hunting and camping with high ground above a major river.
- By 1939 the tract was likely a prairie and oak savanna with livestock grazing.
- 80 years go by and the brush and trees fill in.
- Shade is hard on savannas
- We have work to do.
- To restore good oak savanna habitat with a diverse herbaceous and shrub layer would be an uncommon success.

Random points were generated and numbered

A closeup of some of the random points.

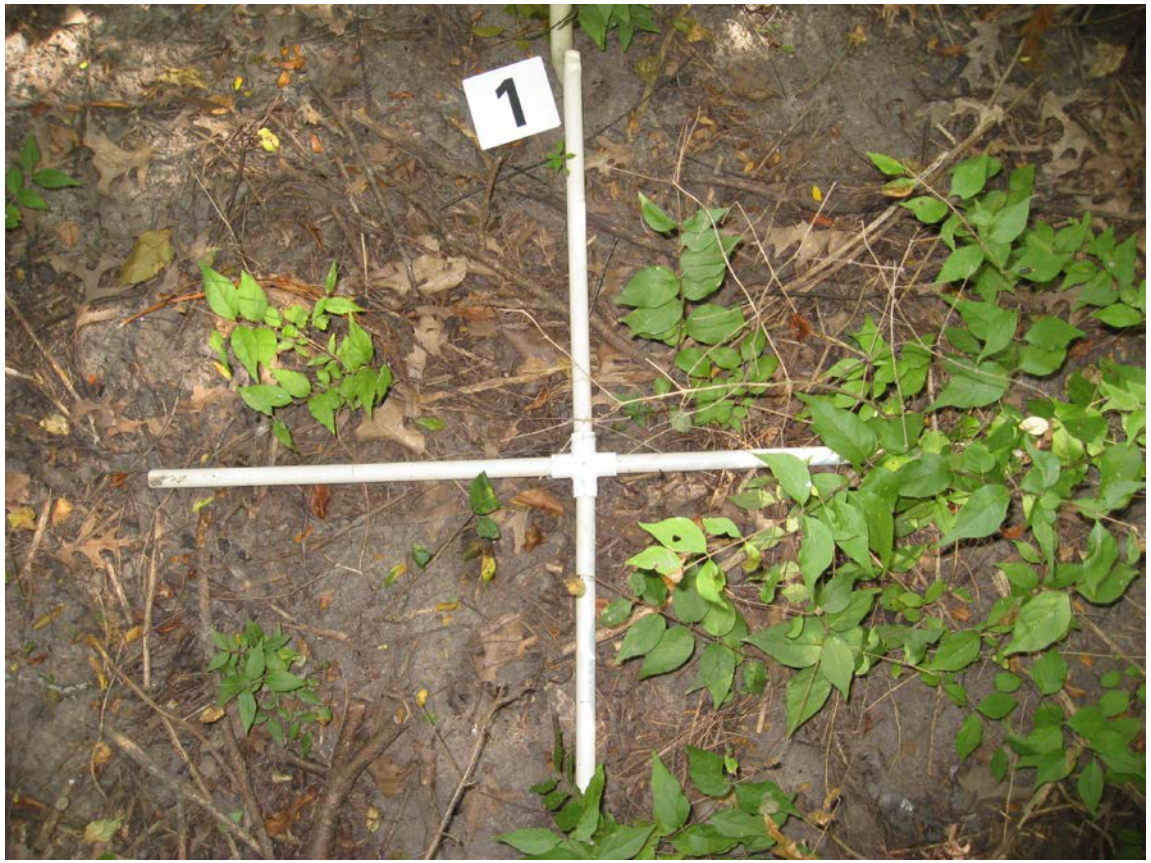
The data and photos correspond to these numbers.

Where we sampled

- We only sampled one community type, the currently closed canopy.
- This was due to time and fund restraints.
- We chose not to sample the Department of Transportation lands. The old vegetation surveys done decades back by DOT are likely available to use as our baseline.

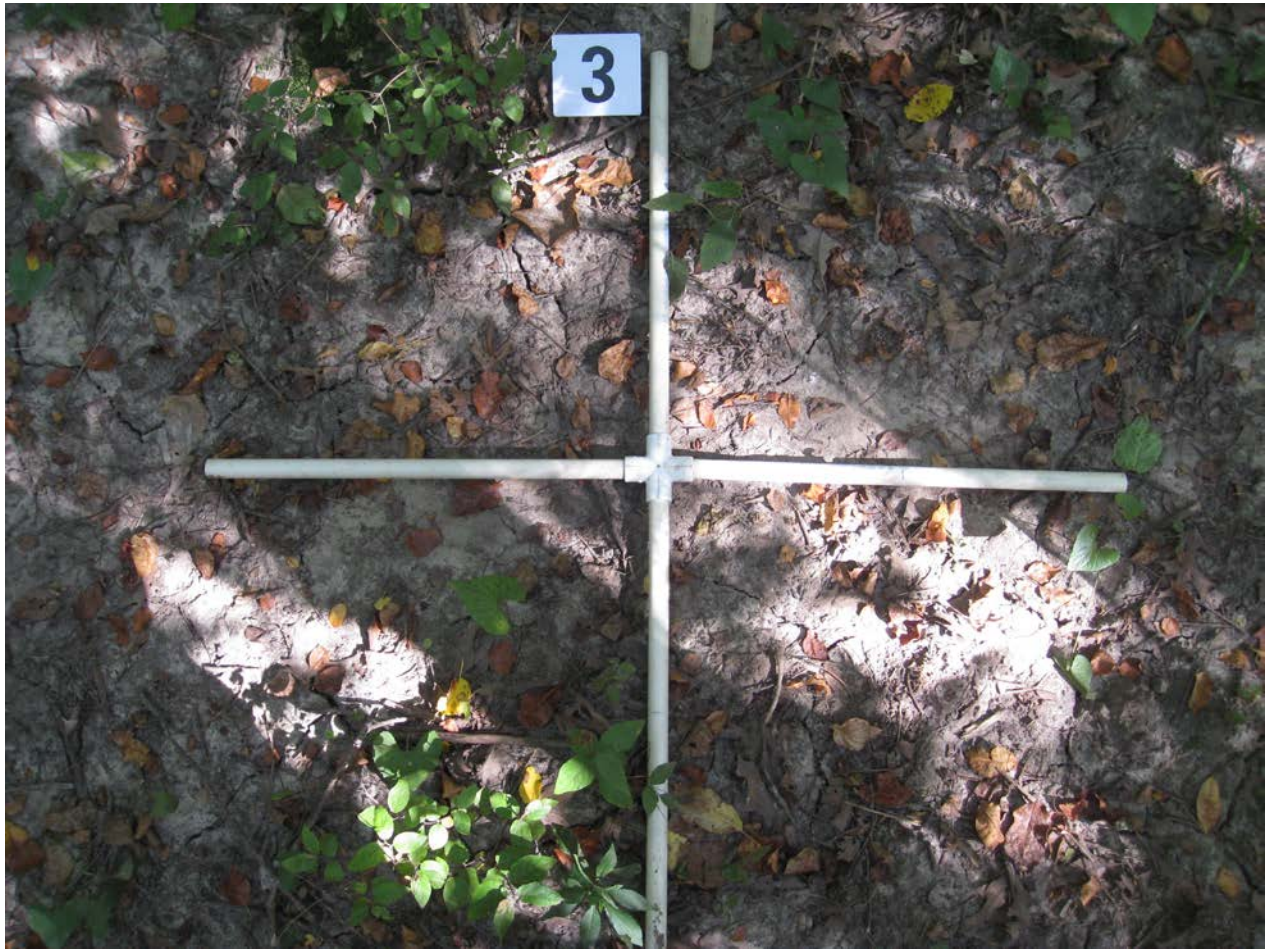
All plant species in the meter by meter quadrat were recorded as percent cover.

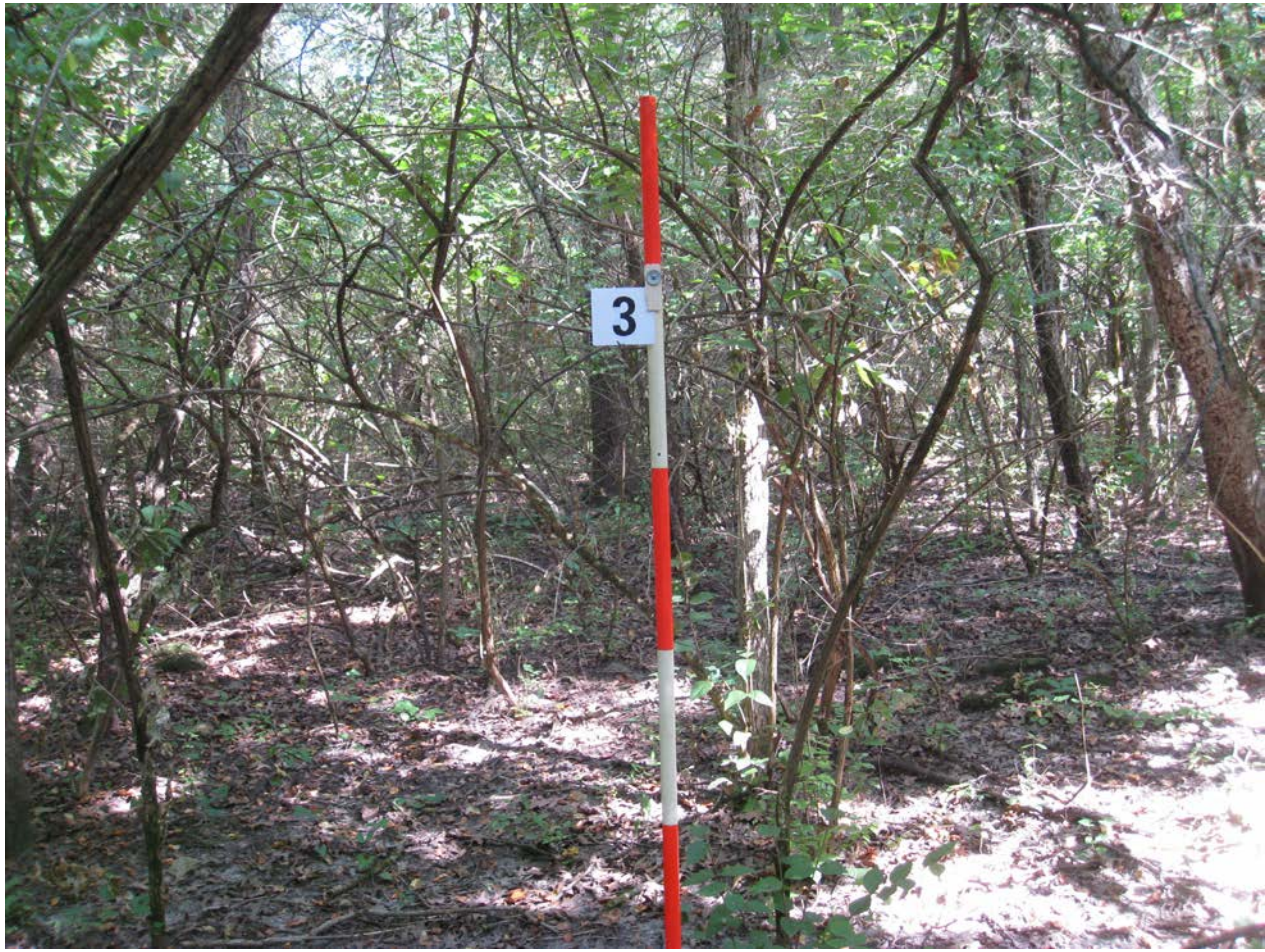
We took a photo of each quadrat looking down



And a photo looking north

Quadrat 2 showing typical extensive bare soil


3


3

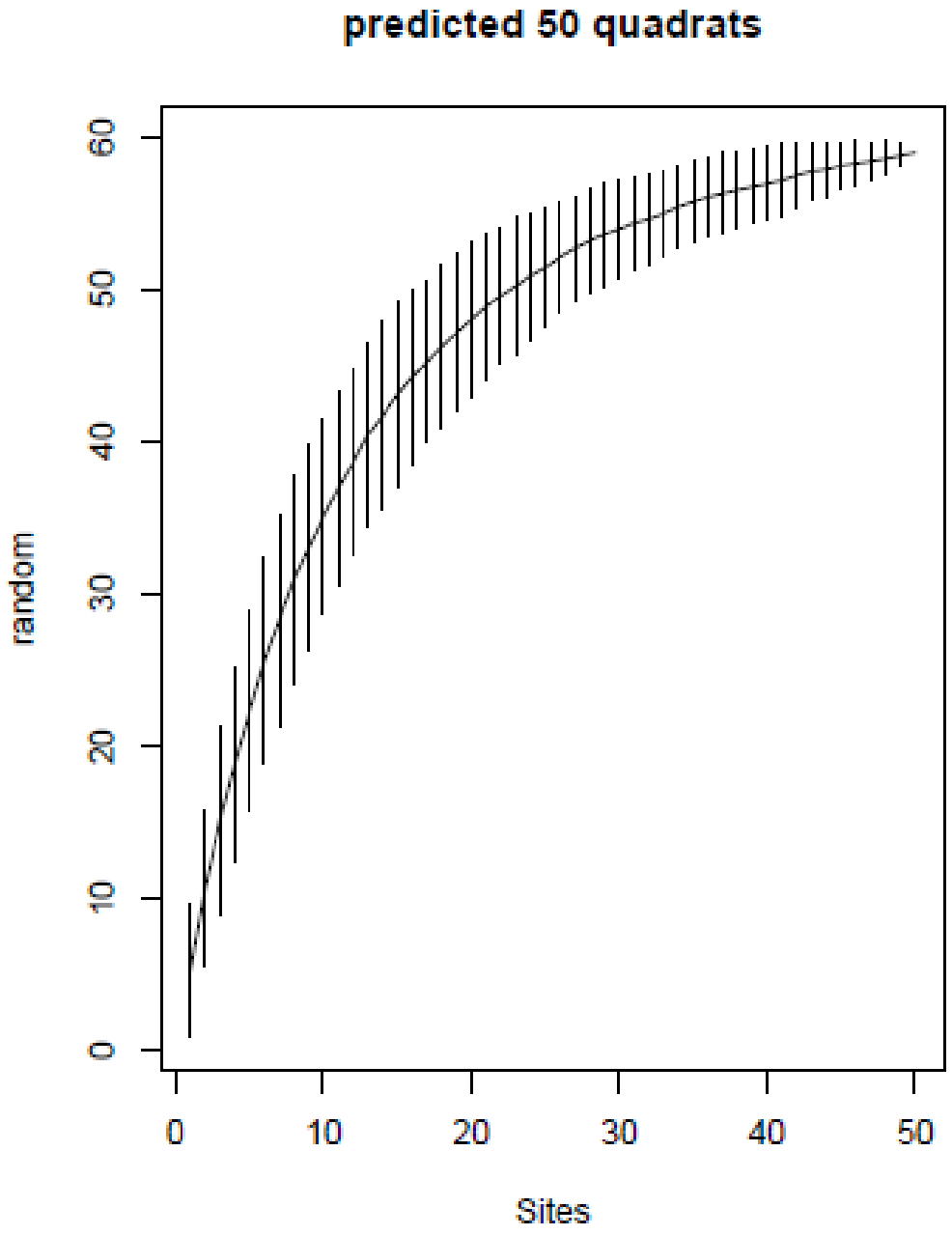
51

51

87

87

After the first day of 24 quadrats of sampling Elizabeth analyzed that data which predicted 50 quadrats would be enough to have confidence we sampled enough places. This is the species accumulation curve.



Close up of quadrat 4.
5 species in this quadrat, but mostly exposed soil.

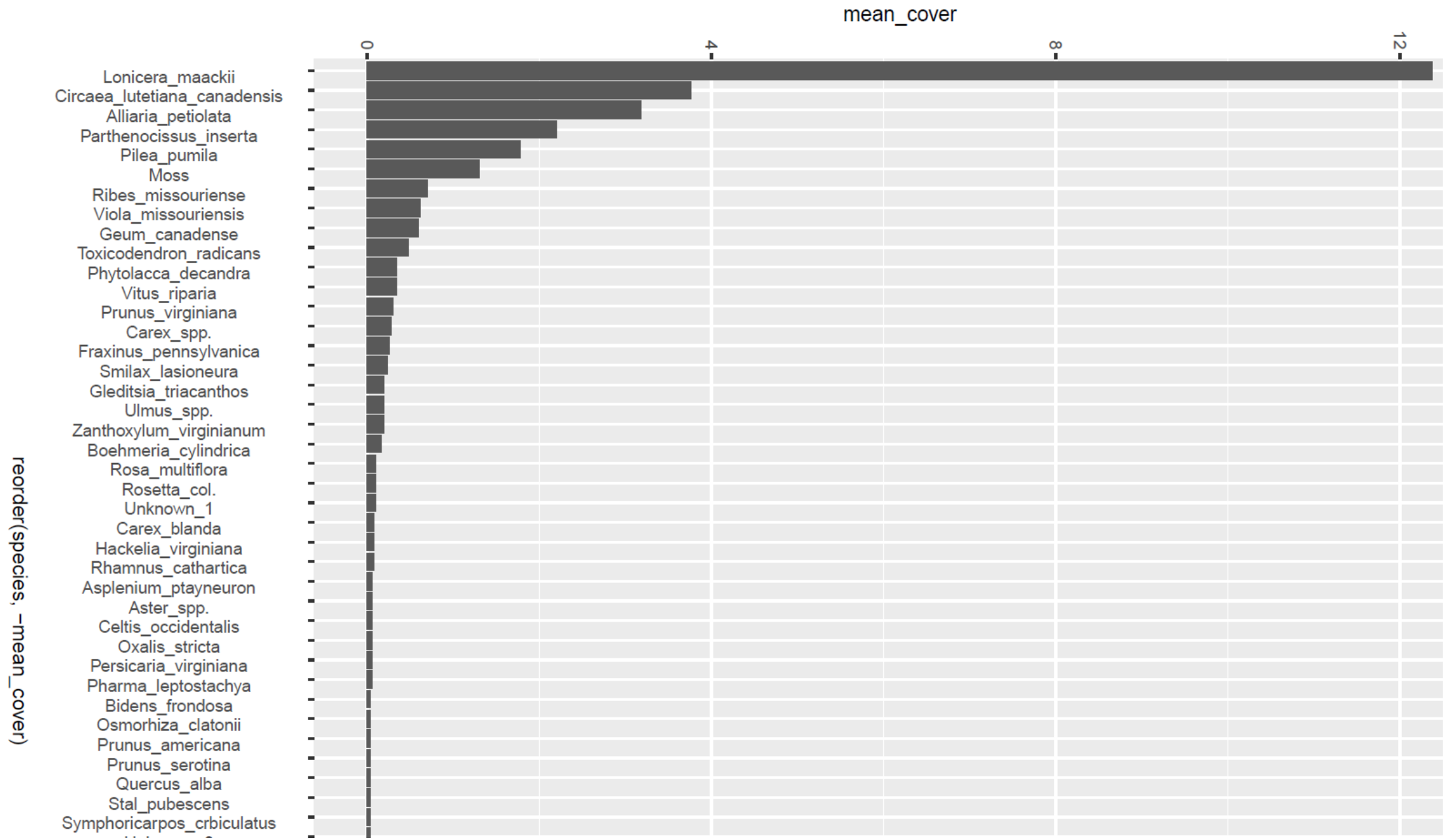
Close up photo looking north from quadrat 4.

The three closest trees to each quadrat were noted.

The vegetation team were L to R: Mike Jones, our hired botanist; Elizabeth Bach, Nachusa Scientist; Jenn Simons, Nachusa science intern; Bill Kleiman, Nachusa director. Bill came up with the protocol. Elizabeth helped refine the protocol and do statistics. Mike was the field botanist. Jenn took photos, recorded data and did data entry.

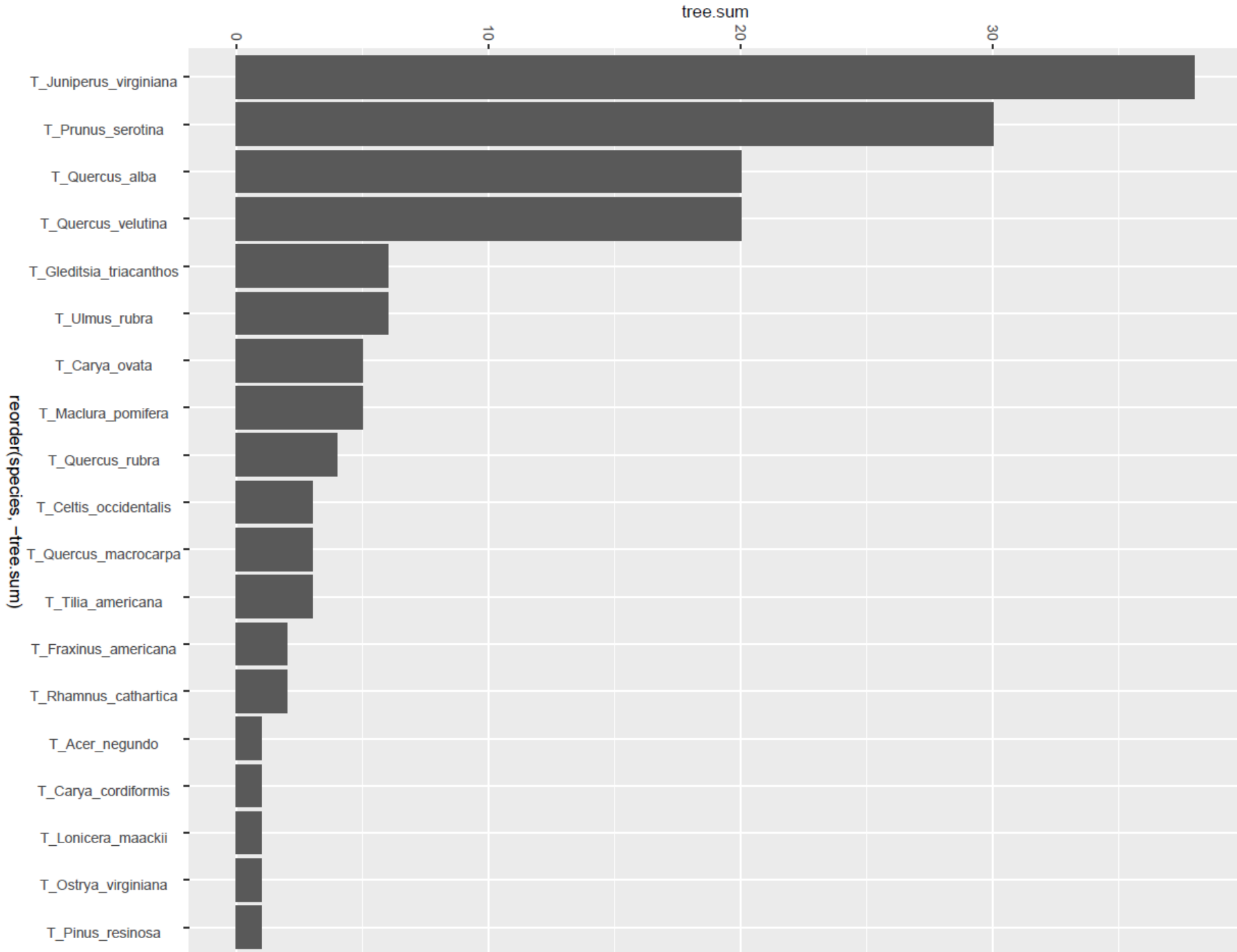
Summary of data for Harden Savanna

- 75% of the quadrats were bare soil.
- The most common plant was invasive honeysuckle, Lonicera maackii.
- The top ten most common species were all exotics or weedy natives. In order: honeysuckle, enchanters nightshade, garlic mustard, Virginia creeper, clearweed, moss, gooseberry, Missouri violet, white avens, poison ivy.
- There were 55 plant species but their presence was insignificant.


mean_cover
0
4
8
12
reorder(species, −mean_cover)
Lonicera_maackii
Circaea_lutetiana_canadensis
Alliaria_petiolata
Parthenocissus_inserta
Pilea_pumila
Moss
Ribes_missouriense
Viola_missouriensis
Geum_canadense
Toxicodendron_radicans
Phytolacca_decandra
Vitus_riparia
Prunus_virginiana
Carex_spp.
Fraxinus_pennsylvanica
Smilax_lasioneura
Gleditsia_triacanthos
Ulmus_spp.
Zanthoxylum_virginianum
Boehmeria_cylindrica
Rosa_multiflora
Rosetta_col.
Unknown_1
Carex_blanda
Hackelia_virginiana
Rhamnus_cathartica
Asplenium_ptayneuron
Aster_spp.
Celtis_occidentalis
Oxalis_stricta
Persicaria_virginiana
Pharma_leptostachya
Bidens_frondosa
Osmorhiza_clatonii
Prunus_americana
Prunus_serotina
Quercus_alba
Stal_pubescens
Symphoricarpos_crbiculatus

We also noted the 3 trees closest to each quadrat. Tree being anything 5cm diameter or larger

- The most common tree was eastern red cedar. Cedar would have begun growth in the open savanna and are now barely holding on in dense shade.
- Black cherry was the second most encountered tree.
- White oak and black oak were still commonly encountered.
- The remaining trees were encountered infrequently.
- 19 tree species in total.


tree.sum
0
10
20
30
reorder(species, −tree.sum)
T_Juniperus_virginiana
T_Prunus_serotina
T_Quercus_alba
T_Quercus_velutina
T_Gleditsia_triacanthos
T_Ulmus_rubra
T_Carya_ovata
T_Maclura_pomifera
T_Quercus_rubra
T_Celtis_occidentalis
T_Quercus_macrocarpa
T_Tilia_americana
T_Fraxinus_americana
T_Rhamnus_cathartica
T_Acer_negundo
T_Carya_cordiformis
T_Lonicera_maackii
T_Ostrya_virginiana
T_Pinus_resinosa

A list of stewardship we can do to return land health to the Harden tract includes:

- Define boundaries
- Use a forestry mower to create fire breaks
- Forestry mow interior areas
- Use prescribed fire as frequently as possible
- Basal bark herbicide the brush
- Seed areas as soon as they are cleared of some brush
- Repeat

Data and photos are stored at Nachusa and on MRCP Box account

MRCP cost was $400. The remainder was TNC Nachusa staff time.

End