

Betony and Biodiversity

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About Litzsinger Prairie

-29y/o restored prairie (North and South)

-Wet, bottomlands prairie



Common Problems with Restoration

- Dominant, warm season grasses often outcompete shorter, less dominant forbs
- May form large monocultures



Hypothesis

-The amount of *Pedicularis lanceolata* in a well-established prairie will have a positive effect on prairie biodiversity, species richness, and overall quality of the prairie, all of which should be measurable on a small scale.

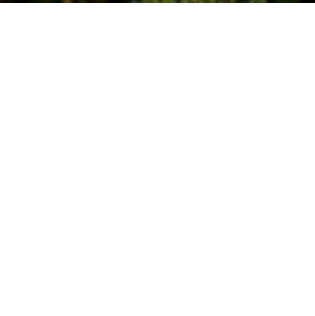
-As Betony cover increases, so will the biodiversity in the prairies

-Swamp Betony

-Hemiparasite

-Colonial





Floristic Quality Index (FQI)

-“A system, based upon plants, that assesses natural quality repeatably and dispassionately, facilitates comparisons among set sites, and tracks changes in the site quality over time.”

-Each plant given a (C) value, or coefficient of conservatism

-0-10

-89% of native plants have a (C) ≥ 4

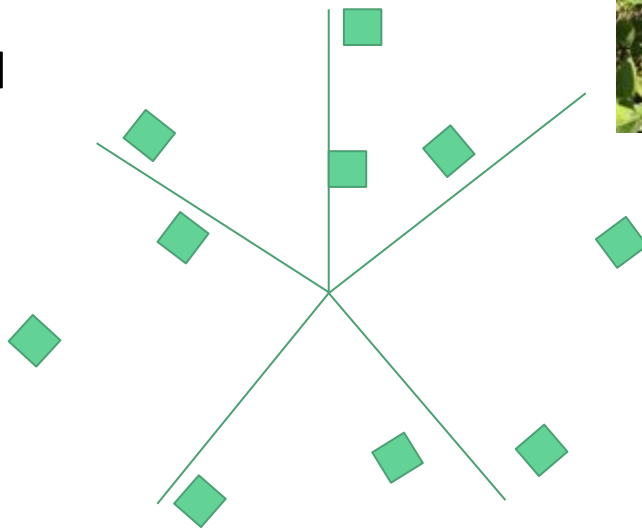
$$FQI = \bar{C} (\sqrt{N})$$

Methods

-Recorded all plant species and cover within a 1m² plot

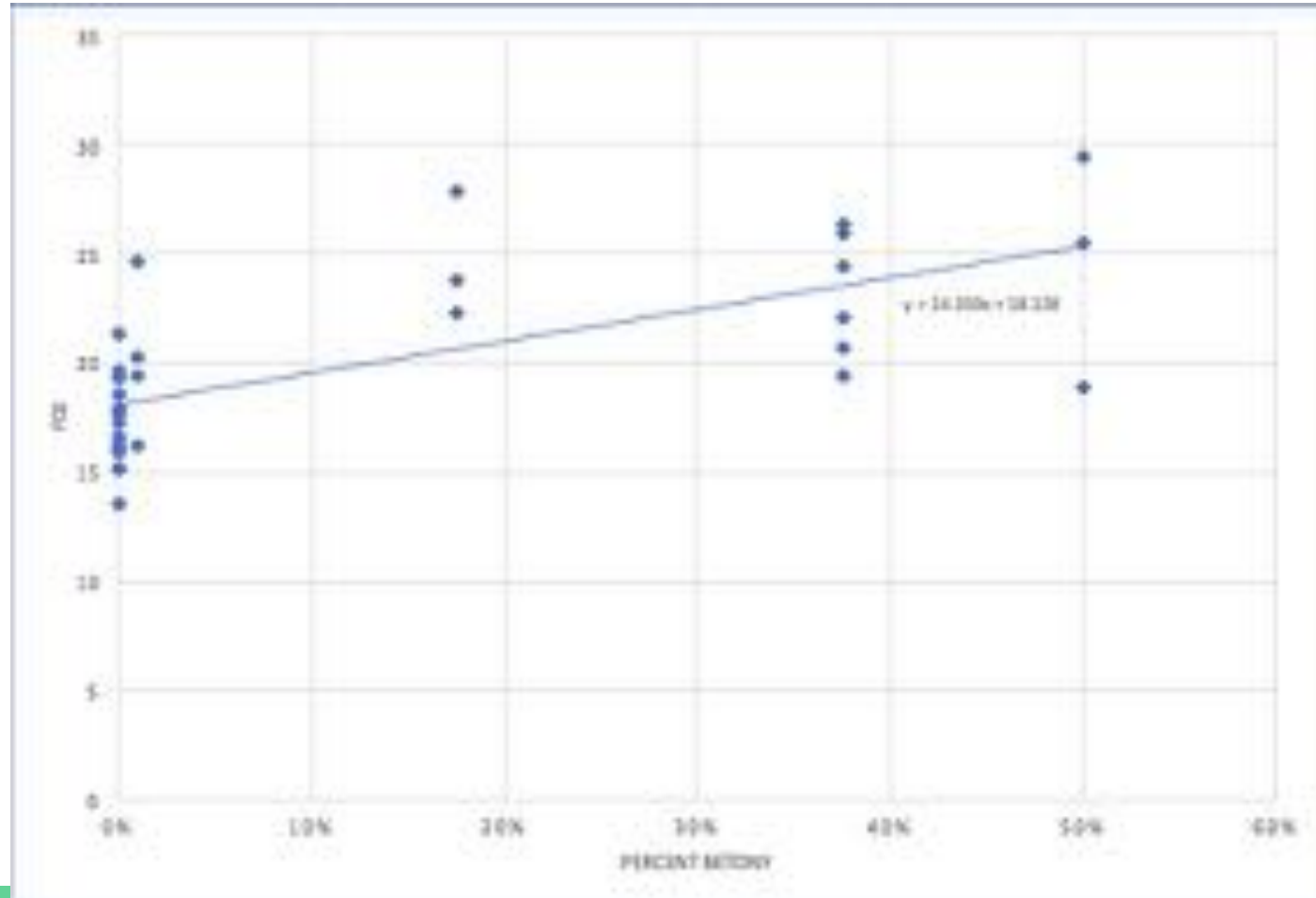
-30 total plots

-Record any potential companion plants



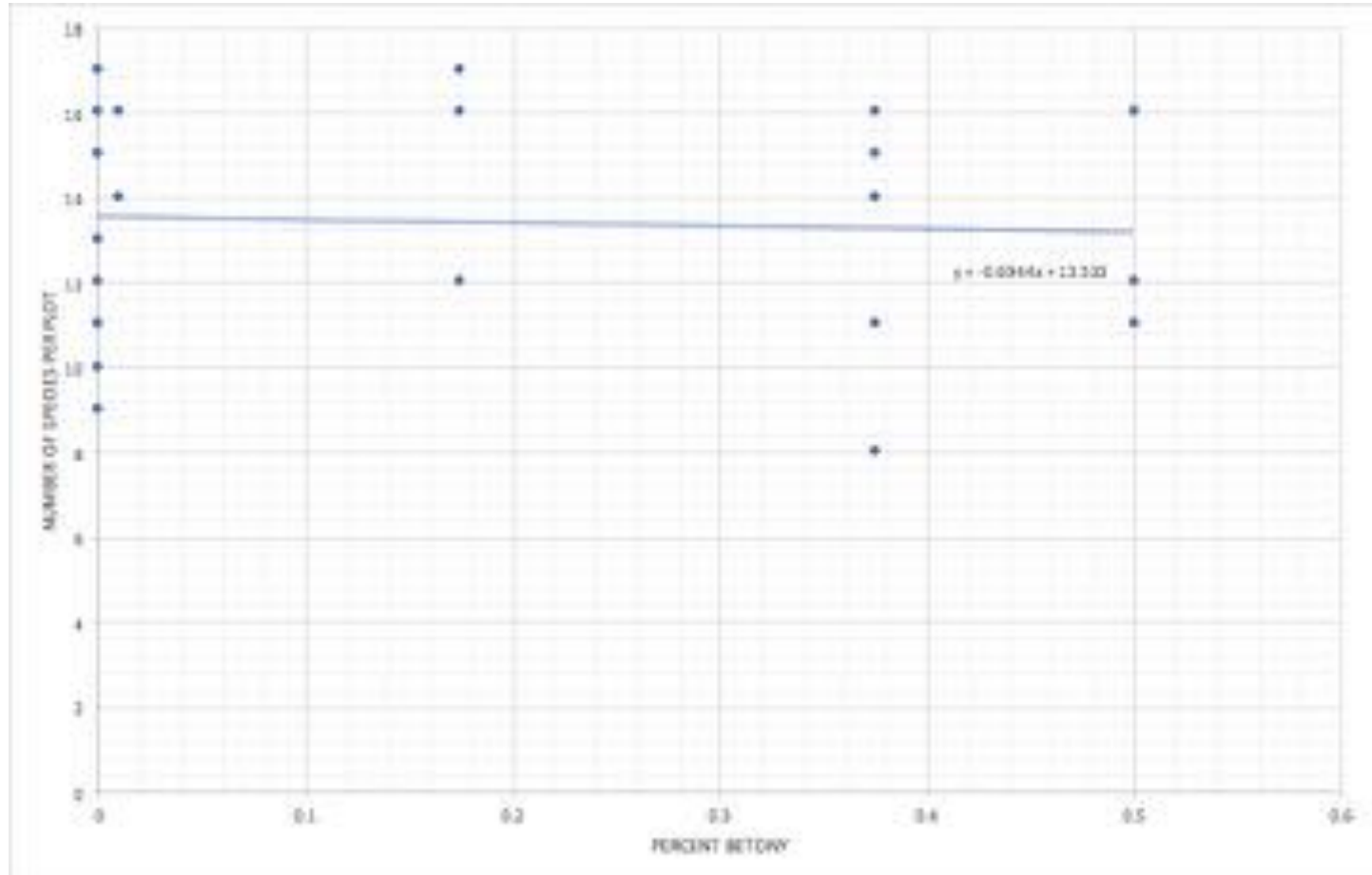
Results

- p=0.000241
- Hypothesis Validated!
- As Betony cover increases, so does quality measured in FQI



Results

- $p=0.513$
- Hypothesis not validated
- Greater Betony cover does not lead to more plants per plot



Potential Companion Plant #1 *Hypericum punctatum*

- Spotted St. Johns Wort
- Found in 4 plots, all with Betony >37.5%
- Perennial plant up to 2 ½' tall
- Pollinated by multiple insects for abundant pollen, no nectar
- Avoided by mammalian herbivores due to hypericin
 - Numerous medicinal uses, including a cancer indicator



Potential Companion Plant #2 *Gentiana andrewsii*

- Closed Bottle Gentian
- Found in 2 plots, both with Betony
- Perennial plant up to 2' tall
- Pollinated by bumblebees
- Low ecological value



Potential Companion Plant #3 *Chamaecrista fasciculata*

- Partridge Pea
- Found in 4 plots, 3 with Betony
- Annual plant up to 2' tall
- Somewhat respond to touch
- Favors disturbed soils
- Supports a variety of insects



Future Work

- How photic conditions change with Betony cover
- Effects of Betony on early restoration projects



