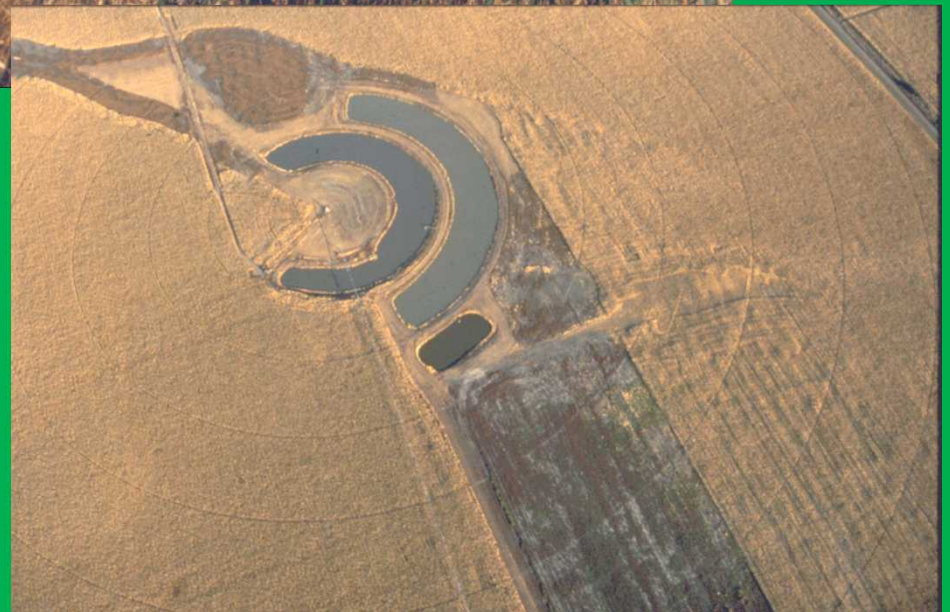


Nebraska Intensification Project: An Ecological Assessment of Nebraska's Wetlands

Nicholas Smeenk
Ted LaGrange
Craig Allen



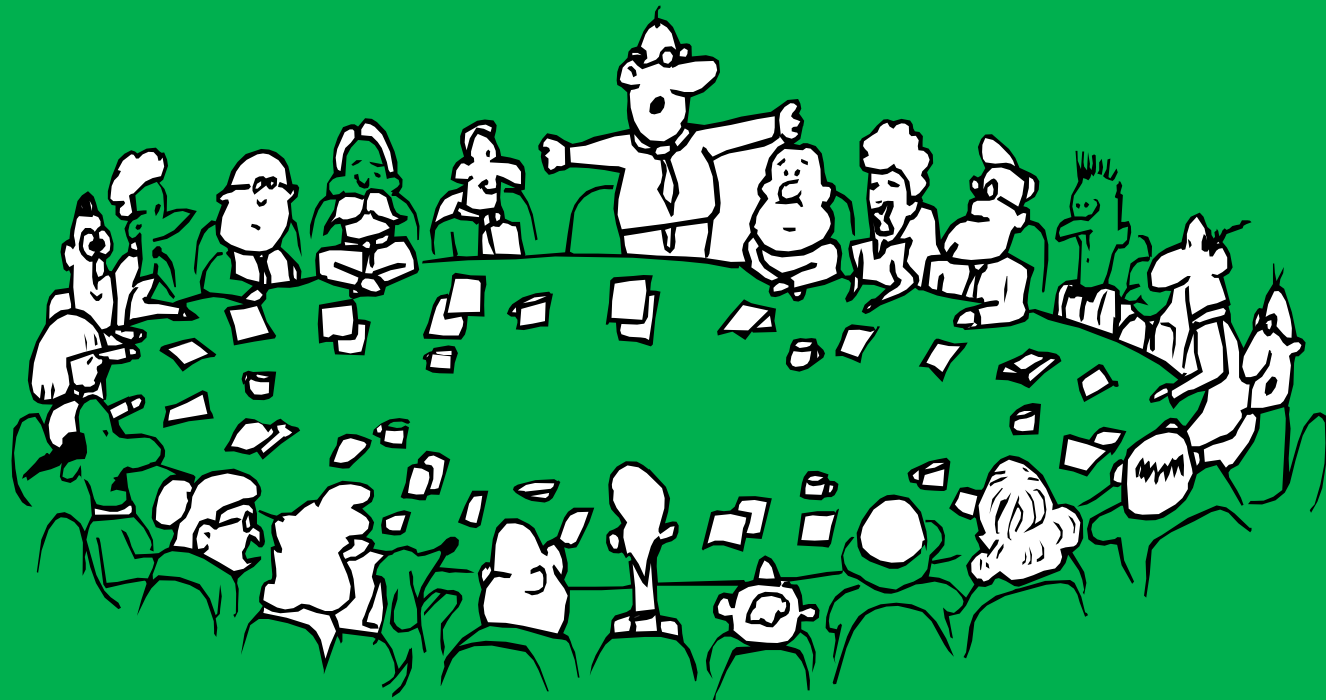
Condition of Nebraska's Wetlands Unknown



A Core Team was assembled in May 2009 to oversee this project

The team is composed of 15 individuals, representing 10 agencies and organizations.

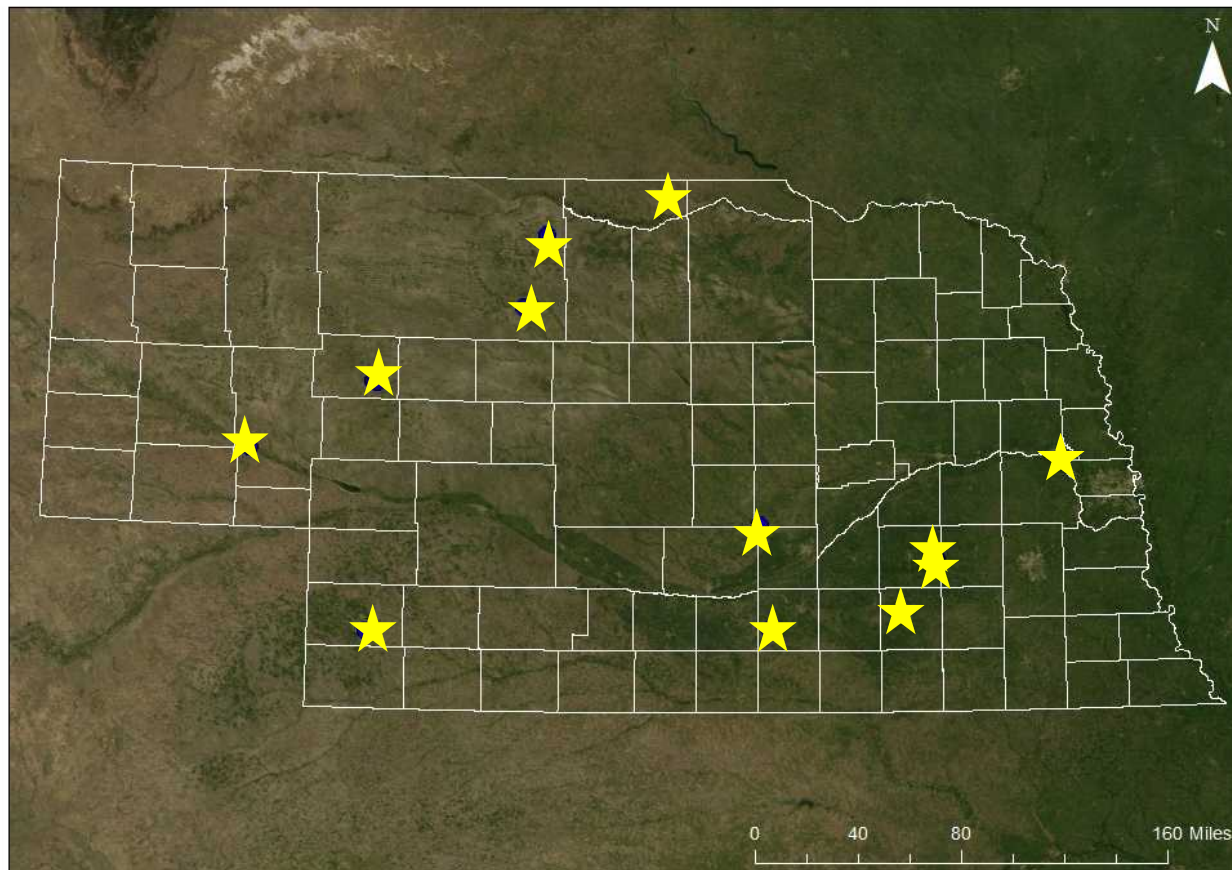
Core Team members are: Anne Bartuszevige (PLJV), Mike Gilbert (USACE), Andy Bishop (RWBJV), John Bender (NDEQ), Ken Bazata (NDEQ), Ritch Nelson (NRCS), Dan Shurtliff (NRCS), Eliodora Chamberlain (EPA), Tyler Janke (TNC), Tom Malmstrom (SWCP), Ed Harvey (UNL), Craig Allen (USGS Cooperative Fish and Wildlife Research Unit), Kristal Stoner (NGPC), Randy Stutheit (NGPC), Gerry Steinauer (NGPC), and Ted LaGrange (NGPC).





2011 National Wetland Condition Assessment

NWCA Sites



NWCA Experience

- Site selection method generally worked for NE
- Performed assessment at 12 sites across NE
- 2 sites revisited
- Mean assessment time around 5 hours



Lessons Learned



- Nebraska is a big state!
- Landowners largely receptive to assessment
- A good crew makes or breaks the season
- Field assistants make good pack mules

Nebraska Intensification Project



2011-2013

Study Questions



1. What is the ecological condition of Nebraska's wetlands?
2. What is the best method for assessing wetland condition?
3. What factors affect occupancy of wetlands by native amphibians?
4. What factors are associated with the presence of chytrid in amphibian populations?



110 Sample Points
11 Complexes

Site Selection

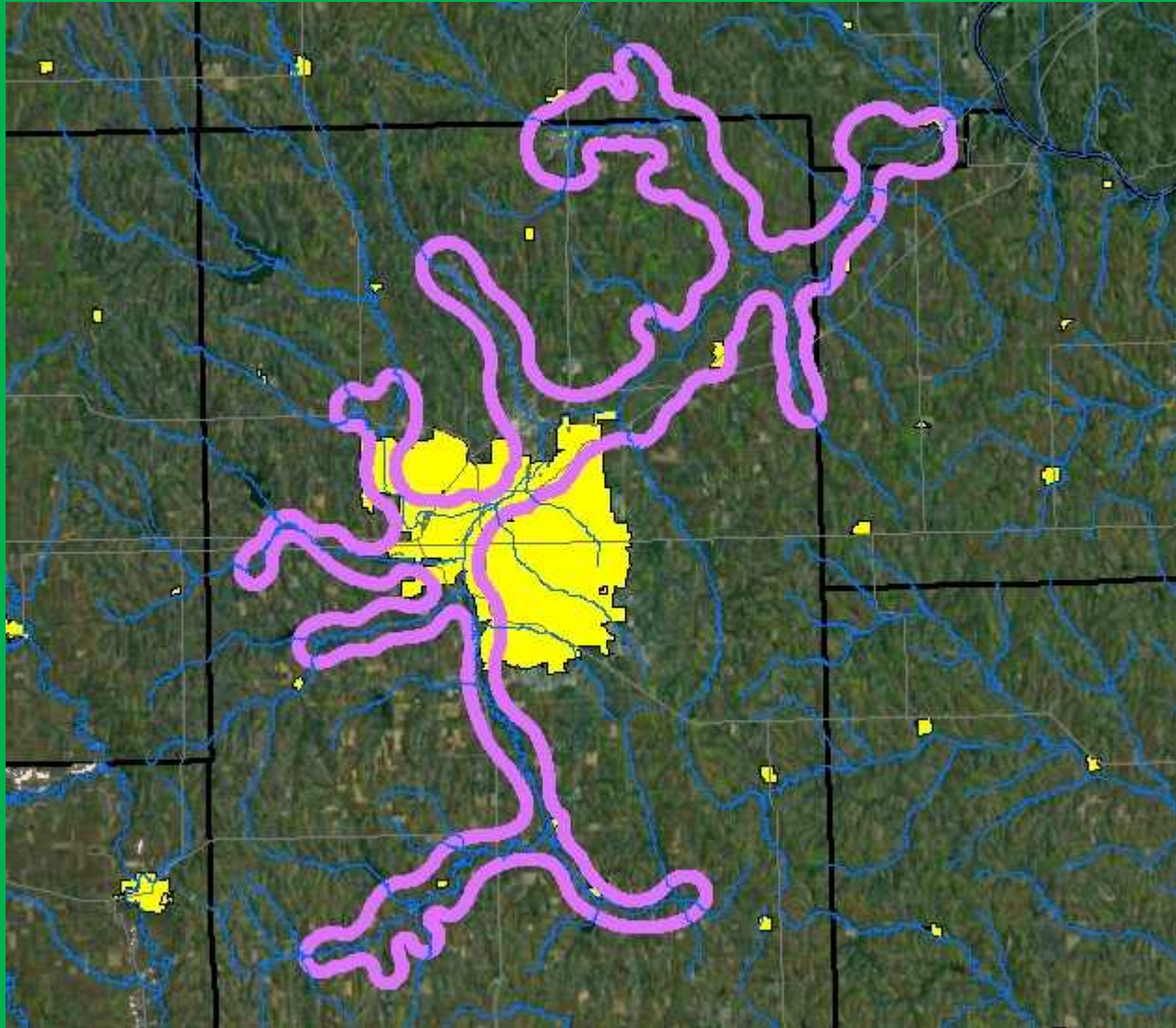
- GIS based site selection
- Intersection of five characteristics:
 1. NWI wetlands
 2. Wetland soils
 3. Plant community
 4. At least 500 m²
 5. 280 m apart
- “Reference standard” site



Example from spreadsheet *Wetland Complex BUL HGM subclasses Community*

Wetland Type	Wetland Complex¹	Biologically Unique Landscape (BUL)¹	HGM Subclass	Natural Community to sample	NWI Cowardin Class	Soil Map Unit Name	Soil Map Unit Symbol
Playa	Central Table Playas	Central Loess Hills	Playa Depressions	Wheatgrass Playa Grassland	PEMA, PEMC	Scott silty clay loam, frequently ponded	3912
Playa	Central Table Playas	Central Loess Hills	Playa Depressions	Wheatgrass Playa Grassland	PEMA, PEMC	Scott soils, frequently ponded	3914
Riverine	Central Platte	Central Platte River	Riverine Floodplain Rapid Permeability, w/minimal out of bank flooding	Northern Cordgrass Wet Prairie	PEMA, PEMC	Barney complex, channeled, frequently flooded	6310
Riverine	Central Platte	Central Platte River	Riverine Floodplain Rapid Permeability, w/minimal out of bank flooding	Northern Cordgrass Wet Prairie	PEMA, PEMC	Barney loam, frequently flooded	6312
Riverine	Missouri (downstream from the Platte River)	Missouri River	Riverine Floodplain Moderate to Slow Permeability, w/regular out of bank flooding	Eastern Riparian Forest/Eastern Cottonwood-Dogwood Riparian Woodland	PFOA, PFOC, PSSA, PSSC	Albaton silty clay, occasionally flooded	7710
Saline/Alkaline	Eastern Saline	Saline Wetlands	Saline Depressions	Eastern Saline Meadow	PEMA, PEMC	Salmo silty clay loam, channeled, frequently flooded	7016
Sandhills	Sandhills	Cherry County Wetlands	Mineral Soil Flats	Sandhills Wet Meadow	PEMA, PEMC	Tryon fine sandy loam, frequently ponded	4743

Saline Wetland BUL



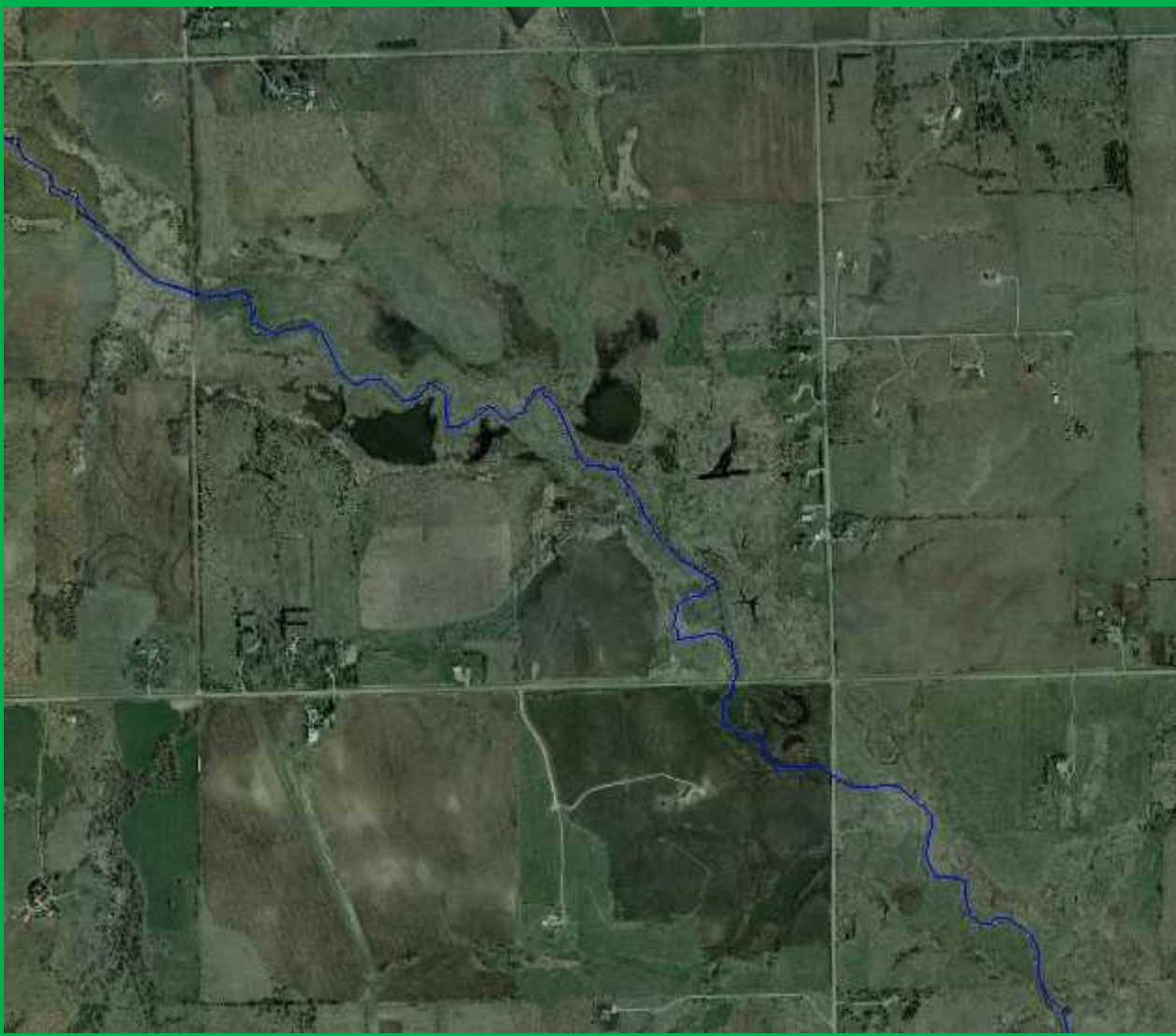


Natural Community Type= Eastern Saline Meadow

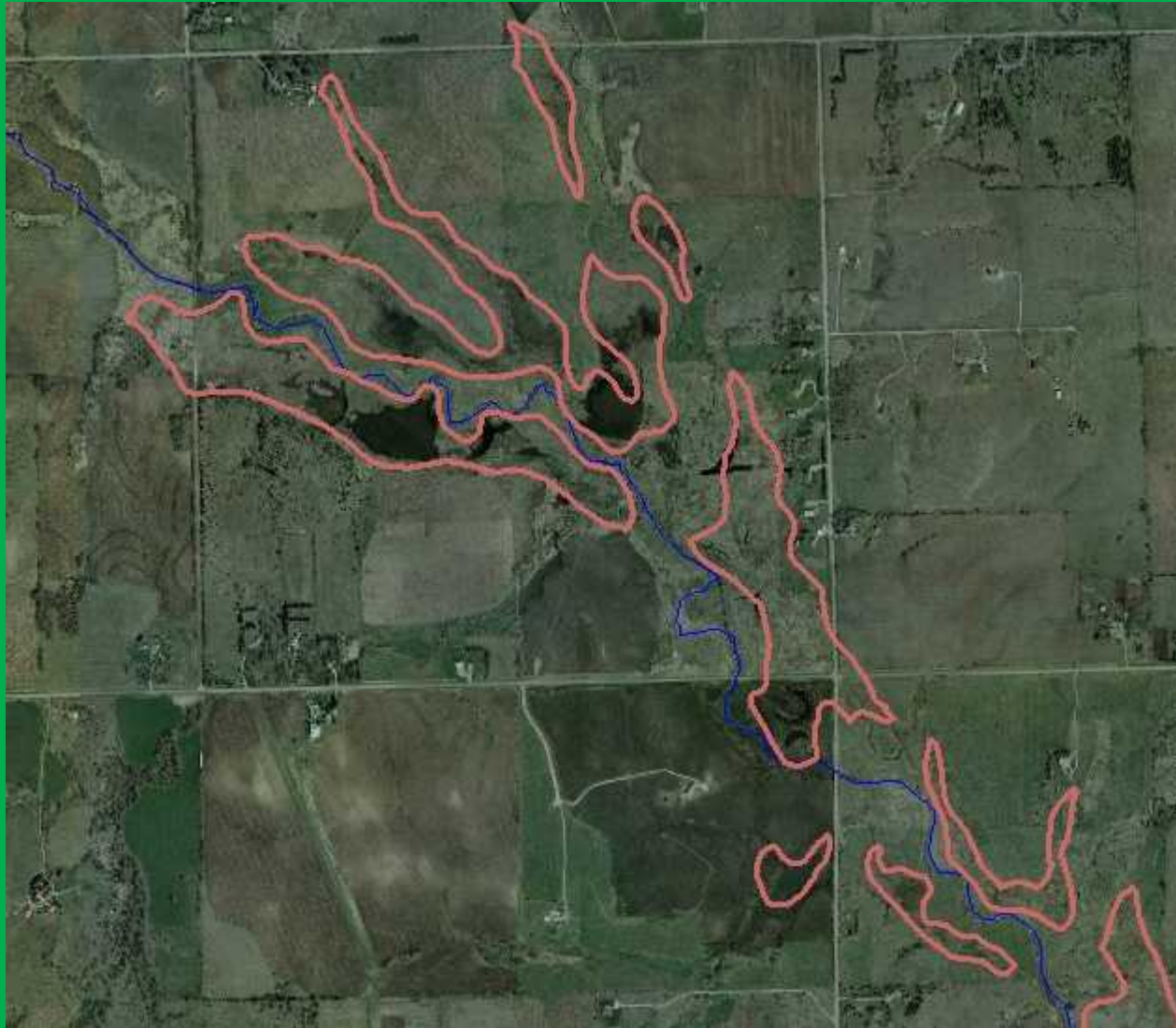
Soil= Salmo silty clay loam, channeled,
frequently flooded (7016)

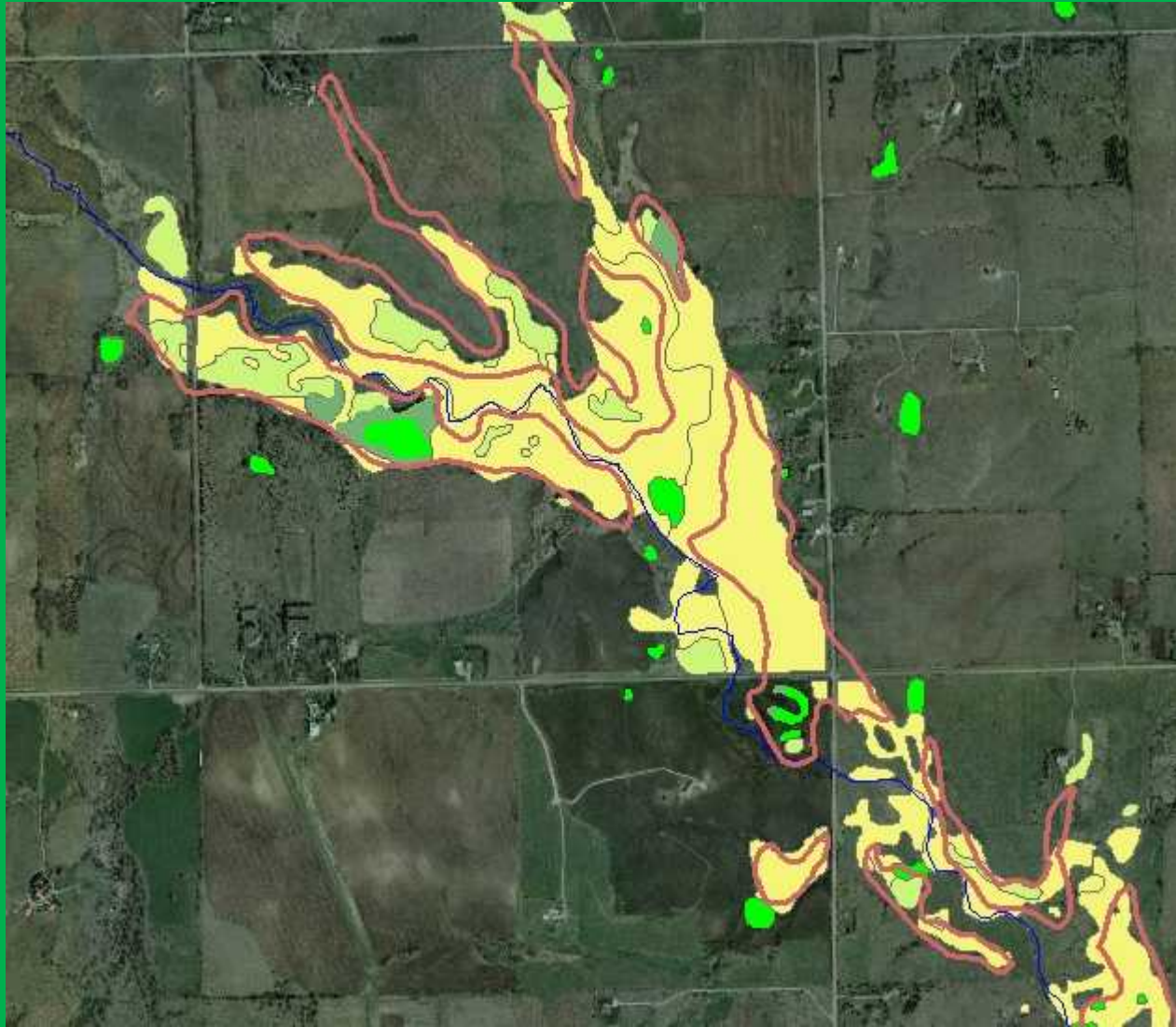
NWI= PEMA and PEMC

Example of sample point selection for a portion of Eastern Saline Wetlands

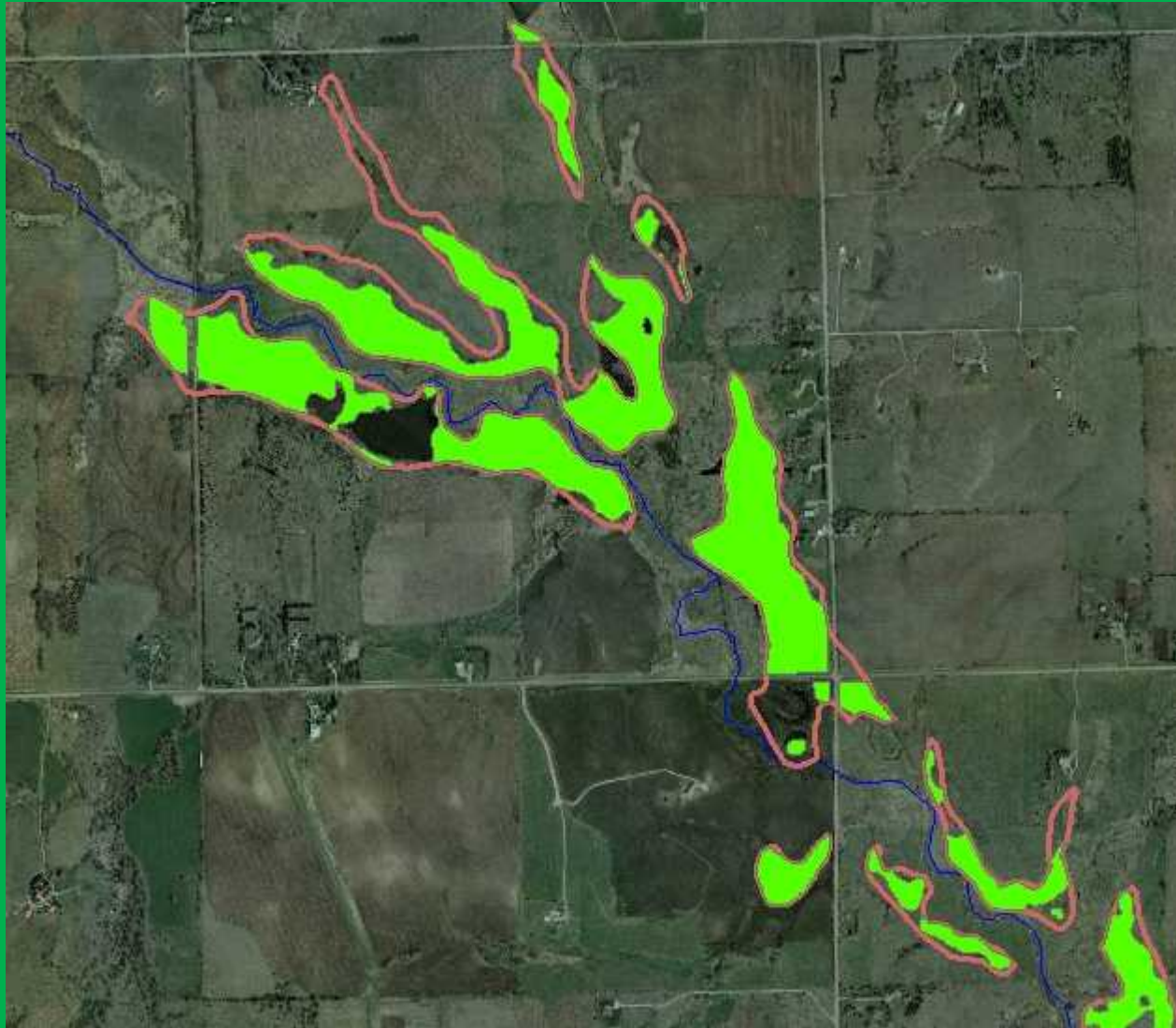


Salmo soils (7016)

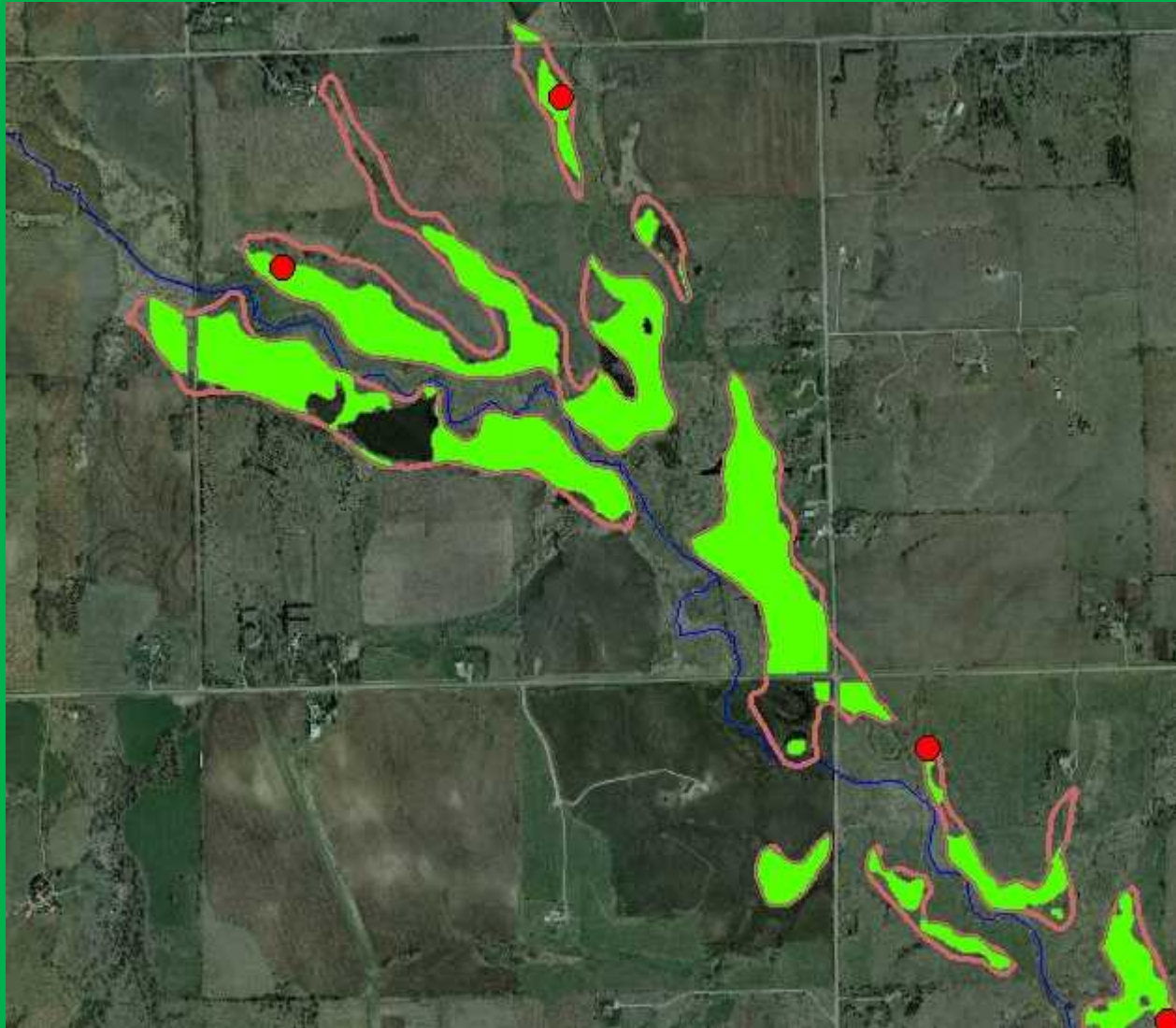




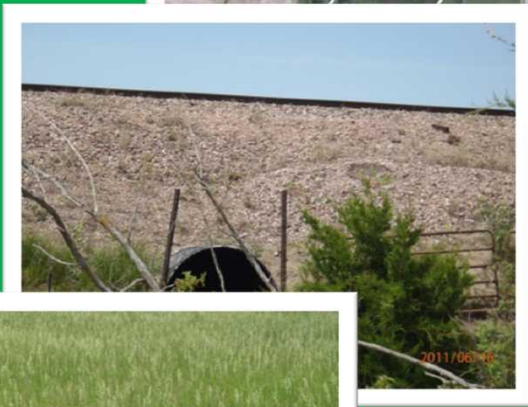
NWI clipped by soils



Sample Points



Wetland Condition Assessment



- Three levels of assessment:
 1. Landscape assessment
 - LDI score
 2. Rapid Assessment
 - USA-RAM
 3. Intensive site assessment
 - FQAI score
 - Other metrics
- Compare methods

Intensive Wetland Assessment Site Set-up



Intensive Wetland Assessment

- Vegetation data collection
 - Species diversity
 - Relative cover
- Soils
 - Soil profiles at four locations
- Water and algae samples
 - Water samples including chemistry, Chlorophyll-*a*, common pesticide, and algal diversity samples



Intensive Wetland Assessment

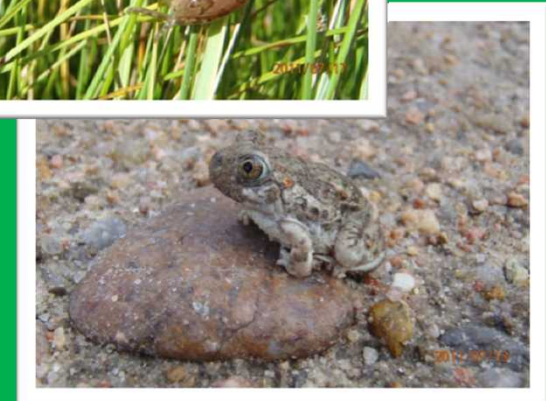
Buffer Assessment



- 100 m buffer around AA
- Buffer Plots – 3 per transect
 - Invasive species
 - Stressors
- Help to calibrate land use for LDI

Amphibian Surveys

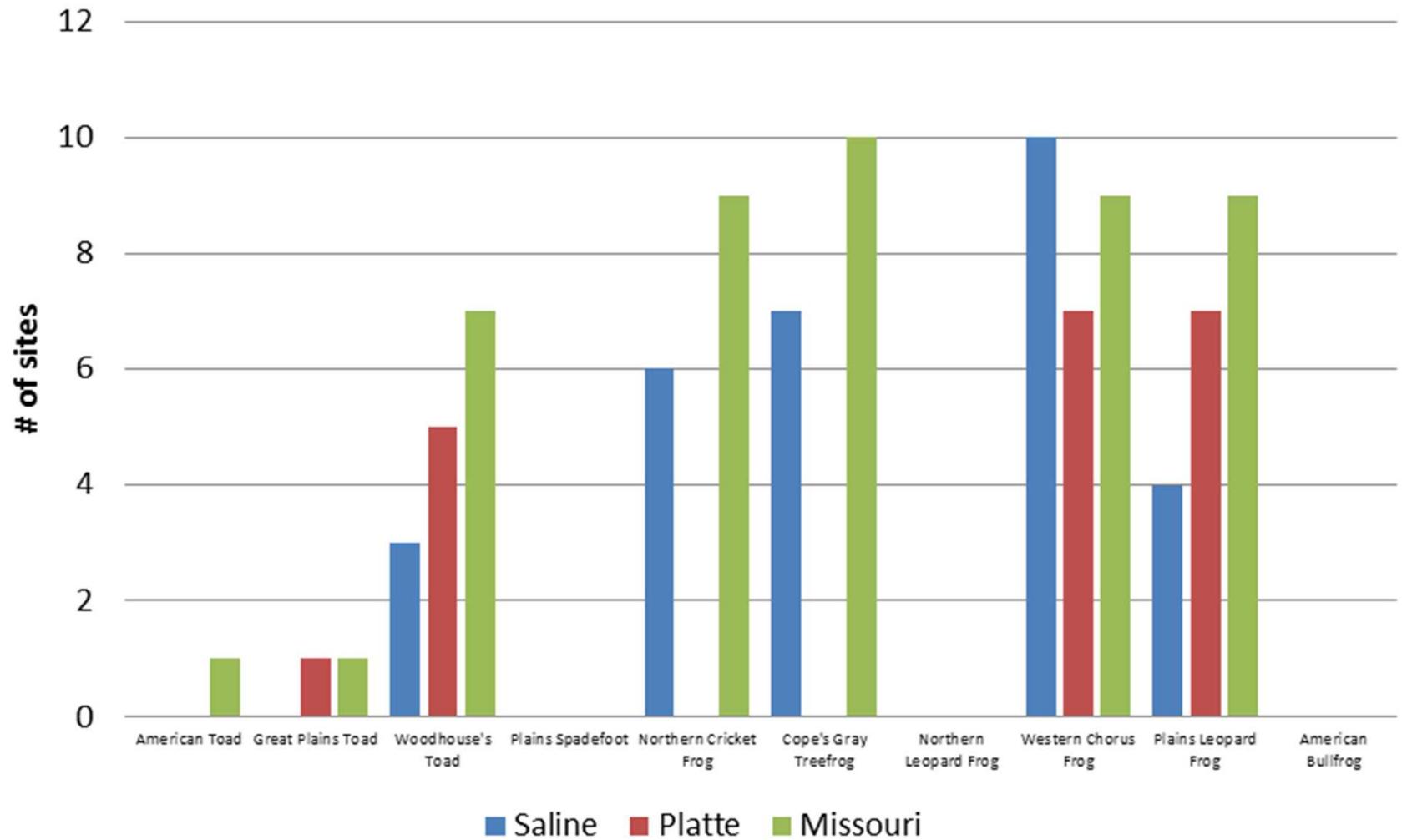
- Determine the presence/absence of anuran species
- April - May
- Conduct and record surveys of anuran calls
- Model surveys using occupancy modeling
- Evaluate presence of chytrid fungus.



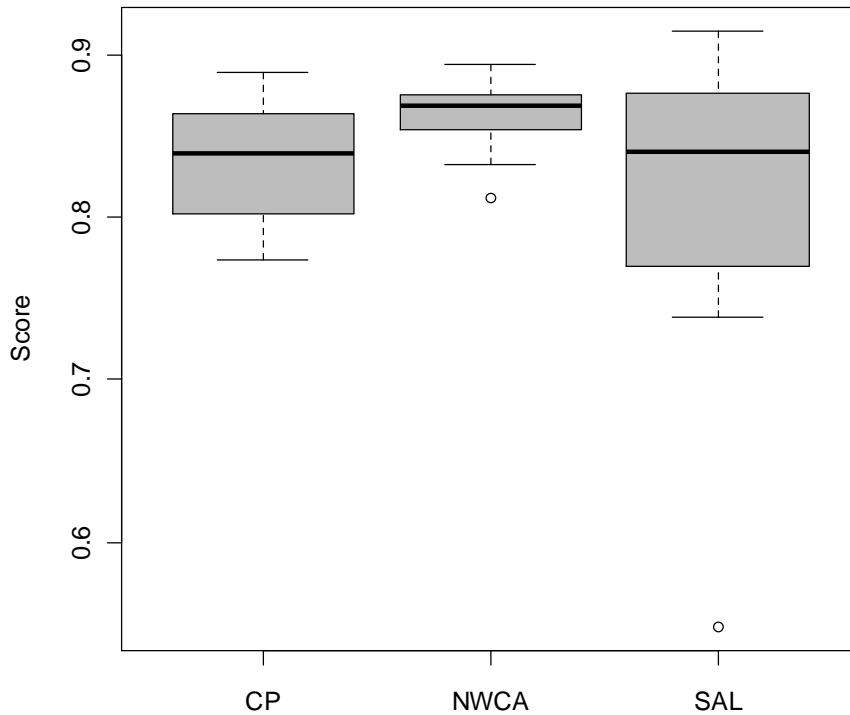
Preliminary Results

- Completed call surveys and chytrid swabs in three complexes
 - Eastern Saline Wetlands
 - Central Platte River Wetlands
 - Missouri River Wetlands
- Completed wetland assessments in two complexes
 - Eastern Saline Wetlands
 - Central Platte River Wetlands
 - Missouri River Wetlands flooded

Call Surveys



Rapid Assessment Method Scores



CP

$n = 10$; $\bar{X} = 0.83$

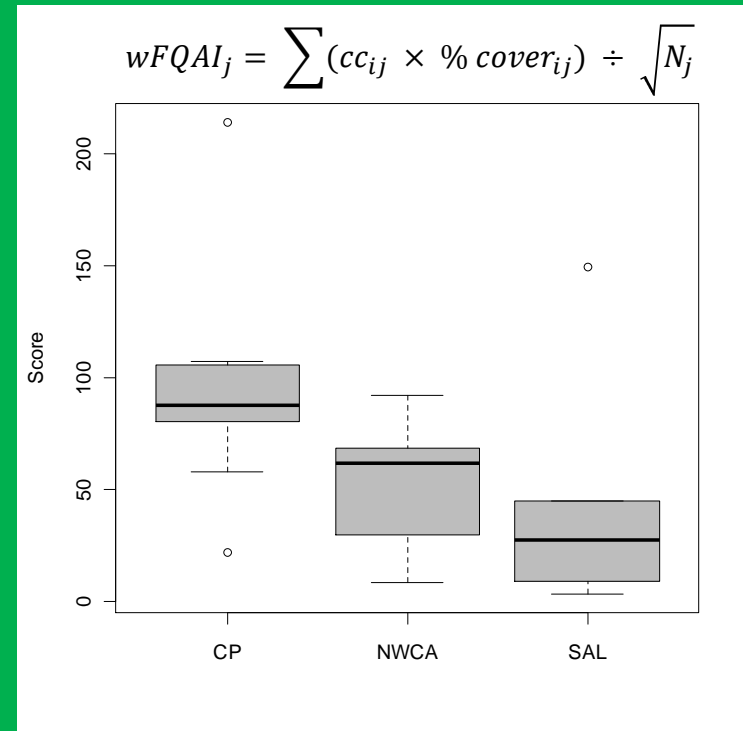
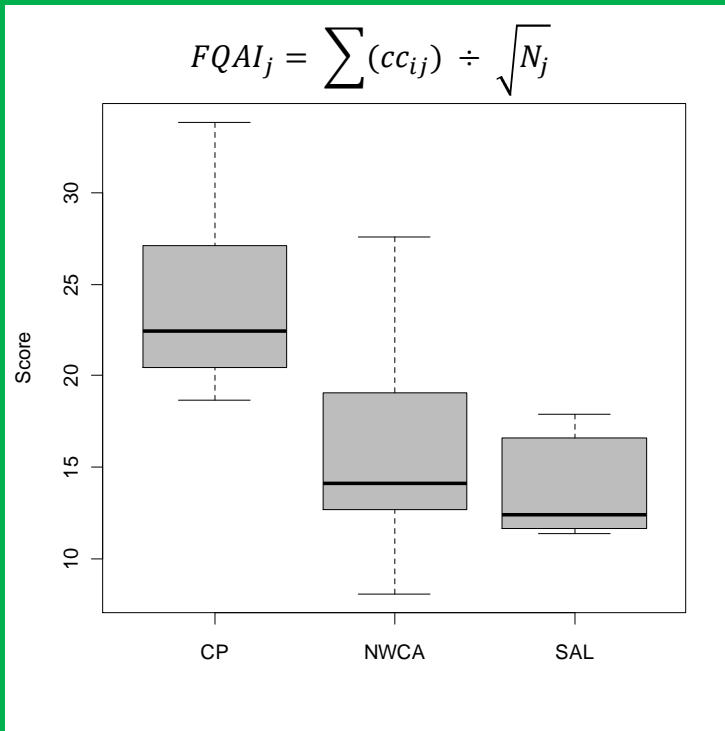
NWCA

$n = 12$; $\bar{X} = 0.86$

SAL

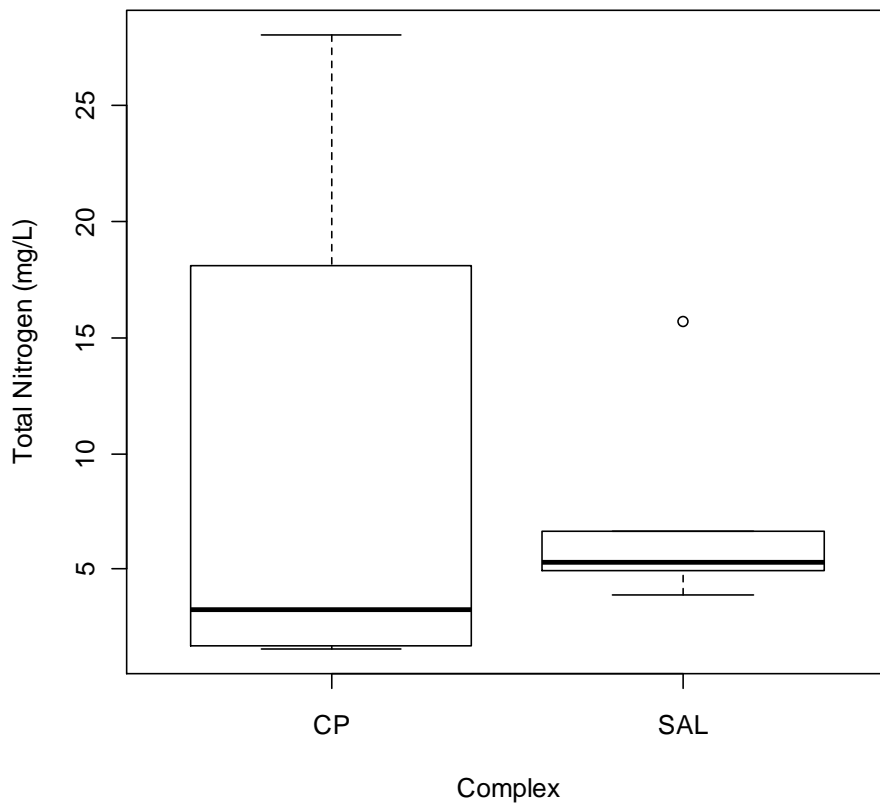
$n = 10$; $\bar{X} = 0.81$

Floristic Quality Assessment Methods



	CP	NWCA	SAL
n	10	12	6
Mean FQAI	24.28	16.3	13.71
Mean w/ FQAI	94.68	52.39	43.57
Diversity	43.4	28.17	19.67
# Invasive	8.3	6.5	3.83

Water Quality: Total Nitrogen



CP (n = 6)

\bar{X} = 9.33 mg/L

Range – 1.61 to
28.0

SAL (n = 5)

\bar{X} = 7.31 mg/L

Range – 3.92 to
15.7

State standard:
100 mg/L

Future Work

- 2012:
 - Sample five complexes: *Elkhorn Headwaters, Cherry Co. Wetlands, Central Table Playas, Rainwater Basin, Missouri River*
- 2013: Complete sampling in the 4 remaining complexes.

Acknowledgments

- Members of the core planning team
- Technicians:
 - Sarah Zink
 - Sarah Moy
 - Brent Dinkel
 - Joey Churilla
- Botanists:
 - Bob Steinauer
 - Alicia Admiraal
 - Tyler Janke



Funding:



Questions?



2011/07/07