Reference wetlands in three ecoregions of the central plains.

Central Plains Center for BioAssessment
Kansas Biological Survey

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Objectives

- Identify potential reference wetlands.
- Collect data to add to the Region 7 wetland database.
Reference condition

Quality

High

Historic

Attainable

Least Disturbed

Low

Disturbed

Ecoregion A

Ecoregion B

Attainable

Least Disturbed

Disturbed
Methods to identify wetlands

- Best professional judgment (BPJ).
- GIS screening of landuse/landcover.
Sites submitted as BPJ

- From the 3 large ER: CGP, CIP, WCB
- Lacustrine, at least 10 acres in area
- 11 sites submitted

That's a tough one.

I'm afraid that you may find the attachment short on numbers and short in detail.
Omernik level 3 ecoregions

Sites by BPJ
Sites chosen by GIS screening

- NWI shapefile for R7
  - > 1,727,417 sites
- >10 acres & lacustrine or non-woody palustrine
  - 21,683 sites
- Three large ecoregions of R7
  - 104 sites
- > 70% of buffer in reference condition (Don’s talk)
- > 60% of buffer on public land
  - 60 sites to evaluate for sampling
  - 30 were sampled
Gory GIS details - selecting wetlands

- Using ArcMap, lacustrine and non-woody palustrine wetlands were selected and subset from a seamless NWI data set.

- Of those lacustrine and non-woody palustrine wetlands, wetlands equal to or greater than 10 acres were selected and subset and saved to a separate file.

- A unique identifier was assigned to the subset of 21,863 wetlands.

- This file was converted from vector to raster data with a grid cell size of 30 m (the same grid cell size as the land use/land cover data set).
Gory GIS details – assigning reference values

- The National Land Cover Dataset (30 m spatial resolution) was recoded to two classes: natural land cover and non-natural land cover.
  - Natural: mixed, evergreen, & deciduous forest, open water, shrubland, grassland, pasture/hay, woody wetland, emergent herbaceous wetland.
  - Non-natural: all else

- Each wetland was buffered with 250 meters and the area of natural vegetation was calculated within the 250 m buffer (excluding the wetland).

- Result – a reference fraction classification of 0 - 1 for each wetland.
  - 0 = none of the buffer contained natural LULC
  - 1 = 100% of the buffer contained natural LULC

- An intersect tool in ArcMap was used to generate a list of public lands and area proportion that intersect within each wetland.
Sites by reference fraction

60 sites examined, 30 sampled
High reference fraction

Site 7146
Rathbun Lake, IA
ref frac = 0.98

Site 7155
Desoto NWR
ref frac = 0.92
Methods

- \textit{In situ}
  - pH, dissolve oxygen, turbidity, conductivity, salinity, air and water temp

- Composite water sample of 3 – 5 subsamples along the longitudinal transect
  - TN, TP, chla, pheoa
Results by reference fraction

Regression of reference fraction and nutrients or chla: $R^2 < 0.50$
Results by reference fraction

- WCB
- CGP
- CIP
Results by ecoregion
Results by ecoregion
Our next effort...