

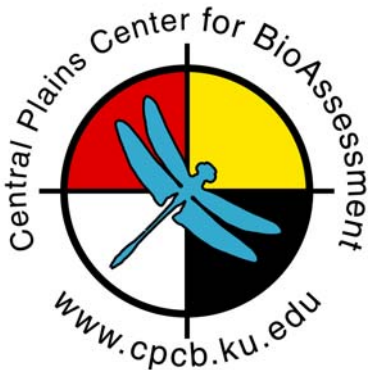
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# Reference wetlands in three ecoregions of the central plains.

## *Central Plains Center for BioAssessment*

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### *Kansas Biological Survey*



KBS Report 147  
Beury, Baker, and Huggins

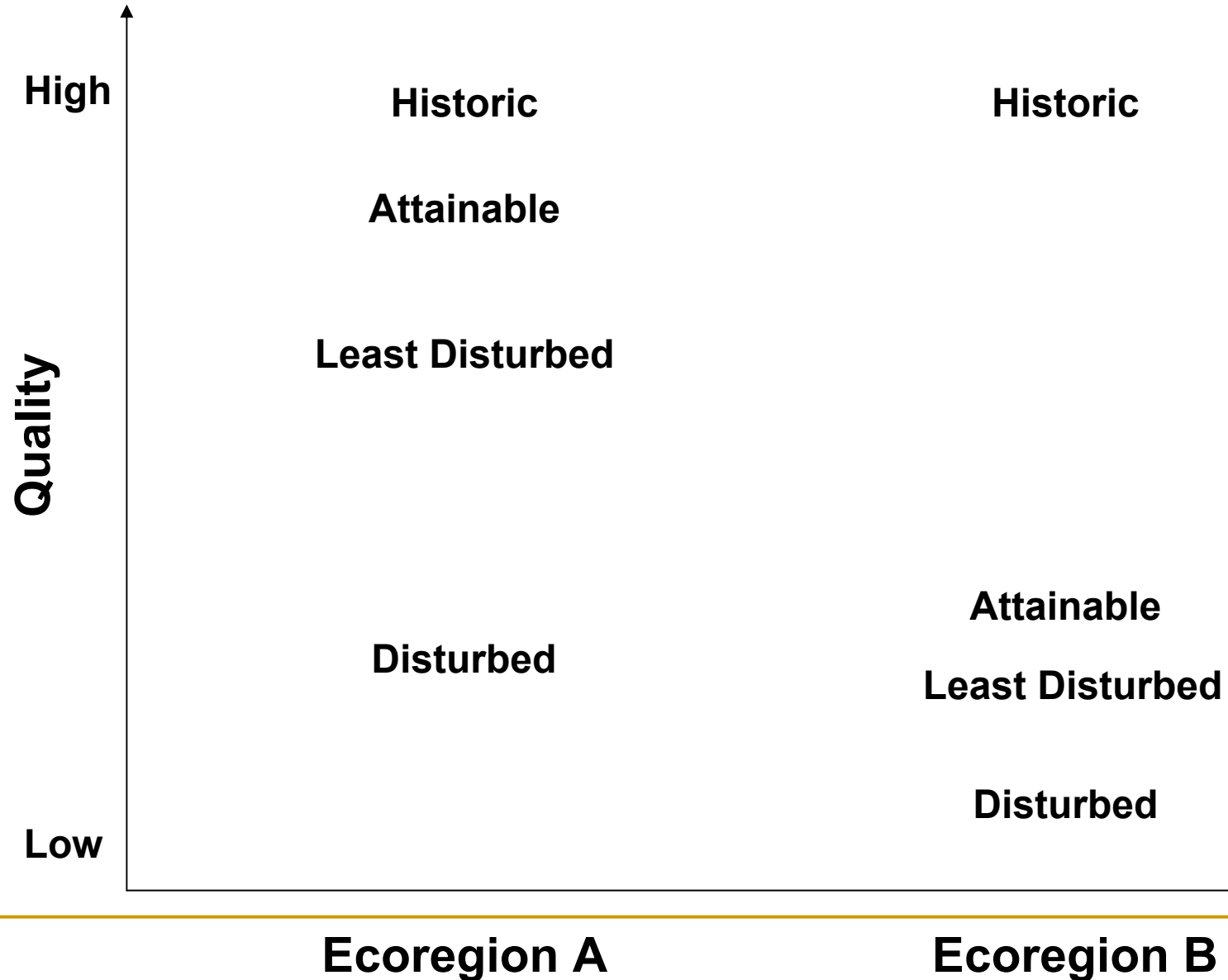
Nov. 2008 Denver  
EPA grant FED41930

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# Objectives

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



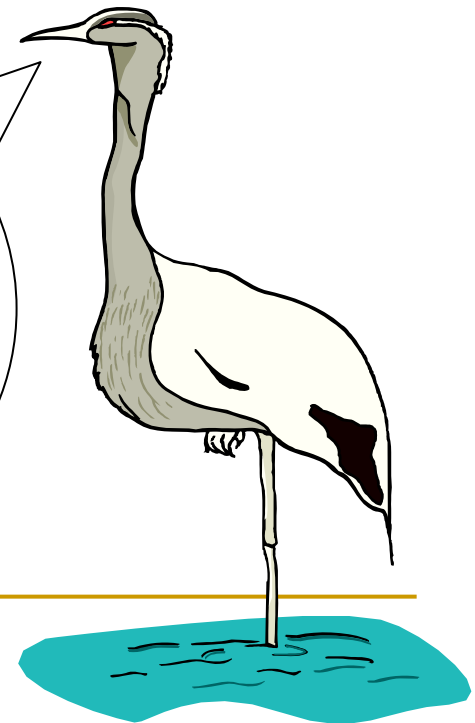
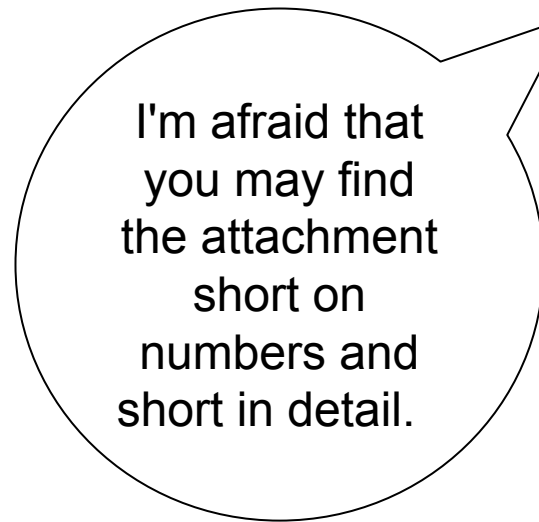
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# Methods to identify wetlands

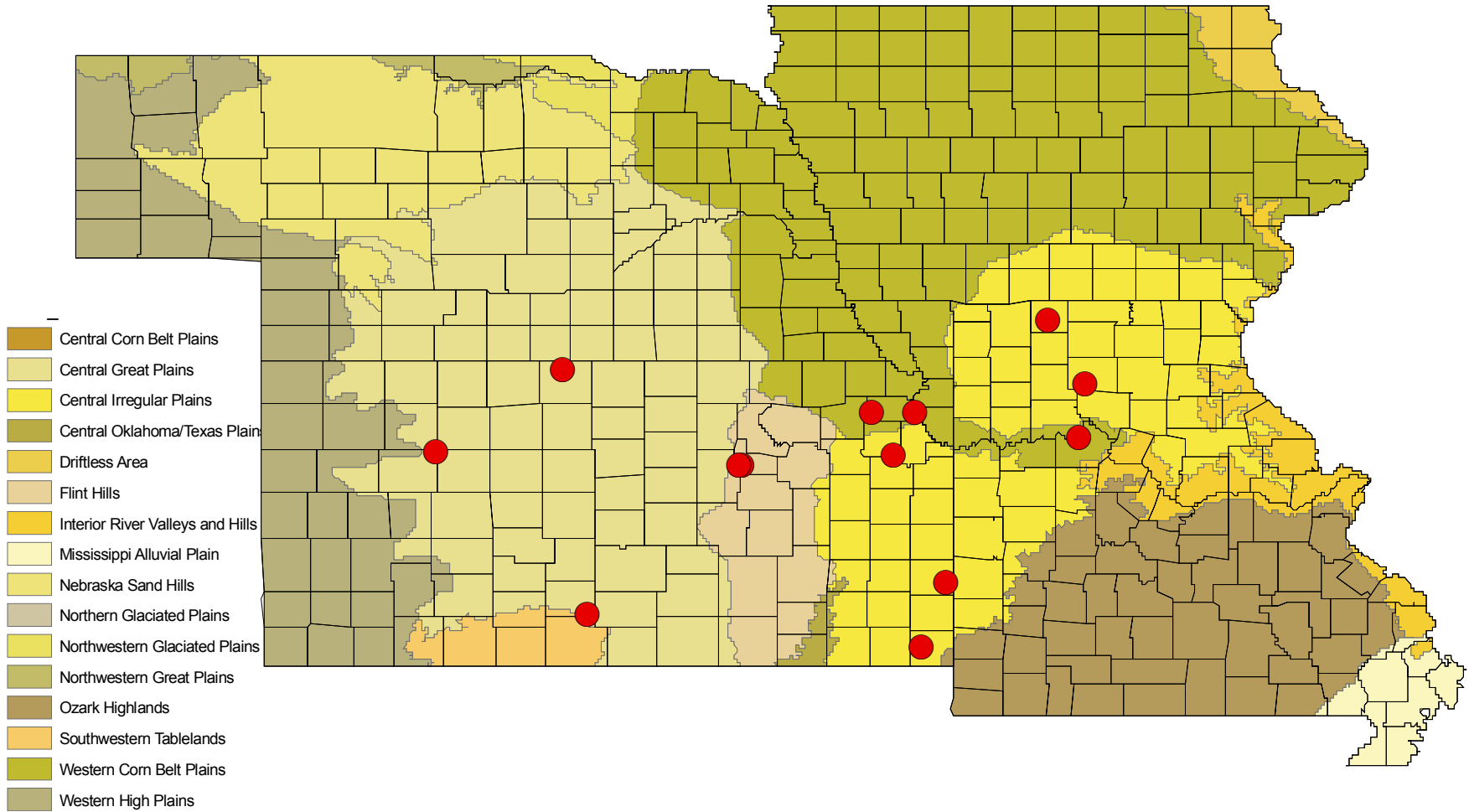
- Best professional judgment (BPJ).
  - GIS screening of landuse/landcover.
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# Sites submitted as BPJ

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



# Sites by BPJ



Omernik level 3 ecoregions

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# 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
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# 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).
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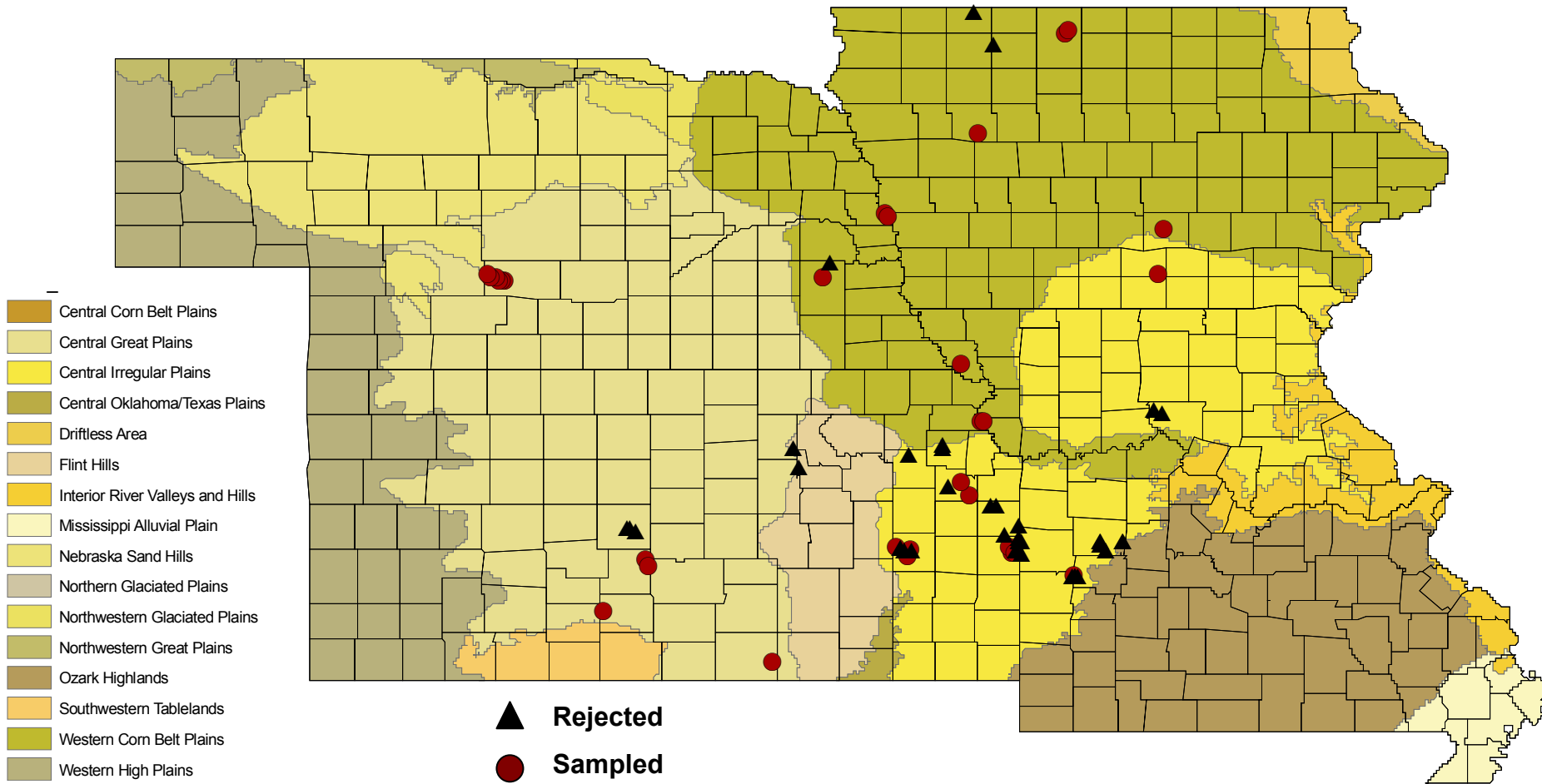
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# Gory GIS details – assigning reference values

- 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.
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# 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

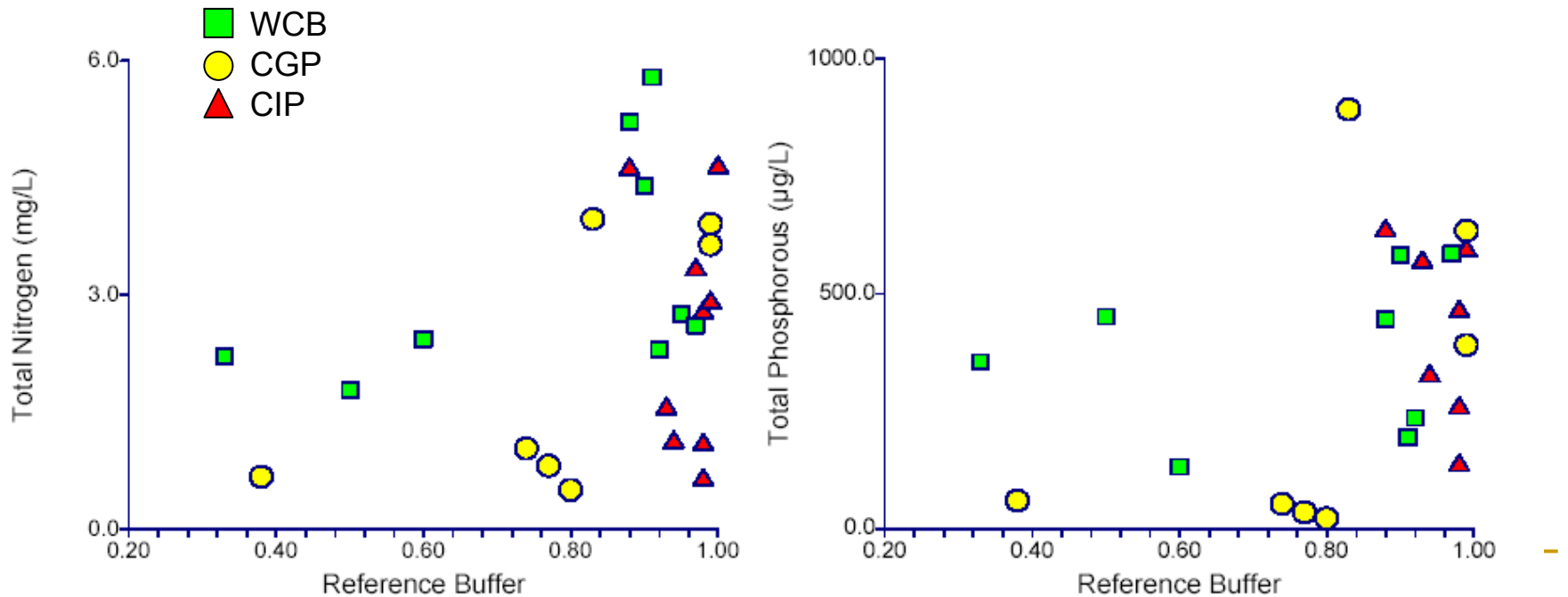
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# Methods

- *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, chl<sub>a</sub>, pheoa
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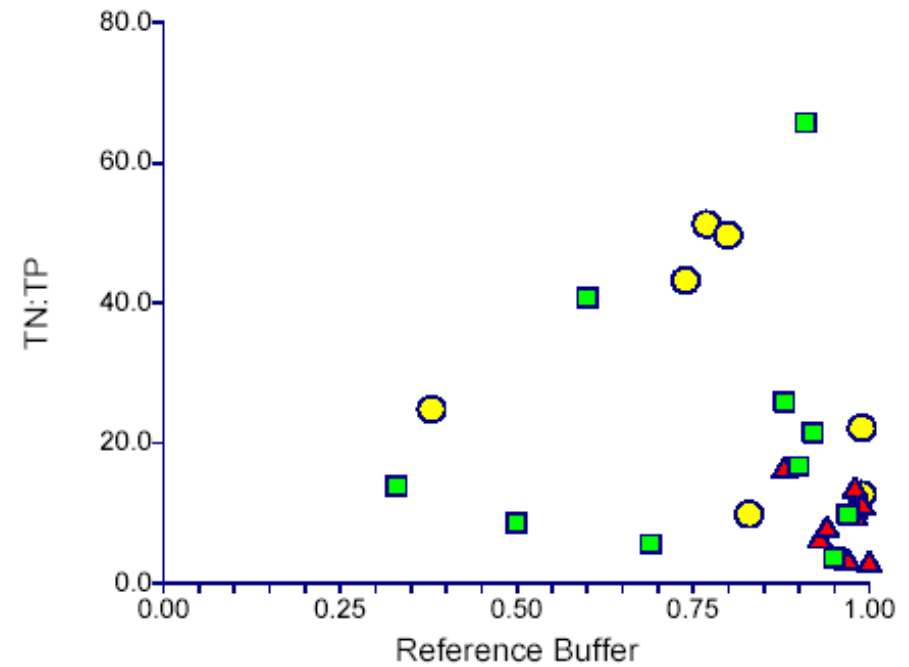
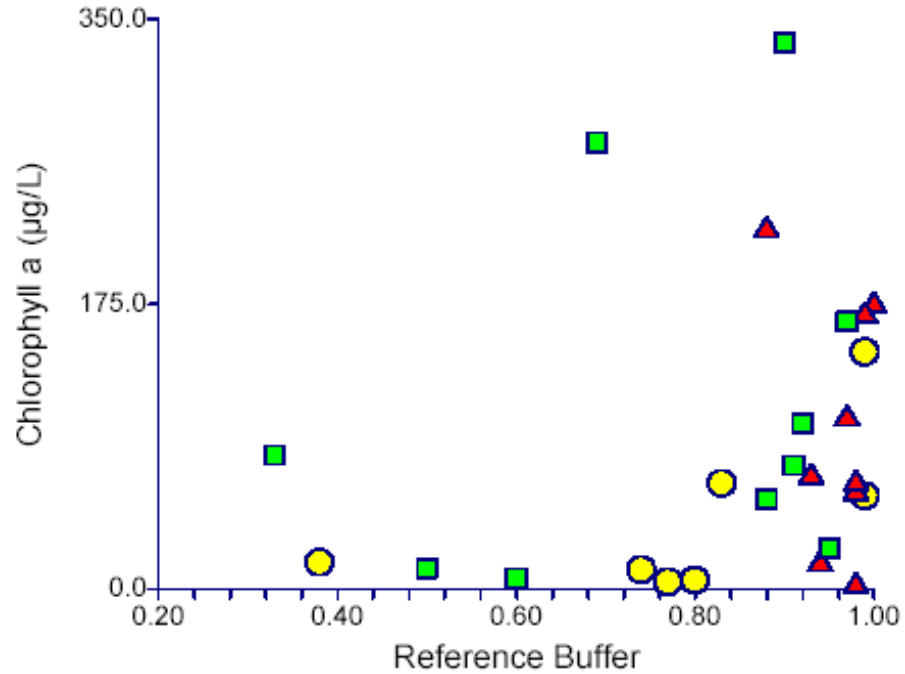
# Results by reference fraction

- Regression of reference fraction and nutrients or chl<sub>a</sub>:  $R^2 < 0.50$

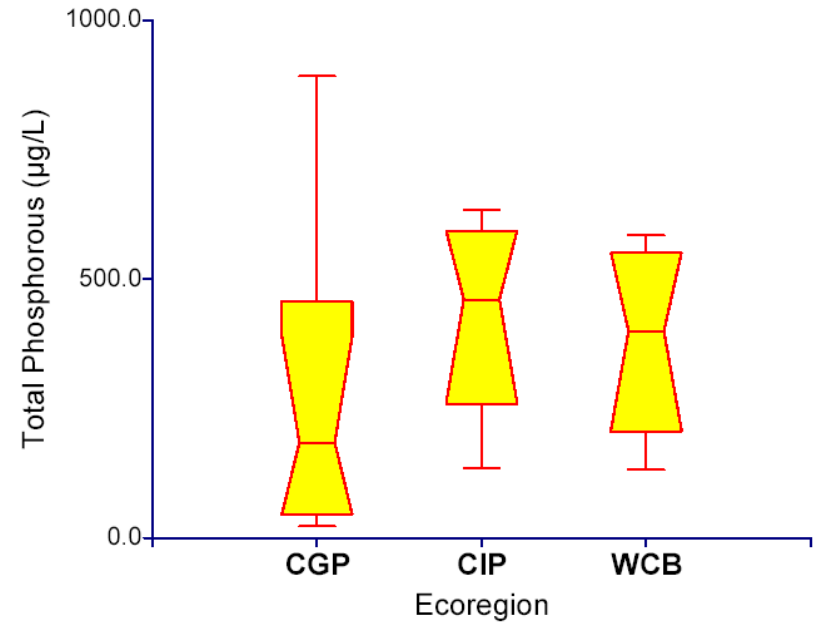
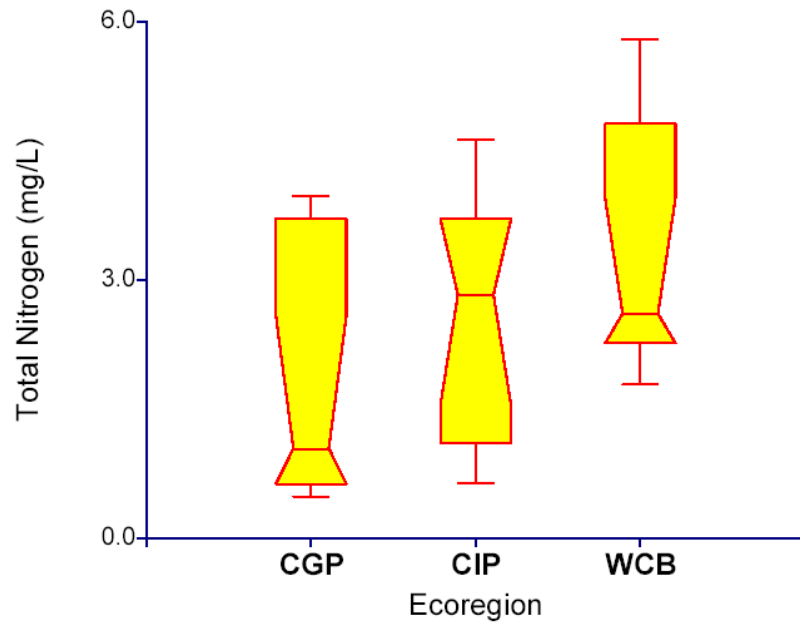


# Results by reference fraction

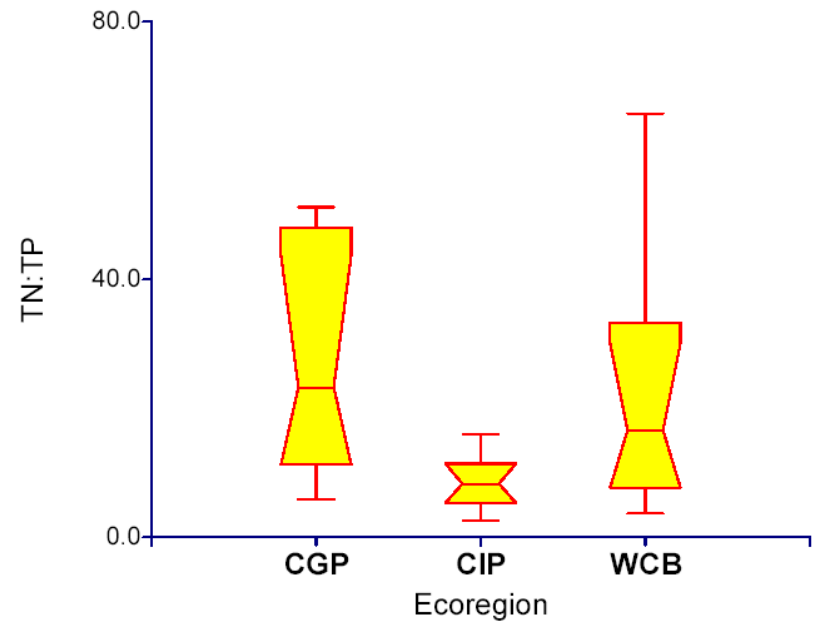
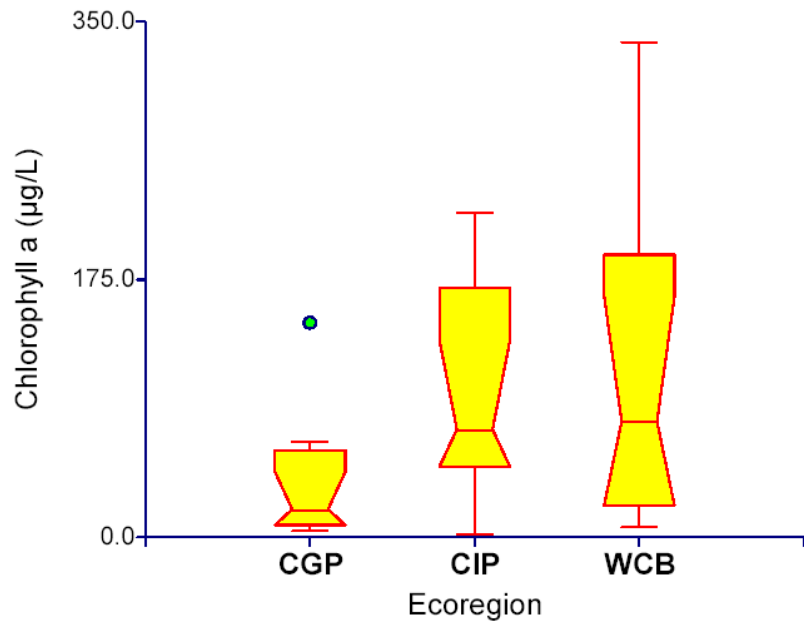
- WCB
- CGP
- ▲ CIP



# Results by ecoregion



# Results by ecoregion





# Our next effort...

