

Hydrogeomorphic Wetland Assessment of the Lowlands of Eastern Oklahoma

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Introduction to HGM

- HGM classification is a technique for assigning groups to wetlands that reflect system function.
- HGM classification can be used to reduce variation among systems which can better facilitate assessment of wetland condition.
- Focuses on geomorphic and hydrologic attributes rather than biotic characteristics.

Classification Components

- HGM includes functional classification based on three components:
 - Geomorphic setting,
 - Water source and its transport, and
 - Hydrodynamics.



HGM Classes

- There are seven national HGM Classes
 - RIVERINE
 - DEPRESSIONAL
 - SLOPE
 - MINERAL SOIL FLATS
 - ORGANIC SOIL FLATS
 - ESTUARINE FRINGE
 - LACUSTRINE FRINGE

RIVERINE

- Distinguished by water source primarily from river flooding or stream connections.



<http://www.na.fs.fed.us/ra/annualreport/fy06/annualrpt06.html>

DEPRESSIONAL

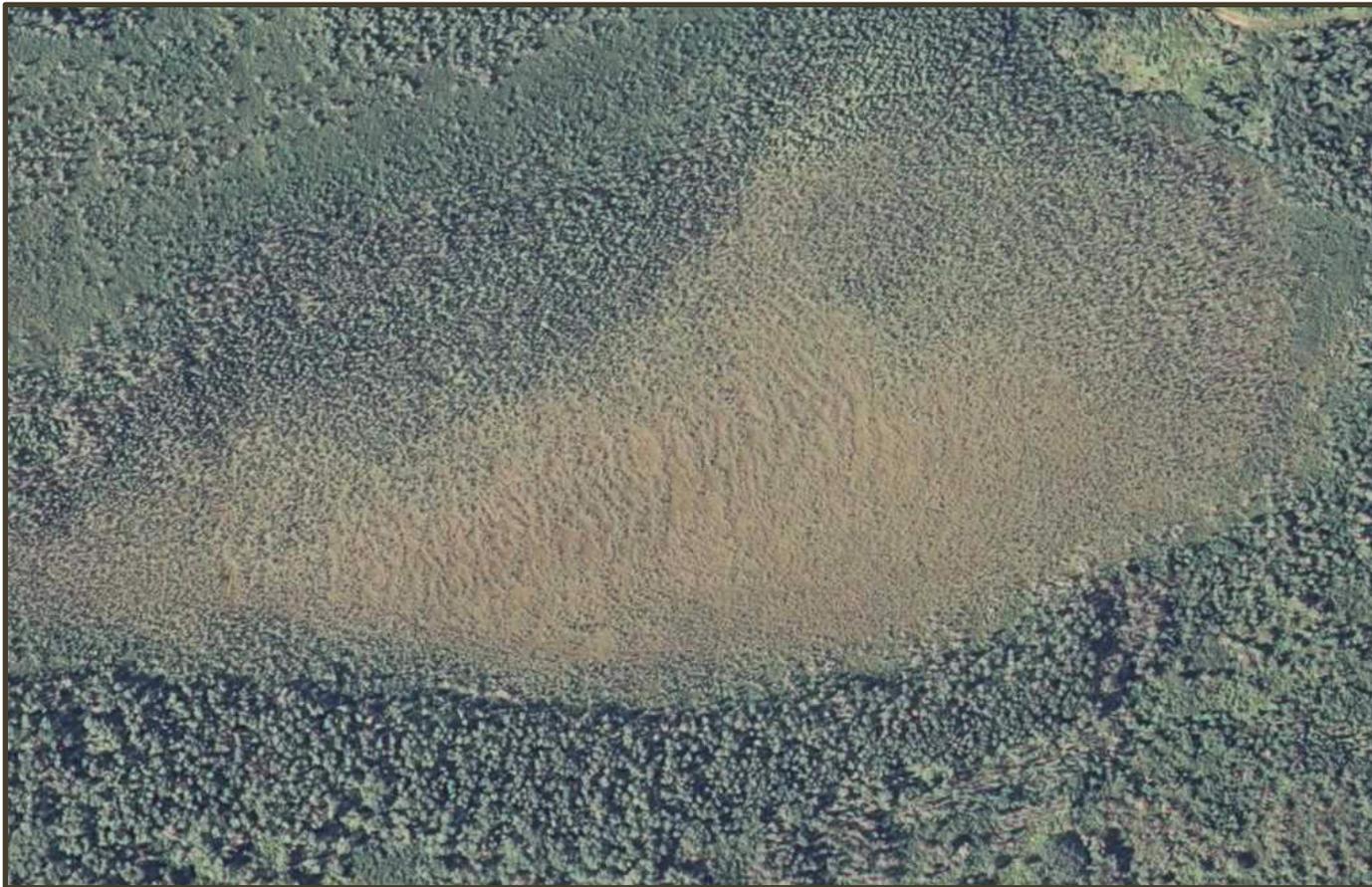
- Water draining from surrounding uplands. May or may not have inlet or outlets.



<http://www.usgcrp.gov/usgcrp/Library/ocp2007/OCP07-Fig-37.htm>

SLOPE

- Ground is sloped.
- Water source is often discharge of groundwater.



<http://www.mngeo.state.mn.us/chouse/northstarmapper.html>

MINERAL FLATS

- Relic lake bottoms or flood terraces.
- Water from precipitation (no groundwater)



<http://www.californiadesert.gov/resources.php?code=hdl>

ORGANIC SOIL FLATS

- Similar to MINERAL SOIL FLATS but filled or covered with peat or other organic material.



http://en.wikipedia.org/wiki/File:Black_Moshannon_Bog_June_panorama_2.jpg

ESTUARINE FRINGE

- Occurs along the coast.
- Commonly RIVERINE with tidal influence.



<http://www.lizasreef.com/HOPE%20FOR%20THE%20OCEANS/estuaries.htm>

LACUSTRINE FRINGE

- Occur along the margin of lakes.
- Water held up by lake table or overflow.



Further Classification

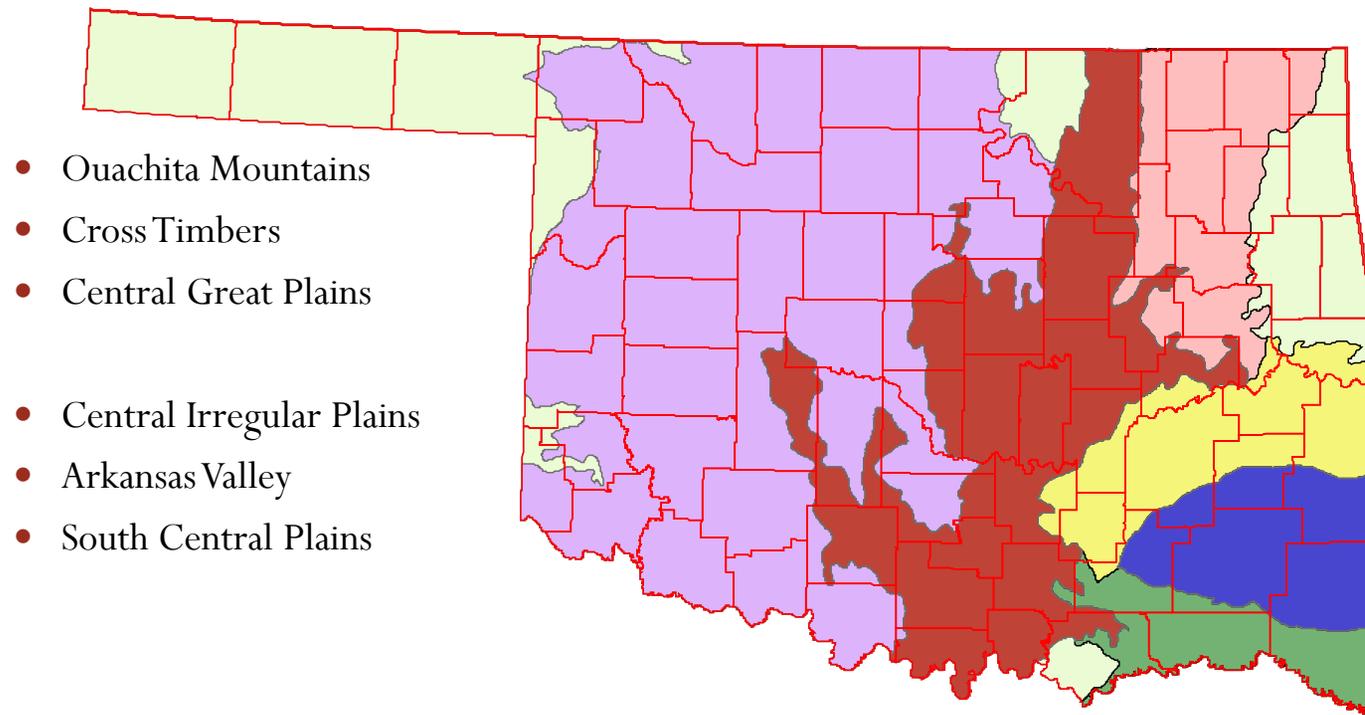
- Subclasses based on descriptive characteristics are created appropriate to the region, such as Riverine: Riparian
- Modifier used for further description can also be added, such as Riverine: Riparian scrub.

Objectives

- Create a list of potential wetlands for the study area.
- Conduct primary site evaluations.
- Categorize evaluated sites into Classes and Subclasses
- Select and revisit a subset of wetlands from each Class and Subclass to use as reference sites.
 - Collect water samples for water quality analysis
 - Assess stressors at reference sites
 - Create vegetation maps for sites
- Develop a working list of potential functional attributes that can be assessed in the dominant wetland class and subclass.

Study area

- Studied ecoregions in Oklahoma



Site selection

- Site selection was nonrandom to assure good coverage and accessibility
 - 867 sites selected with 825 owners

<u>Predicted classification</u>	<u>Permissions</u>	<u>Surveyed</u>
Depression	156	75
Lacustrine	16	7
Riverine	36	22
Slope	16	4

Subclasses

- Partition variability within classes
- Secondary characteristics of wetlands
- Define wetland types specific to the region



Riverine: Riparian

- Natural levee directly adjacent to river or stream



Riverine: In-channel

- Sand and gravel bars within river or stream



Riverine: Floodplain

- Flat, backwater area within floodplain.



Depressional: Open surface water Depression

- Basin with confining layer and with a water outlet



Depressional: Closed surface water Depression

- Closed contour basin with a confining layer



Depressional: Groundwater Depression

- Basin typically in inorganic soil where the water table is close to the surface



Depressional: Created Depression

- Human or animal altered depression or impoundment that exhibits wetland characteristics.



Lacustrine: Reservoir Fringe

- Wetlands on the fringe of lakes created by impounding high order, permanent rivers



Lacustrine: Pond Fringe

- Human impounded basins at least 2 meters deep.



Slope: Headwater Slope

- Sloping areas fed by groundwater



Next steps

- Analyze water samples collected from sites with open water for quality metrics.
- Select and revisit a subsample of past surveyed sites that will serve as reference sites, such that reference wetlands within each subclass constitute a gradient of condition from low quality to high quality wetlands.
- Develop vegetation maps for each site to facilitate assessing condition and function of each wetland.
- Evaluate stressors at reference sites to further assess condition and potential function at each reference site.

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Questions?

