Validation of a Rapid Assessment Method for Determining the Condition of Floodplain Wetlands in Oklahoma

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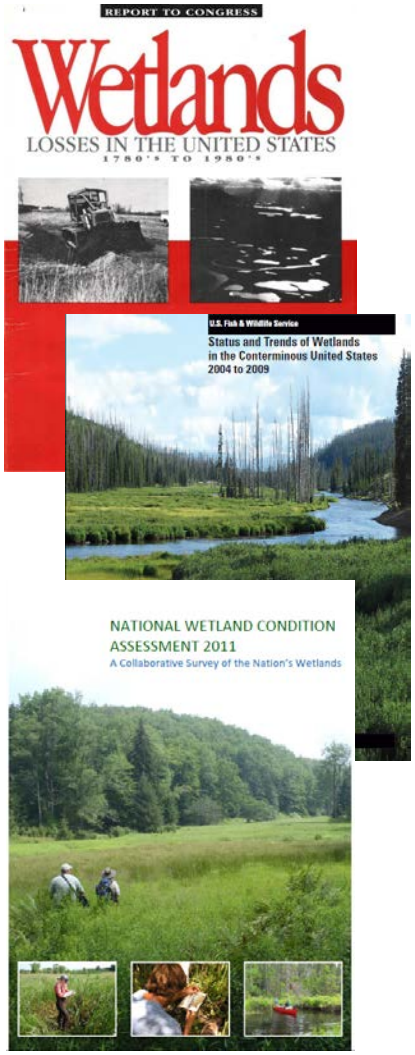
Background



- An estimated 67% of Oklahoma's wetlands were lost between the 1780s and the 1980s
- More than 185,000 acres lost in US between 2004 and 2009
- 55% of wetlands in the Interior Plains (of which Oklahoma is a part) were in fair or poor condition as of 2011

Wetlands provide important services

Habitat

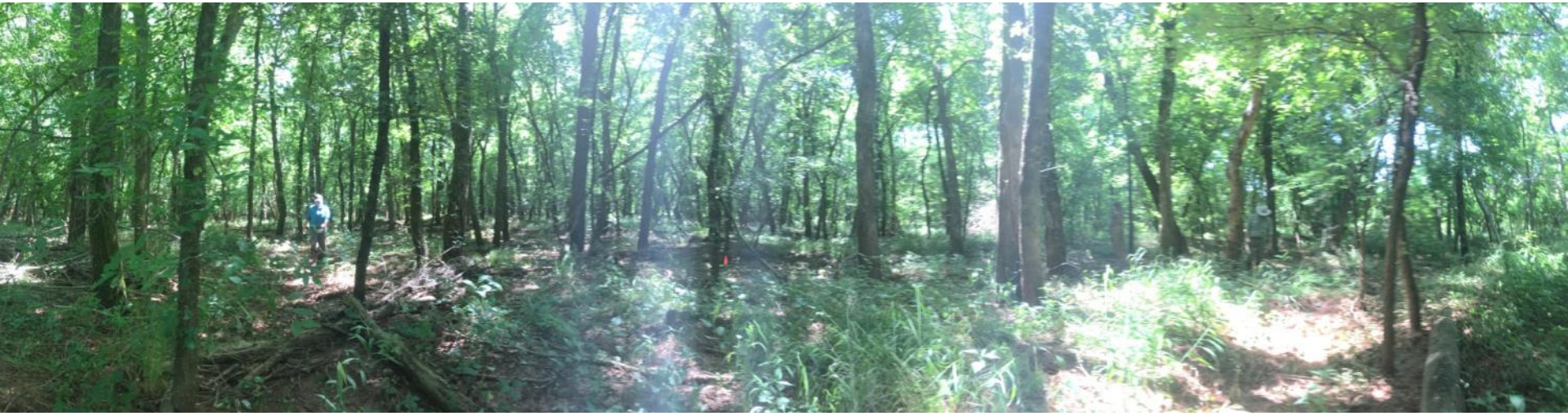
Flood mitigation

Filtration

Aquifer recharge

Degradation reduces a wetlands ability to provide services

Monitoring and Assessment



- No formal monitoring and assessment in Oklahoma
- Wetland Program Plan developed in 2013
- OKRAM
- Floodplain Wetlands

Floodplain Wetlands



OKRAM

Stressor based assessment method

Hydrology –
Hydroperiod,
Water Source,
Hydrologic Connectivity

Water Quality –
Nutrients, Sediments,
Contaminants,

Buffer Filter

Biota –
Vegetation,
Habitat Connectivity

Objectives

- Calibrate OKRAM for floodplain wetlands
  - 30 sites on two river channels
  - Landscape scale GIS data
  - intensive vegetation and soil survey
- Validate OKRAM
  - statewide
  - 50-60 sites
  - intensive vegetation and soil survey

Study Area

Deep Fork of the Canadian River and the
North Canadian River

Study Area

North Canadian River

Deep Fork of the Canadian River

Calibration

- Use a landscape development intensity index (LDI) to assign a rough condition score to each watershed within the two river systems
- Choose wetlands from each end of the condition spectrum
- Determine if the OKRAM is sufficiently capturing the difference between conditional extremes
- Conduct intensive biotic survey and compare to RAM scores

Landscape Development Intensity Index

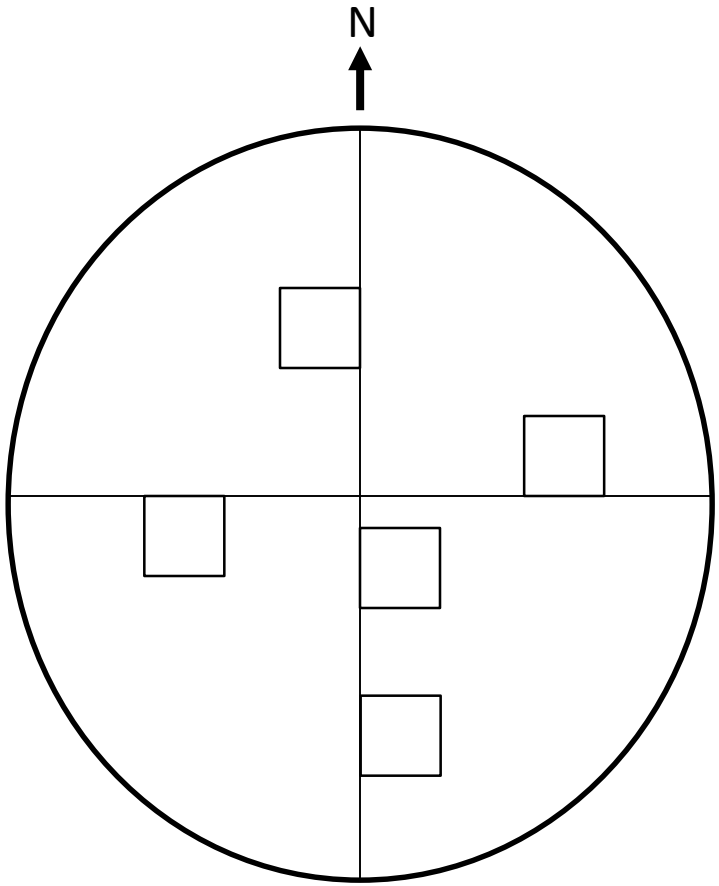
Land Cover Type	Coef
Sandy Prairie/Pasture	0.4
Urban – High Intensity	0.0
Pasture/Prairie	0.8
Eastern Redcedar Woodland and Shrubland	0.4
Bottomland Hardwood Forest	1.0
Open Water	1.0

LDIs are developed by assigning coefficient values to land-cover types and calculating a condition score based on the percentage of each type in the assessed area.

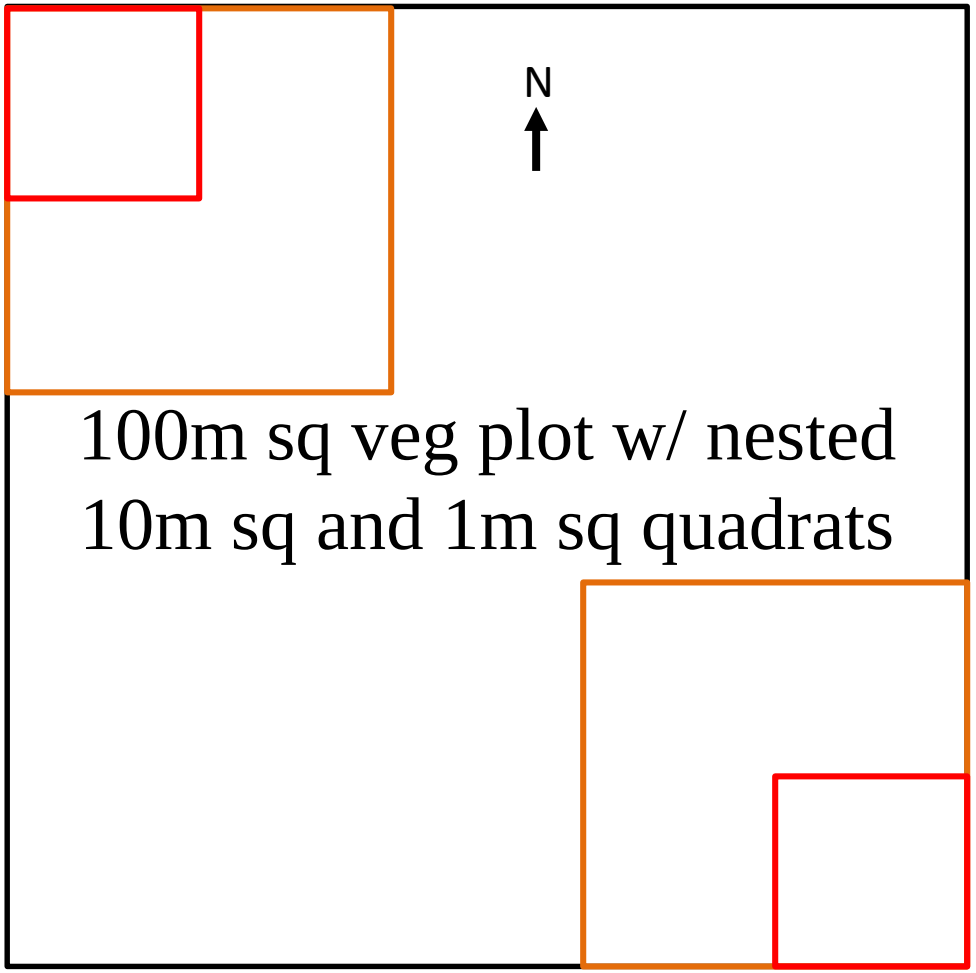
Intensive biotic survey

- Intensive site assessment consisting of vegetation and soil sampling
- NWCA vegetation protocol
- Soil analysis for organic matter, nutrients, and texture

NWCA vegetation protocol



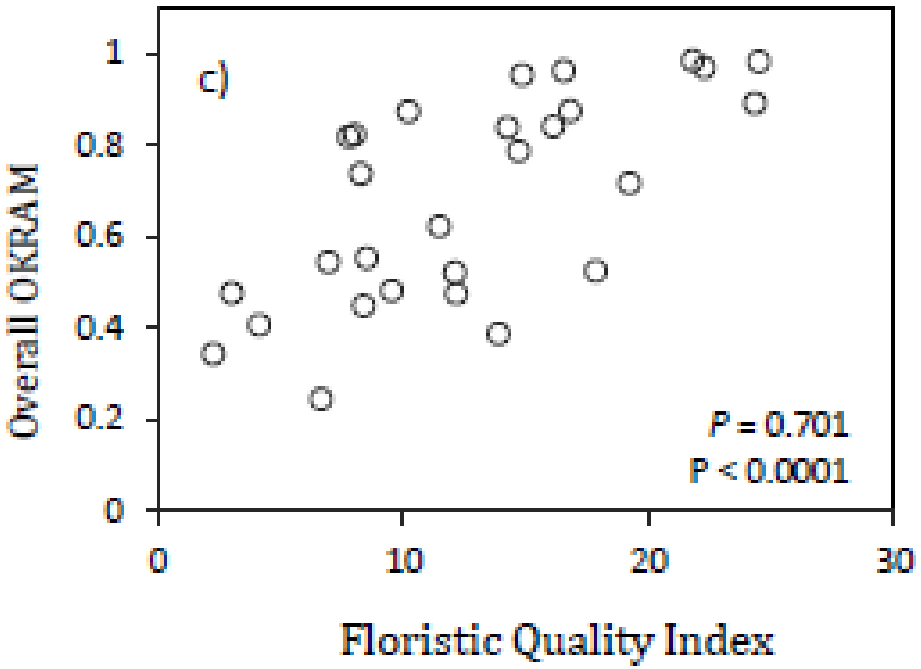
Standard 0.5ha AA boundary with veg plots

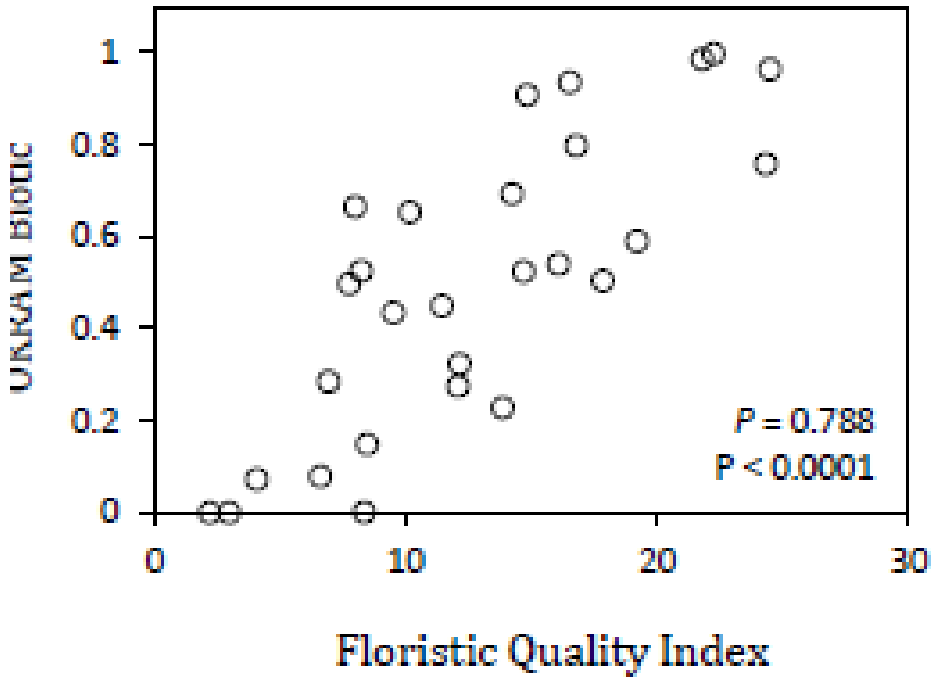


100m sq veg plot w/ nested 10m sq and 1m sq quadrats

NWCA vegetation protocol

Relationship between OKRAM and biotic assessment scores





Example from OKRAM validation in depressional wetlands

Future Steps

Expected results

- Some metrics will need to be altered or removed to accurately reflect a wetlands condition score

Future Steps

Expected results

- LDI, OKRAM, and vegetation scores for each wetland should compare in severity

Future Steps

- Validation of OKRAM on 50 to 60 floodplain wetlands statewide.
- Assessments independently carried out by at least two technicians to verify repeatability

Acknowledgements

Bollenbach Endowed Chair in Wildlife Management

Technicians:
J.D. McCoy
Will Hurney

OSU Department of Natural Resource Ecology & Management

Funded by USEPA 104(b)(3) Wetlands Development Grant


Questions?