The National Wetland Condition Assessment in North Dakota: Preliminary Results

Shawn DeKeyser¹, Lindsey Meyers², Jack Norland¹, Christina Hargiss¹, Tom DeSutter¹, Mike Ell³

¹North Dakota State University, ²URS Corporation, ³North Dakota Department of Health
National Wetland Condition Assessment (NWCA)

• First nationwide wetland assessment
• Nationally consistent methods
• Document current wetland conditions
• Summer of 2011
• 11 sites
• 2 reference sites
NWCA

- Collected data on:
  - Wetland type
  - Buffer
  - Hydrology
  - Plants & trees
  - Water quality
  - Algae
  - Soils
  - U.S. Rapid Assessment Method (USRAM)
USRAM

• National rapid assessment
• Performed as part of NWCA
• Assessment based on buffer, topographic and patch complexity, plants, water quality, hydrology, and soils
North Dakota Intensification

• Additional 42 sites

• Four regional assessment methods:
  – Landscape Wetland Condition Analysis Model (LWCAM)
  – Index of Plant Community Integrity (IPCI)
  – North Dakota Rapid Assessment Method (NDRAM)
  – Hydrogeoemorphic Model (HGM Model)
Site Locations
Landscape Wetland Condition Analysis Model (LWCAM)

- Uses satellite data to classify and map land cover
- Landscape spatial metrics calculated to assign condition categories
Index of Plant Community Integrity (IPCI)

- Wetlands assigned to temporary, seasonal, or semi-permanent based on Stewart and Kantrud’s 1971 classification
- Intense vegetative assessment using quadrats
- Condition metrics calculated based on plant community
North Dakota Rapid Assessment Method (NDRAM)

- Used to rapidly assess wetlands
- Metrics calculated based on buffer, soils, plants, hydrology, land use, and overall condition
Hydrogeomorphic Model (HGM Model)

• Functional assessment
• Analyzes plants, soils, land use, and hydrogeomorphic and landscape characteristics
LWCAM Results

- Poor: 30.9%
- Intermediate poor: 10.9%
- Intermediate good: 43.6%
- Good: 14.5%
IPCI Results

Temporary Wetlands
- 50% Good
- 25% Fair
- 25% Poor

n = 4

Seasonal Wetlands
- 17.4% Poor
- 17.4% Very poor
- 43.5% Good
- 13.0% Fair
- 8.7% Very good

n = 23

Semi-permanent Wetlands
- 42.8% Poor
- 28.5% Fair
- 28.5% Good

n = 28
## HGM Model Results

<table>
<thead>
<tr>
<th>Functional Capacity Index</th>
<th>Mean</th>
<th>Standard Error</th>
<th>Minimum</th>
<th>Maximum</th>
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</thead>
<tbody>
<tr>
<td>Water Storage</td>
<td>0.90</td>
<td>0.01</td>
<td>0.48</td>
<td>1.00</td>
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<tr>
<td>Groundwater Recharge</td>
<td>0.79</td>
<td>0.01</td>
<td>0.43</td>
<td>0.97</td>
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<tr>
<td>Retain Particulates</td>
<td>0.85</td>
<td>0.02</td>
<td>0.36</td>
<td>1.00</td>
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<tr>
<td>Remove, Convert, and Sequester Dissolved Substances</td>
<td>0.85</td>
<td>0.02</td>
<td>0.41</td>
<td>0.99</td>
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<tr>
<td>Plant Community Resilience and Carbon Cycling</td>
<td>0.86</td>
<td>0.02</td>
<td>0.41</td>
<td>1.00</td>
</tr>
<tr>
<td>Provide Faunal Habitat</td>
<td>0.85</td>
<td>0.02</td>
<td>0.39</td>
<td>1.00</td>
</tr>
<tr>
<td>Provide Faunal Habitat (Alternate Formula)</td>
<td>0.84</td>
<td>0.01</td>
<td>0.39</td>
<td>0.96</td>
</tr>
</tbody>
</table>
Conclusions

• NWCA condition scores not developed yet
• USRAM indicated majority of stressors in buffer – most due to agricultural practices
• Range of conditions in wetlands across the state
Thank You!

Any Questions?
IPCI Comparison

Seasonal Wetlands (Hargiss 2008)