

NWCA Data and Applying Quantifiable Performance Standards to Mitigation Wetlands

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National Wetland Condition Assessment (NWCA)

- Part of National Aquatic Resource Studies (NARS)
- 2011 – First time wetlands included
- 1258 wetlands monitored across the lower 48 states
- NWCA objectives
 - National report on the ecological condition of wetlands
 - Assist state and tribal wetland programs in monitoring and assessment – policy development/decision making
 - Advance wetland science monitoring and assessment to aid management needs

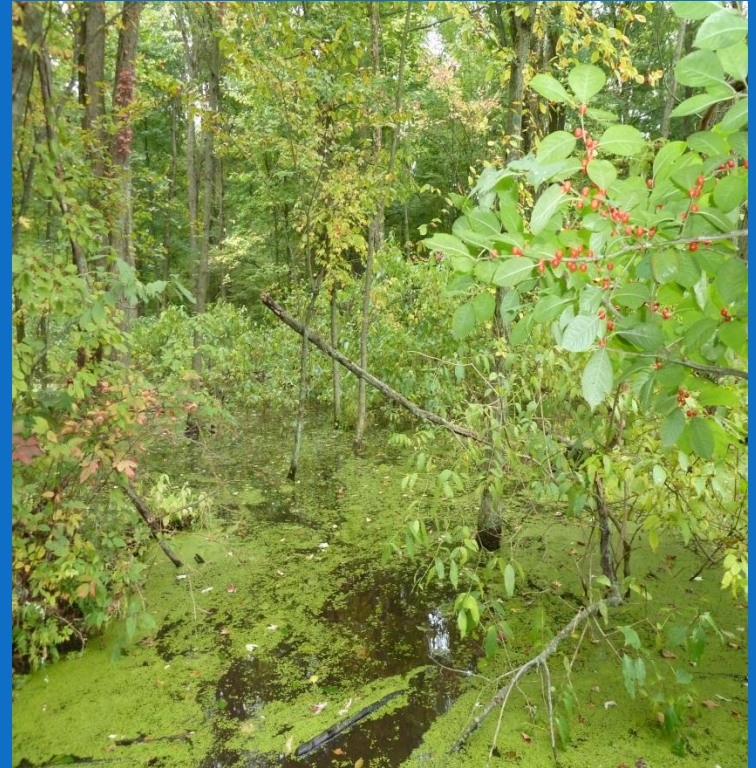
Overview

NWCA: Detailed data from 1258 wetlands across US

- Biological Condition-Vascular Plants and Algae
- Stressors – Buffer Plots, Water Chemistry, Soil Chemistry, Soil Analysis, USA RAM, others

Great Lakes Basin Evaluation of Compensatory Sites:

- 60 Randomly Selected Wetlands
 - 30 Wetland Mitigation Bank
 - 30 Permittee Responsible



Overview

Report on:
GLBECS Wetland Mitigation
Performance

Using NWCA Data to develop
quantitative measures of:

- Wetland Ecological Condition
- Wetland Mitigation Performance



Purpose of GLBECS Study



- Assess the regulatory and ecological outcomes of two compensatory mitigation mechanisms
 - Mitigation Bank (MB)
 - Permittee-Responsible Mitigation (PR)
- Collect data concurrently using the NWCA methods
- Allow for basin-wide and national comparisons

Site Selection

- 60 Randomly Selected Sites (30 MB and 30 PRM); Two re-visit sites
- Lake Erie watershed of Ohio
- Data available on 19 MBs and hundreds of PRM sites in study area



GLBECS Data Collection and Analysis

Used NWCA Protocols

- Soil Protocols Modified
- Vascular Plant Data
 - Used for VIBI Scores (Mack 2007)
 - Ecological Condition Determination-Poor, Fair, Good or Excellent



Ecological Condition Performance Standard

Success Criteria–Mitigation wetlands of GOOD or better ecological condition

- Wetlands of sufficient ecological integrity to adequately compensate for losses
- Wetlands that demonstrate high environmental resilience
- Meets Ohio's Wetland Water Quality Rules standard



GLBECS Results -Ecological Condition - VIBI Scores

- MBs – OVERALL 30%
SUCCESS RATE (30 sites)
 - 27% - POOR (8 sites)
 - 43% - FAIR (13 sites)
 - 17% - GOOD (5 sites)
 - 13% - EXCELLENT (4 sites)
- PRMs – OVERALL 13%
SUCCESS RATE (30 sites)
 - 30%- POOR (9 sites)
 - 57%- FAIR (17 sites)
 - 13% - GOOD (4 sites)

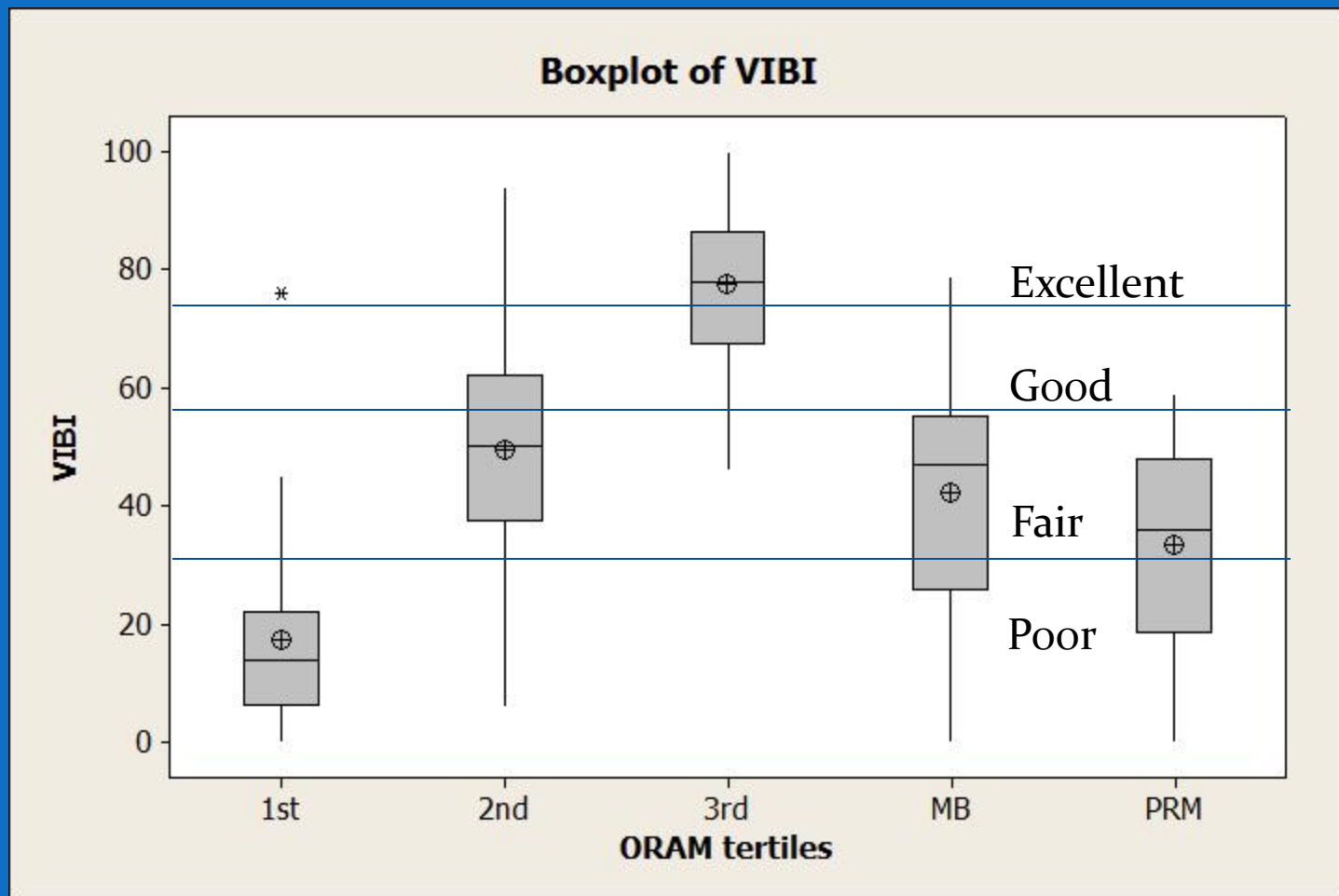


VIBI Results for GLBECS Study vs. Ohio Reference Wetlands Data



- 154 natural Ohio reference wetlands
- Used to develop the VIBI
- Span the range of disturbance from least impacted to severely impaired

Comparisons to Natural Ohio Reference Wetlands



Mitigation Bank Results

- Overall increase in MB success rate
 - 9.7% in the 2003-2004 Ohio study
 - 30% for GLBECS MBs
- May be a result of quantifiable ecological performance standards linked to credit releases – started in 2003

Responsibility on the banker for non-performance

Importance of site selection, restoration design, implementation and adaptive management



Permittee-Responsible Mitigation Results

- A slight decrease in success rate from earlier study:
 - 19.2% in 2007 Ohio study
 - 13% in GLBECS PRMs
- 87% failure rate
- Need to implement and enforce the provisions for financial assurances in the 2008 Federal Mitigation Rule



Reasons for Failure

Nebulous Goals – No quantifiable success criteria

Poor Site Selection

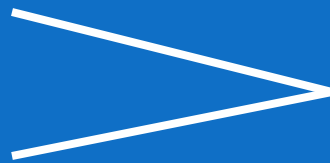
- Topography
- Hydrology, Soils
- Surrounding Land Uses

Site Disturbance – Especially to soil horizons

Excavation

Impoundment

Large Berms



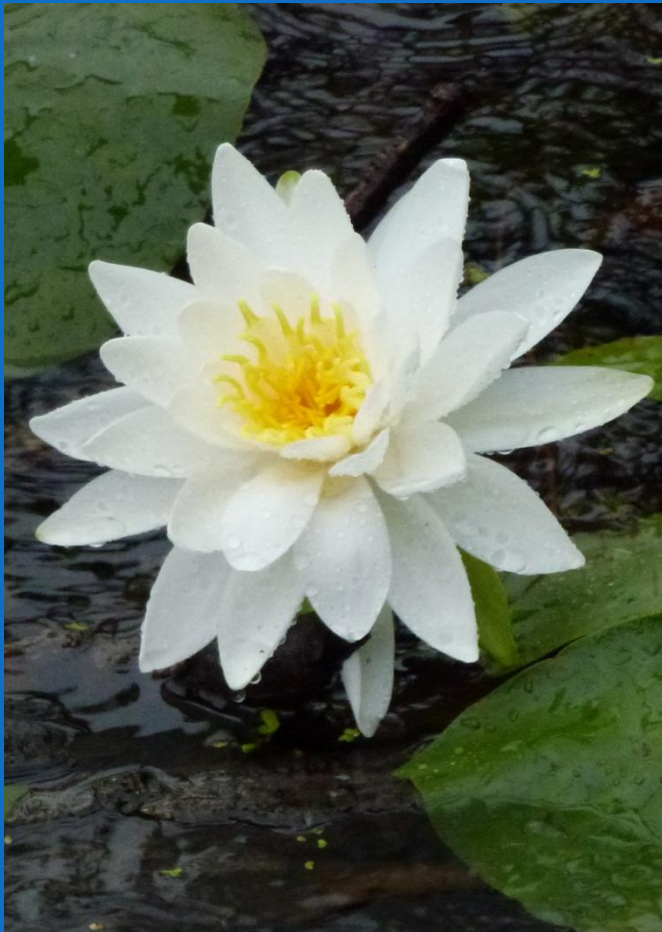
Ponds

Ponds Instead of Wetlands



- Maximizing footprint of wetland acreage/credits
- Deep unvegetated water zones
- Static water levels – no seasonal water fluctuations or dry downs
- Enhancements that were not improvements

NWCA Vegetation Data



- Used to attain VIBI scores
- Great potential for development of similar Level 3 tools across a broad geographic context – MMIs, IBIs
- Can serve as measures of ambient wetland condition and quantitative performance standards for wetlands

Conclusions – Successful Mitigation

- Select appropriate HGM settings
- Design to replicate reference wetlands
- Use low disturbance designs
- Select or provide adequate buffers
- Incorporate natural hydrographs



Conclusions – Successful Mitigation

- Keep soil profiles intact
- Seed and plant natives at high densities
- Start adaptive management immediately
- Use Level 3 tools – set goals and monitor
- Goals – “good” ecological condition or better



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Thank You!

