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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