



Measuring Mitigation:

A Review of the Science for Compensatory Mitigation Performance Standards

Mitigation Stakeholders Forum
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Performance Standards

- ◆ Review ELI study goals and objectives
- ◆ Review ELI findings
- ◆ Metrics



ELI study



- Looked only at peer reviewed literature of biological indicators that could help create performance standards.
- Made distinction between design and performance standards.



Goal of study:



1. To capture the status of the peer reviewed literature on selected biological indicators, abiotic factors, functional assessments and developmental trajectories as they relate to performance standards for wetland mitigation.
2. To provide background research to help the federal agencies develop performance standards and monitoring guidance by 2005.



Reports calling for Mitigation Standards:

- 2001 National Academy of Sciences Report
“clearly specified performance standards be adopted to enhance mitigation effectiveness”.
- 2001 GAO Report
 - Success of in lieu fee mitigation was impossible to assess because data were not collected and no standards were set.



Performance Standards:

“Observable or measurable attributes or outcomes of a compensatory mitigation project that help determine whether the project meets its objectives.”

- Streever 1999, NAS 2001



Performance Standards:

- Developed from mitigation goals and objectives
- Give a clear set of standards to identify the extent to which mitigation is functioning as replacement for lost functions and values.



Challenge:

- Develop and implement scientifically based performance standards that will work within a regulatory structure.
- Standards need to be clear, measurable, and pertain to the desired ecological function of the replacement wetland.



Observations

- Science of wetland restoration is still relatively young.
- Literature is dominated by studies of sites less than 10 years old.
- 1990 MOA was 1st call for mitigation requirements.



General Findings:



- Short monitoring periods – 2 to 5 years
- Baseline information – importance / deficiency in
- Landscape level perspective for monitoring and assessment.
- Need to enhance standardization in data collection and access, language and definitions and sampling protocols.
- Limited transferability of standards among different regions and wetland types.



General Conclusions:



- Report suggests that performance standards can be developed and implemented.
- Multiple parameters necessary to accentuate strengths while minimizing weaknesses of the various metrics.

Metrics Reviewed: Biotic Parameters



**Amphibians, Fish, Invertebrates,
Birds, Algae, Mammals, Vegetation**

Abiotic Parameters

Hydrology,
Soil,
Sediment,
Substrate,
Nutrients



Dark parent material catina. Left is non-hydric, middle-left is about on the line, right two are hydric. Site is Sakonnet Vineyards in RI (8/23/00)

Landscape Level Parameters

- HGM,
- Developmental Trajectories





Summary of Findings:

- Biotic Parameters
 - Showed promise – but problems using as sole parameter.
- Abiotic Parameters
 - Showed promise – but require long monitoring times.
- Landscape Level Parameters
 - HGM reference sites – difficult and time consuming and may not always translate into replacement functions.
 - Trajectories – few available and difficult to establish