

# Regulatory Compliance and Ecological Performance of Mitigation Wetlands in an Agricultural Landscape

Terry VanDeWalle  
Natural Resources Consulting, Inc.  
2300 Swan Lake Blvd, Suite 200  
Independence, IA 50644  
tvandewalle@nrc-inc.net

Kelly Poole  
Iowa State University  
2218 Agronomy Hall  
Ames, IA 50011  
kpoole@iastate.edu

Scott Marler  
Iowa Department of Transportation  
800 Lincoln Way  
Ames, IA 50011  
scott.marler@dot.iowa.gov

Neil Bernstein  
Mount Mercy College  
1330 Elmhurst Drive NE  
Cedar Rapids, IA 52402  
neil@mtmercy.edu

Stephen Main  
Wartburg College  
100 Wartburg Blvd.  
Waverly, IA 50677  
stephen.main@wartburg.edu

David McCullough  
Wartburg College  
100 Wartburg Blvd.  
Waverly, IA 50677  
david.mccullough@wartburg.edu

James Miller  
Iowa State University  
146 Design Building  
Ames, IA 50011  
jrmiller@iastate.edu

Franklin Olsen  
Iowa Lepidoptera Project  
1108 1st Ave.  
Center Point, IA 52213  
fdolsen@mchsi.com

Jeffrey Parmelee  
Simpson College  
701 North C Street  
Indianola, IA 50125  
parmelee@simpson.edu

Thomas Rosburg  
Drake University  
Olin Hall, 1st Floor  
Des Moines, IA 50311  
thomas.rosburg@drake.edu

Dennis Schicht  
Iowa Lepidoptera Project  
1108 1st Ave.  
Center Point, IA 52213  
DWS1108@aol.com

Martin St. Clair  
Coe College  
1220 First Avenue NE  
Cedar Rapids, IA 52402  
mstclair@coe.edu

Eric Walsh  
Iowa State University  
11 Science II  
Ames, IA 50011  
eric9@iastate.edu

Craig Chumbley  
Earth Tech, Inc.  
3033 Campus Drive North  
Minneapolis, MN 55441  
Craig.Chumbley@earthtech.com

## **ABSTRACT**

The success of wetland mitigation projects nationwide is typically assessed by comparing the total number of wetland mitigation acres attained to the total number of mitigation acres required by Section 404 permits. In the absence of performance measurements on mitigation wetlands, the success of compensatory mitigation in replacing the ecological value of impacted wetlands is increasingly questioned by wetland scientists. This study focuses on evaluating regulatory compliance and ecological performance of mitigation wetlands in Iowa. Regulatory compliance was determined by comparing delineated wetland areas to permitted losses and by evaluating completeness of permit conditions at 24 randomly selected Iowa Department of Transportation wetland mitigation sites. In a separate study, intensive biological inventories were used to evaluate ecological performance at 12 mitigation and 3 reference wetlands. Species richness and abundance data were collected on algae, protozoa, aquatic invertebrates, butterflies, amphibians, reptiles, birds, and mammals at each site. Species richness and diversity at mitigation sites and reference sites were compared to determine whether mitigation wetlands are performing differently than reference wetlands in Iowa. The results are valuable for building and expanding the tools and knowledge necessary to effectively assess and manage the ecological performance of compensatory mitigation wetlands and improve the ecological effectiveness of wetland mitigation.

**Key words: agricultural landscape—ecological performance—regulatory compliance—wetland mitigation**