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American Journal of Agricultural Economics
Vol. 84, No. 5, Proceedings Issue (Dec., 2002), pp. 1355-1361
Published by: Agricultural & Applied Economics Association
Article Stable URL: http://www.jstor.org/stable/1245071
10.2307/1245071
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The Economics of Wetland Ecosystem Restoration and Mitigation (Sandra Batie, Michigan State University, presiding)

THE ECONOMIC EQUIVALENCY OF DRAINED AND RESTORED WETLANDS IN MICHIGAN

FRANK LUPI, MICHAEL D. KAPLOWITZ, AND JOHN P. HOEHN

Wetland ecosystems are valued for a range of ecological services. These services are protected by national, state, and local regulation. The primary federal wetland protection statute is Section 404 of the Clean Water Act (33 U.S.C. Section 1344). Under this statute, the U.S. Army Corps of Engineers, in conjunction with the U.S. Environmental Protection Agency (EPA), administers a review and permitting process for the "discharge of fill material" in "waters of the United States." Since 1989, the guiding principle of federal wetland policy has been the "no net loss" of wetlands criterion (Gaddie and Regens). To implement this principle, the wetland permit process encourages potential dischargers to avoid and minimize wetland impacts wherever possible. Where wetlands are impaired or destroyed, wetland mitigation is required. Mitigation refers to actions taken to recreate, restore, or protect wetlands of an equivalent type and function to those being impaired or destroyed (Denison and Schmid).

Since wetlands vary by type, ecological functions, and the services they yield to humans, the means for judging the equivalency of destroyed and mitigated wetlands is both problematic and central to successful implementation of the "no net loss" policy (National Research Council, Mitsch and Gosselink). While wetland regulation and mitigation regimes seem to address concerns of changes in wetland acreage, they do not adequately address the equivalency of changes in wetland values (Environmental Law Institute). Though substantial effort has been made to define and measure wetland equivalencies using engineering principles and biophysical characteristics (Bartoldus), the economic equivalency of wetland services has received less attention. In the absence of an understanding of the economic trade-offs, wetland mitigation may leave economically important services unprotected and under-provided.

In this paper, we report the results of a pilot study on the public's willingness-to-accept wetland mitigation as in-kind compensation for the loss of an existing wetland. A choice experiment was developed to relate the acceptance of mitigation projects to the characteristics of both the lost and mitigated wetland. The wetland characteristics describing the lost wetland and proposed mitigation include acreage and several indicators of habitat suitability.

Wetlands Valuation and Mitigation

Wetlands are transitional types of ecosystems that occupy a spectrum between land and water ecosystems. Their exact definition has been controversial (National Research Council). The operational definition used in Federal wetland regulations builds on two essential wetland characteristics: (*a*) the land is composed of soils that are water-saturated during part of the vegetation growing season and (*b*) the land supports plants that are typical of saturated soils (Smith et al.). Based on this definition, wetlands may have covered about 12%

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The research was funded by the U.S. Environmental Protection Agency's Science to Achieve Results (STAR) program, the Michigan Department of Environmental Quality, and Michigan Sea Grant. However, the research has not been subjected to peer-review of these agencies, and the research does not reflect the views of the agencies. The authors are solely responsible for any errors or omissions.

This article was presented in a principal paper session at the

AAEA annual meeting (Long Beach, CA, July 2002). The articles in these sessions are not subjected to the journal's standard refereeing process.

of the area of the continental United States during colonial times. Since that time, human

Amer. J. Agr. Econ. 84 (Number 5, 2002): 1355–1361