

The Curriculum in Ecology presents

Modeling the Wetland Mitigation Process and its Dynamic Effects on No Net Loss Policy

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In 1987, the National Wetlands Policy Forum recommended that U.S. wetlands policy should achieve overall “no net loss” of the country’s remaining wetland acreage and function. Since then, regulations have required compensatory mitigation for wetland losses, often through wetland creation or restoration. Controversy has surrounded recent reports that laud the achievement of no net loss while citing the virtual elimination of certain types of wetland losses in certain areas. However, little discussion in this debate has centered on the dynamic nature of wetland loss and restoration. Evidence has shown that temporal lags in wetland restoration can temporarily reduce wetland function and impose high costs on society. This paper analyzes wetland loss and compensation as dynamic processes that include temporal

lags prevalent in various mitigation techniques. Here, a system dynamics model of the mitigation process is used to explore wetland alteration and mitigation data collected between 1993 and 2004 for the Chicago, IL region. This model includes vital factors associated with mitigation policy, including mitigation failure rates, varying mitigation ratios, and the temporal lags and head starts inherent in mitigation banking, permittee responsible mitigation, and in-lieu fee mitigation programs. Results demonstrate that delays in initiating and completing restoration activities mean that frequent, temporary wetland losses can easily contribute to a consistent and considerable net functional loss over time. I conclude by discussing methods for minimizing net temporary losses and reducing wetland restoration lag costs.

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