Restoration and Reclamation Review
Student On-Line Journal
Vol.1, No.1, Spring 1996
Department of Horticultural Science
University of Minnesota, St.Paul, MN

Introduction to Restoration & Reclamation Review

Susan Galatowitsch

Restoring ecosystems is regarded as one of few ways to reverse trends of environmental degradation caused by unsuitable land uses. Attempts to cultivate marginal lands, to intensively graze arid lands, and to urbanize unstable lands have resulted in landscapes possessing few cultural or natural benefits to society. There is growing interest in restoring ecosystems to improve water quality, increase biodiversity, reduce soil loss, and minimize catastrophic flooding.

Successful restoration entails re-establishing soil, hydrologic, and vegetative characteristics that existed on a site prior to disturbance. Some of these characteristics may be regained over time through natural processes whereas others rely on interventions. Drastically altered sites within highly disturbed landscapes often exhibit the least resiliency and may rely almost entirely on active restoration measures such as soil amendments and revegetation. Developing effective restoration strategies depends on our ability to predict rates and outcomes of ecosystem recovery via natural processes and to determine how best to intervene to stimulate recovery. However, with few exceptions, only weak predictions of ecosystem recovery can be advanced because the scientific basis for restoration is scant. Consequently, ecosystem restoration is prone to failure.

Restoration ecology has been slow to develop as a scientific discipline, although implemented projects have the potential to be rich experimental opportunities. How a restoration actually comes to be is far more complex than a well-controlled scientific experiment. Social perception, economic feasibility, and project administration/regulation are as important as optimizing ecosystem recovery. Consequently, examples of restorations that were primarily driven by what is known of ecosystem structure and function are very rare. Moreoften, restorations reflect many compromises that are often undocumented. For experimentation, then, lack of ecosystem recovery cannot be clearly tracked to a flawed scientific assumption.

The Restoration and Reclamation Ecology class (Hort 5015) at the University of Minnesota compiled case-studies during Spring 1996. These case studies augmented class lectures on scientific concepts relevant to ecosystem restoration. By documenting case studies, students explored the extent to which our conceptual understanding of ecosystems is a basis for project implementation. Each case study describes the location, goals and people responsible for the restoration, what interventions are planned or have been done, and how success will be evaluated. These case studies have been assembled in the format of an electronic journal. This issue of the journal will remain on the Web until June 30, 1996 so students can download a copy and will reappear on the Web in the future during terms when the class is taught. Next year's class will produce the second

issue with the theme of intervention techniques. Each student will research the history of a specific technique and characterize how it is used in restoration.

I thank the restoration and reclamation project managers in industry, government, and academia who provided information and guidance to the students as they prepared their case studies.

--Susan Galatowitsch, Assistant Professor Course Instructor, Restoration and Reclamation Ecology