

Introduction

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The science and art of reclaiming drastically disturbed mined lands has evolved significantly over the last thirty plus years. Many of the initial attempts at reclamation and revegetation in arid and semi-arid regions met with failure. To this day many of these areas would still be considered failures in terms of vegetative growth, the progress of ecological succession, and biological diversity. Through the advancement of knowledge and application of scientific principles, in conjunction with the requirements of both State and Federal regulations, significant strides in reclaiming mined lands were made in the mid-1960's through the early 1980's. Revegetation efforts in mesic climate zones during this time generally resulted in adequate permanent plant cover for erosion control and vegetation production for domestic livestock grazing needs and other postmining land uses. However, in arid and semi-arid climates, vegetative composition has often remained largely unchanged after the first several years of plant establishment and growth. A majority of these sites consist of revegetated communities dominated by a few species and a generally even structure. Why hasn't secondary succession and invasion by native species from adjacent lands progressed as well as we have hoped? Why haven't many of the revegetated sites evolved beyond communities composed of the few species planted?

During the middle period of reclamation research, the late 1980's to early 1990's, we learned how to make many mined areas green, but we also learned that green often is not enough -- diversity is necessary for effective ecosystem function. Some of the current questions in mined land reclamation, research, and regulation are: "How important are diversity and/or biodiversity?; How do we define and measure them?; How do we achieve them in reclamation?; and What are the rewards of achieving them?"

This short technical session had two goals. One was to show how different reclamation disciplines (e.g., mining, soil science, agronomy, botany, genetics, and ecology) come together

to affect diversity in reconstructed ecosystems. The second goal was to discuss different ways to define and evaluate diversity and biodiversity. Presenters were challenged to discuss general procedures and methods while relating these ideas to a wide range of field situations.

Unfortunately, not all presenters could complete a written version of their presentations within the specified time-frames. The papers and abstracts included in this technical session section provide brief insights into the processes, challenges, and questions that regularly face reclamation specialists concerned with diversity and biodiversity.