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Development of Southern California Restoration Performance Curves Using the California Rapid Assessment Method, an Integrative Wetland Condition Index

Lisa S. Fong, Eric D. Stein

Southern California Coastal Water Research Project

Abstract

Restoration monitoring is a required element of most regulatory and management programs; however, monitoring periods are often too short to determine ultimate restoration success. Performance curves, which depict change in function over time, can visually and mathematically demonstrate the developmental trajectory of wetlands following restoration and therefore be used to establish performance measures before restoration sites mature. We used a chronosequence approach to develop performance trajectories that illustrated the expected development of stream condition following restoration. To develop the curves, we graphed California Rapid Assessment Method (CRAM) data from restored streams of different ages against time. We fit mathematical functions to the highest CRAM component scores from a sample of southern California stream restoration projects. The CRAM index score, Hydrology attribute, and Biotic Structure attribute curves reached natural reference level conditions within 30 years, but the Physical Structure attribute curve leveled off below reference levels. Verification of the curves using data from additional mature restoration sites and regional reference sites indicated that the curves generated are representative of desired trajectories and can be used to support monitoring and assessment.