



**XVIIth World Congress of the International Commission
of Agricultural and Biosystems Engineering (CIGR)**

Hosted by the Canadian Society for Bioengineering (CSBE/SCGAB)
Québec City, Canada June 13-17, 2010



**AN INTERDISCIPLINARY ECOLOGICAL ENGINEERING APPROACH TO
THE ASSESSMENT AND ENHANCEMENT OF LAGOONS IN CALIFORNIA'S
CENTRAL COAST**

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**CSBE101569 – Presented at the 10th American Ecological Engineering Society
Annual Meeting (AEES) Symposium**

ABSTRACT Along the Central California Coast, the term “lagoon” is most commonly applied to backbarrier wetlands and areas of open water that form where coastal stream mouths are naturally dammed by accretion of beaches during low flows, when the stream discharges by seepage through the beach. High winter flows breach the beach berm, and the systems are temporarily able to experience marine influence from storms and spring tides. The variable but predominantly fresh-brackish salinity regimes in these lagoons differentiate them from their analogues in other areas. Recent studies suggest that these highly productive ecosystems may play a disproportionately important role in the life cycles of federally-listed steelhead and coho salmon, as well as providing critical habitat for a broad range of other species such as tidewater goby, California red-legged frog, and many birds. For these and other reasons, lagoon systems have increasingly become a resource of management interest for many federal, state, and local agencies. However, due to their unique combination of coastal and fluvial hydrology, morphodynamics, and ecological communities, the relationships between governing physical processes and ecological responses in lagoons are poorly understood. This has made it difficult for resource agencies to assess and, if necessary, enhance these habitats for the benefit of target species and overall ecosystem health. The authors present an interdisciplinary, ecological engineering approach to assessing and enhancing these ecosystems that has been successfully applied to two very different lagoon systems: Laguna Creek Lagoon in Santa Cruz County and Pilarcitos Lagoon in San Mateo County.

Keywords: Lagoon, Hydrology, Morphodynamics, Coastal, Ecosystems, Ecological, Engineering, Enhancement, Wetland.