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## Historical ecology as a tool for assessing landscape change and informing wetland restoration priorities

Eric D. Stein<sup>1</sup>, Shawna Dark<sup>2</sup>, Travis Longcore<sup>3</sup>, Robin Grossinger<sup>4</sup>, Nicholas Hall<sup>5</sup> and Michael Beland<sup>2</sup>

<sup>1</sup>*Southern California Coastal Water Research Project, Costa Mesa, CA*

<sup>2</sup>*California State University, Geography Department, Northridge, CA*

<sup>3</sup>*University of Southern California, Department of Geography, Los Angeles, CA*

<sup>4</sup>*San Francisco Estuary Institute, Oakland, CA*

<sup>5</sup>*University of Southern California, Department of History, Los Angeles, CA*

### ABSTRACT

Vast resources are devoted annually to watershed management and wetland restoration. Historical wetland losses are often cited as a motivation for prioritizing ambitious wetland restoration efforts. However, analysis of historical conditions is often underutilized in the planning process. In this paper we demonstrate historical ecological analysis of the San Gabriel River watershed in southern California. We integrate multiple disparate data sources collected at different spatial and temporal scales to describe historical wetland extent and distribution. We compare historic wetlands to contemporary conditions to calculate wetland losses. From the results of this analysis, we conclude that the widely held view of southern California as naturally dry and desert-like with mainly ephemeral and intermittent streams may be an over generalization. Historically, the San Gabriel watershed has supported complex expanses of channels, ponds, sloughs, seeps, marshes, and seasonal wetlands that alternated between wet and dry conditions on multi-year to decadal cycles. We estimate that >86% of historical wetlands have been lost since ca. 1870, with the greatest losses occurring to palustrine alkali meadows in the lower floodplain. Despite the extensive losses, the analysis reveals areas of the watershed conducive to wetland re-establishment and provides insight into the most appropriate wetland types to prioritize for specific watershed settings.

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