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Historical Wetland Change along the Southern California Coast: A Tool to Inform Regional Restoration Planning

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Abstract

Restoration and management of resilient wetland metapopulations requires a regional perspective that can support appropriate combinations of wetlands within a defined coastal region. Historical analysis can inform regional planning by providing critical information about the composition of wetland systems, and by extension their relationship with landscape drivers, under natural conditions. In this study, we demonstrate the utility of historical information to inform regional restoration planning along the southern California coast. We acquired, digitized, georeferenced, and analyzed coastal T-sheets to provide an estimate of wetland extent and composition in the 1850 timeframe. We compared historical estimates to contemporary wetland mapping to assess losses and type conversion over the past 150 years. Total estuarine habitat declined by approximately 48% since 1850; moreover, there has been substantial type conversion, with intertidal habitats declining by over 75% and subtidal habitat increasing from approximately 35% of the total estuarine habitat to over 70%. This has been accompanied by a general consolidation of small seasonally open lagoons to larger perennially open estuaries. The understanding of historical extent and contemporary losses can be used to guide regional restoration planning and help set site-specific priorities that will contribute to a more robust and resilient system of coastal wetlands.