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**Title:** Climate change and conservation planning in California: The San Francisco Bay Area Upland Habitat Goals approach

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**Abstract:**

Climate change threatens California's vast and unique biodiversity. The Bay Area Upland Habitat Goals is a comprehensive regional biodiversity assessment of the 9 counties surrounding San Francisco Bay, and is designing conservation land networks that will serve to protect, manage, and restore that biodiversity. Conservation goals for vegetation, rare plants, mammals, birds, fish, amphibians, reptiles, and invertebrates are set, and those goals are met using the optimization algorithm MARXAN. Climate change issues are being considered in the assessment and network design in several ways. The high spatial variability at mesoclimatic and topoclimatic scales in California creates high local biodiversity, and provides some degree of local resiliency to macroclimatic change. Mesoclimatic variability from 800 m scale PRISM climatic norms is used to assess "mesoclimate spaces" in distinct mountain ranges, so that high mesoclimatic variability, especially local extremes that likely support range limits of species and potential climatic refugia, can be captured in the network. Quantitative measures of network resiliency to climate change include the spatial range of key temperature and precipitation variables within planning units. Topoclimatic variability provides a finer-grained spatial patterning. Downscaling to the topoclimatic scale (10-50 m scale) includes modeling solar radiation across DEMs for predicting maximum temperature differentials, and topographic position indices for modeling minimum temperature differentials. PRISM data are also used to differentiate grasslands into distinct warm and cool types. The overall conservation strategy includes local and regional connectivity so that range shifts can be accommodated.

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