

# Examining Effects of Vineyard Development on Bird Populations of California's Oak Woodlands—Use of GIS and Power Analysis to Select Study Sites<sup>1</sup>

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Vineyard expansion into California's oak woodlands is creating an increasingly fragmented and altered landscape for wildlife. This landscape-level study is designed to provide information about the effects of vineyard development and oak habitat retention on oak-associated bird communities in northern coastal California. We have used Geographic Information System (GIS) technology to identify potential study sites in Sonoma County that are hypothesized to be differentially influenced by vineyard development, or "vineyardization." Degree of vineyardization was determined using a 1997 map of vineyards and a "sliding window" GIS analysis that examined the amount and distribution of vineyard within a 2,000 m radius. Sampling sites will be established in high, medium, and low-level vineyardization areas containing low elevation (0-300 m), gently sloped (0-15 degrees) oak woodland habitat. Sites will also be established in vineyards in high-level vineyardization areas. We have also conducted an analysis of species detectability using existing bird data collected in oak woodland habitats to determine statistical power and sample sizes necessary to detect differences in certain bird populations in these habitats. Surveys of bird communities, using standard point count survey protocols, will be conducted within the various treatments over the next 3 years.

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