

Potential Effects of Sudden Oak Death on Birds in San Luis Obispo County Coastal Oak Forests

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Tree pathogens can act as keystone species, affecting forest community composition and structure over wide areas. These changes may in turn affect faunal communities. Sudden oak death has caused high levels of adult tree mortality at some sites. *Phytophthora ramorum* has the potential to spread to near and distant regions and may dramatically affect vegetation structure in multiple forest communities. The pathogen has not yet been detected in the wild in San Luis Obispo County, but may threaten coast live oak (*Quercus agrifolia*) woodlands here. Resulting changes in vegetation structure and tree community composition may cascade to affect vertebrate communities and other ecosystem attributes.

We surveyed breeding bird populations and measured habitat characteristics at 78 points distributed among four sites in coast live oak woodlands in San Luis Obispo County. In each of three years (2002-2004), we censused birds at a subset of these points (all points in 2004) using 10-minute point counts of all adults detected within 50 m. Each point was visited at least three times each year. In 2004, we recorded topographic characteristics at each point, surveyed the trees within 10 m of each point, and measured canopy and shrub cover within 25 m of each point. We are using this information to construct habitat association models of individual species, as well as models of community attributes such as species diversity.

Preliminary analyses indicate that heuristically valuable patterns will emerge from this effort. A total of 84 bird species were recorded at the census points from 2002 to 2004. The most abundant species in 2004 were Orange-crowned Warbler (*Vermivora celata*, 9.20% of individuals), Steller's Jay (*Cyanocitta stelleri*, 8.43%), Dark-eyed Junco (*Junco hyemalis*, 7.41%), and Spotted Towhee (*Pipilo maculatus*, 7.35%). We found 13 tree species within 10 meters of the points; 63.8% of the individuals recorded were coast live oak and 19.6% were California bay laurel (*Umbellularia californica*). Avian species diversity (Shannon-Wiener index) showed no clear pattern of variation with the basal area of oaks and tanoaks in 2004 ($r_s = -0.10$, $0.2 < p < 0.5$). Patterns of abundance for individual species may be affected by the degree of oak/tanoak dominance, however. For instance, counts of Oak Titmice (*Baeolophus inornatus*) were positively correlated with basal area of oaks and tanoaks ($r_s = 0.4$, $p < 0.001$).

Coast live oak forest is an important and geographically limited ecotype. The high diversity of breeding birds (overall 2004 Shannon-Wiener index 3.5, 71 species, 1564 individuals) we observed demonstrates the rich biota characteristic of this habitat. If sudden oak death becomes established in San Luis Obispo County, it could alter much of the remaining coast live oak woodland. Oaks may become less dominant and bay laurel, which is mostly unharmed by *P. ramorum* infection, may become more prevalent. As trees die and fall, the canopy would become more open, woody debris would accumulate on the ground, and increased light levels may result in dense shrub cover. We postulate effects on avian communities that may result from these

structural changes.