THE CALIFORNIA PHENOLOGY PROJECT: A PHENOLOGICAL MONITORING NETWORK TO TRACK CLIMATE CHANGE IMPACTS (4F)

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Phenology is the study of seasonal biological events such as flowering, leaf-out, insect emergence, and animal migration. Long-term observational studies have found that the timing of phenological events responds to environmental variation and climate change. To assess the potential effects of climate change on California's flora, the National Park Service (NPS), the University of California, Santa Barbara (UCSB-PSP), and the USA National Phenology Network (USA-NPN) established The California Phenology Project (CPP) in 2010 with funding support from the NPS Climate Change Response Program. The CPP is a three-year pilot project, whose primary goals are to develop and test protocols and to create tools and infrastructure to support long-term phenological monitoring and public education in California national parks. Longer-term goals are to: (1) engage and educate people of all backgrounds and ages in the study of phenology, (2) detect how phenology is linked to climatic conditions that vary over time and space, and (3) provide data to support stewardship of wildland ecosystem. To this end, the CPP has identified scientific questions to guide monitoring efforts across all NPS units in CA, selected focal plant species, and established monitoring infrastructure in seven pilot parks that represent a range of bioclimatic regions. Focal species were selected based on their ability to address scientific questions of interest and to engage Citizen Scientists; they include native and non-native species, widespread and endemic species, and species of local management concern. The CPP is currently adapting and testing standardized phenology monitoring protocols developed in collaboration with the USA-NPN for tracking the phenological status of 25 plant species across key environmental gradients (e.g., latitude, elevation, and precipitation). The CPP seeks to build a large phenological monitoring network across the state by working with students, volunteers and other partners including the University of California Natural Reserve System, Naturebridge and the California Native Plant Society. The project is being designed and implemented as a potential model for replication across other NPS units or regions, as well as other protected areas, across the nation.

Key words: phenology, climate change, public outreach