***The California Phenology Project: tracking the effects of climate on plant phenology through citizen science***

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**Tejon Ranch**

**September 13, 2014 | 9:00 am - 5:00 pm | INDICATE LOCATION HERE**

**Outline**Introduction

Phenology, visualizing phenological variation, linking phenology to climate change, ecological consequences of phenological change, and a few case studies

**California Phenology Project**: design, use of historical data, species selection for current monitoring, protocols, and a few results to date.

**USA National Phenology Network**: Nature’s Notebook, target species, resources available

Practical guide to setting up a public monitoring program: crash course in Botany; best practices & lessons learned

During this workshop, participants will learn how to contribute to a nationwide effort to track the effects of climate change on the timing of phenological events in plants. We’ll cover: the basics of phenology; the evidence-based link between phenological events and climate; the long-term effects of climate change on plant phenology; the risks of phenological mismatches induced by environmental change; and results of recent analyses of data collected by national park staff and volunteers in California since 2011. We will introduce the **California Phenology Project** (CPP; [www.usanpn.org/cpp](http://www.usanpn.org/cpp)), a statewide phenological monitoring program based in seven National Parks and five University of California Natural Reserves, where 30 plant species are currently being monitored in a replicated fashion across a variety of environmental gradients. This workshop will include a presentation, on-line demonstrations, time for questions, and hands-on experience in the monitoring protocols and on-line database designed by the USA National Phenology Network (USA-NPN; [www.usanpn.org](http://www.usanpn.org/)). Currently, hundreds of volunteers and scientists are contributing to the NPN database standardized phenological observations of hundreds of plant and animal species.

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| **Coyotebrush, male flowers** | **California Poppy** | **Blue Oak** |

***The California Phenology Project:*** [**www.usanpn.org/cpp**](http://www.usanpn.org/cpp)

***Educational materials developed by the California Phenology Project:*** [**www.usanpn.org/cpp/education**](http://www.usanpn.org/cpp/education)

***The USA National Phenology Network*:** [**http://www.usanpn.org**](http://www.usanpn.org)

**SELECTED ONLINE RESOURCES for climate change & phenology workshop**

**PHENOLOGY**

**USA National Phenology Network** <https://www.usanpn.org/>

**California Phenology Project** <https://www.usanpn.org/cpp/>

**Additional partners with the USA-NPN** <https://www.usanpn.org/partner/current>

**CLIMATE CHANGE**

**Intergovernmental Panel on Climate Change (IPCC)** <http://www.ipcc.ch/>

**C2ES – Center for Climate & Energy Solutions** (formerly Pew Center on Climate Change)

<http://www.c2es.org/>

**U.S. CLIMATE CHANGE RESEARCH PROGRAMS & RESOURCE MANAGEMENT ACTIVITIES**

**United States Global Change Research Program** <http://www.globalchange.gov>

**U.S. Department of Interior –** Strategic Response to Climate Change

<http://www.doi.gov/whatwedo/climate/strategy/index.cfm>

**U.S. Climate Science Centers** <http://www.doi.gov/csc/index.cfm>

**U.S. Landscape Conservation Cooperatives** <http://www.doi.gov/lcc/index.cfm>

**USGS National Climate Change & Wildlife Science Center** <http://nccwsc.usgs.gov/>

**National Park Service** Climate Change Response Program:

<http://www.nature.nps.gov/climatechange/index.cfm>

**PUBLIC PARTICIPATION IN SCIENTIFIC RESEARCH (CITIZEN SCIENCE)**

**Citizen Science Central (Cornell Lab of Ornithology)** <http://www.birds.cornell.edu/citscitoolkit>

**EDUCATION/OUTREACH RESOURCES**

**350.org** <http://www.350.org/>

**Climate Central** <http://www.climatecentral.org/>

**Union of Concerned Scientists** <http://www.ucsusa.org/global_warming/>

**Climate Science Watch** <http://wwwclimatesciencewatch.org>

**Climate Change Education** <http://www.climatechangeeducation.org>

**California Climate Change Portal** <http://www.climatechange.ca.gov>

**California Climate Change & Energy: Education Resources Catalog** http://globalwarmingcalifornia.ne