



Developing fruits  
*Arctostaphylos patula*  
Green leaf manzanita



Open flowers  
*Diplacus aurantiacus*  
Sticky monkeyflower



Developing fruits  
*Heracleum lanatum*  
Cow parsnip



Open flowers  
*Eriogonum fasciculatum*  
California buckwheat

National Park Service

UCSB Phenology  
Stewardship Program

USA National Phenology Network

**Phenology** – the study of seasonal biological activities, such as the flowering and fruiting of plants and the spring arrival of migratory bird species – is one of the simplest ways to detect the effects of climate change on the living world. Phenological monitoring offers people in all walks of life opportunities to learn and to practice observational and scientific skills while re-connecting with the rhythms of their local environments.

## The California Phenology Project is launched!

Welcome to the first semi-annual newsletter of the California Phenology Project! This inaugural issue provides an introduction to the project and reports on exciting milestones accomplished during the first year.

The CPP was launched in late 2010 with 3 years of funding from the National Park Service (NPS) Climate Change Response Program. Scientists from the NPS, the University of California, Santa Barbara (UCSB), and the USA National Phenology Network (USA-NPN) have teamed up to coordinate an integrated phenological monitoring and education program across California parks. The CPP is a collaboration among 19 parks, five Inventory & Monitoring (I&M) Networks, two Research Learning Centers (RLCs), and the Californian Cooperative Ecosystem Studies Unit (CESU).

The CPP is developing and testing protocols, tools, and infrastructure for long-term phenological monitoring – including educational activities – in order to

support the use of phenology in tracking and understanding natural resource responses to changing climatic conditions in California national parks.

A primary focus of the project is to recruit and engage citizen scientists of all ages in the collection and interpretation of phenological data.

Initial project work focuses on plants with on-the-ground protocol testing activities centered in seven pilot parks representing the diverse ecosystems of the state. The project is designed to support eventual deployment of monitoring and education programs to 19 NPS units across California (see map pg 2).

Over time, the CPP intends to expand the project scope through the addition of new partners and resources. The CPP is pleased that the University of California Natural Reserve System has now joined the effort (see pg 4).

We hope you will join us in making the CPP a success! Find us online at [www.usanpn.org/cpp](http://www.usanpn.org/cpp)

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## California Phenology Project goals

By incorporating sound scientific practices with public education and outreach, the CPP aims to assess how phenological monitoring and data can be used to understand the effects of changing climatic conditions on California's diverse landscapes.

The primary goals of the CPP are to: 1) engage and educate people of all backgrounds and ages in the study of phenology; 2) detect how phenology is linked to changing climatic conditions over time in California; and 3) provide data to support stewardship of wildland ecosystems.

Reaching these goals requires active participation of California residents, visitors, scientists, students, educators, and families – anyone with access to living plants! Participants in the CPP measure species' short-term phenological responses to local, regional, and statewide environmental conditions. The accumula-

tion of data over time will help to inform the management of park resources and predictions of their longer-term responses to changing climatic conditions.

A vision of the CPP is to create – in collaboration with partners at National Parks, science learning centers, and schools – an environmentally informed and ecologically literate populace that is highly motivated to study, preserve, and sustain the state's remarkable biological diversity in the face of risks posed by climate change. Starting in early 2011, the CPP has encouraged public participation by recruiting and training NPS staff, park partners and visitors, scientists, and educators to record and interpret standardized phenological data in California. These data are contributing to the scientific understanding of the effects of climate change on California's unique and sensitive natural resources.

Photos: A selection of plant species and phenophases that the CPP is monitoring across California landscapes and national parks. All photos in this newsletter were taken by Brian Haggerty unless noted otherwise.

## NPS Units Involved in the CPP

Seven pilot parks were selected to represent and facilitate coordination across parks in each of the five park networks in California (Klamath, San Francisco Bay Area, Mediterranean, Sierra, and Mojave Networks).

This design helps to ensure that all 19 parks served by the CPP are provided opportunities to participate in pilot park-based activities and that the ultimate suite of products resulting from the CPP will have wide applicability.

### Pilot Parks:

Golden Gate NRA  
John Muir NHS  
Joshua Tree NP  
Lassen Volcanic NP  
Redwood N&SPs  
Santa Monica Mountains NRA  
Sequoia & Kings Canyon NPs

### Other Parks Served by CPP:

Cabrillo NM  
Channel Islands NP  
Death Valley NP  
Devils Postpile NM  
Lava Beds NM  
Mojave NPRES  
Muir Woods NM  
Pinnacles NM  
Point Reyes NS  
Presidio of San Francisco  
Whiskeytown NRA  
Yosemite NP



Honey bee visiting open flowers of *Penstemon newberryi* at Lassen Volcanic NP.

## What is the CPP?

The CPP is a *consortium* of organizations and individuals – including scientists, educators, students, policy makers, and the public – observing and recording the phenology of California’s natural resources, reporting these important data to an online database managed by the USA National Phenology Network, and interpreting these data for the management and conservation of California’s natural resources.

The CPP is the *designer* of self-guided phenological monitoring trails and tools at seven pilot California national parks and other locations, providing species guides, field maps, data sheets, and best practices for the design and implementation of phenological monitoring at 19 parks in California.

The CPP is the *provider* of train-the-trainer workshops for California’s national parks and partners to instruct staff, volunteers, and educators in the concepts and tools of phenological research and its link to climate change.

The CPP is a *resource* for on-line educational materials designed for K-12 teachers, informal science educators, and university faculty seeking easy-to-use and well-tested activities and lesson plans for in-class and field-based use. Our curricula and activities are aligned to California State Science Standards.

The CPP is a *partner* for self-organized public groups (e.g., the California Native Plant Society, science



Natural Resource and Interpretation staff at each pilot park - including Joshua Tree NP where this photo was taken - worked together and with volunteers and staff from nearby parks during train-the-trainer workshops to practice recording phenological observations.

education organizations, park volunteers, botanical gardens) that are interested in participating in phenological monitoring of CPP targeted plants at national parks or identifying their own backyard, schoolyard, or local wildlands for one-time or long-term data collection.

The CPP is *any and all who participate* in the collection and contribution of phenological data of CPP-targeted species to the USA-NPN database. **You are the CPP!**

## Design and Reach of the California Phenology Project



The California Phenology Project is integrating phenology science and education programs across 19 NPS units - including 7 pilot parks (dark green) - spanning five Park networks and desert, coastal, and mountain biogeographic regions.

In its first year, the CPP has been active in seven pilot parks (see map and sidebar). At each of these parks, the CPP selected and tagged individual plants for phenological monitoring, in total labeling over 500 individual plants representing 27 plant species. At each park, 2-5 trails or locations were established where observers can record the phenological status of multiple individuals of several species. Some of the CPP trails extend over significant elevation or aridity gradients, or include sites with distinct slopes or aspects, allowing for the examination of the effects of these environmental conditions on the timing or duration of vegetative growth, flowering, and fruiting. Individual plants were labeled with semi-permanent tags to enable observers to relocate specific individuals. This helps to ensure that data recorded for a particular individual correspond to the same plant even when different observers are involved.

During the 2011 field season, CPP observers recorded and uploaded more than 5000 phenological observations from pilot parks to the USA-NPN’s online database, *Nature’s Notebook* (to learn more about the nationwide USA-NPN and *Nature’s Notebook*, visit [www.usanpn.org](http://www.usanpn.org)). These data contribute to a baseline of phenological information to which future phenological data can be compared in order to detect changes in the phenology of California’s flora that are associated with changing climatic conditions.



# Target Species Selection for the CPP

With guidance from NPS staff and dozens of California botanists and ecologists, the CPP has identified over 60 plant species as high-priority species for phenological monitoring across California. These species were selected on the basis of addressing key scientific questions to inform natural resource management of California's public lands. To encourage public participation, species also needed to be accessible as well as easy to identify (charisma and appeal are important!).

Some of the CPP's currently targeted species were selected because they are iconic and charismatic (Joshua trees, California buckeye, live oak, California poppy), whereas some were selected because of their widespread distribution among California landscapes and national parks (orange bush monkeyflower, cow parsnip). Some species were chosen because they

are subtle harbingers of spring (elderberry, Pacific trillium), while others were chosen because their flowering may signal the true end of summer (coyote brush) or because they support diverse assemblages of pollinators (California buckwheat).

The list of species currently targeted by the CPP for 19 NPS units in California and a description of the species selection process is located under the 'Meet the Species' section of the CPP website.

Conversations continue among botanical contacts and park staff about which species best address our collective goals. We would welcome additional input on selected target species or suggestions of additional species to consider. Comments are welcome on the CPP listserv (see last page for instructions to join the listserv).

## Resources to Support Phenological Monitoring

Ready to go outside to start recording your observations?

Don't go empty-handed! There are a number of tools that you might want to download from the CPP website before getting started at one of the CPP monitoring locations.

**Table of geo-referenced plants for each monitoring location:** the table also includes plant names and unique identifiers as well as site notes and hints for finding some plants that may be difficult to locate.

**Maps:** for each monitoring location, there are CPP maps available at multiple spatial scales, as larger spatial scales will help get you to each monitoring site and smaller spatial scales will inform you of the arrangement of the plants. There are even interactive GoogleEarth maps available for you to fine-tune your own map or to create educational activities!

**USA-NPN datasheets:** you will need one datasheet for each plant at your monitoring sites. Our park partners at Golden Gate NRA and Santa Monica Mountains NRA have designed alternative datasheets

that include all monitored plants on a single sheet of paper, and you may find these on the CPP website. If similar datasheets have not yet been created for your monitoring location, feel free to design and to print your own, using these datasheets as a guide.

**CPP species profiles:** download one for each species that occurs at your monitoring locations(s); these profiles include phenophase photos and monitoring tips.

**Park-specific monitoring guide,** (not yet available for all parks): guides are in development for each pilot park and will include all of the materials listed here (and more!) to help you get started monitoring at a CPP location!

Other useful materials include:

- Hand lens for viewing small plant parts
- Clip board for datasheets
- Pen or pencil
- Camera for photographing phenophases and plant-animal interactions

### Seeking Legacy Data!

In an effort to increase the value of contemporary phenological data, the CPP seeks existing phenology datasets for California's natural resources. There may be several categories of historical datasets with phenological information that have been collected or acquired by the natural resource community in California. These categories include seed collection records (with date and location), naturalist's notes or journals, and wildflower lists with date and location information, among many others. If you are aware of any such datasets, particularly those that include information about the CPP focal species, please contact UCSB Project Scientist Liz Matthews (email address on page 6).

### Seeking Phenophase Photos!

The CPP continues to develop phenophase photo guides for its targeted plant species and needs your help taking photos. Find the list of targeted species (available on a park-by-park basis) on the 'Meet the Species' section of the CPP website. Become familiar with the phenophase definitions for a species, then go hunting for precise photo opportunities (don't forget to bring datasheets with you too!). Download the current phenophase photo guides for examples and to see which phenophases are still needed. Contact the UCSB team (email addresses on page 6) once you're ready to share your photos.



NPS staff, park partners, and the UCSB team discuss phenological monitoring protocols and CPP monitoring site selection during a Spring 2011 workshop at Golden Gate NRA.

## Super Seasonals in the CPP

Several exceptional seasonal staff served the CPP in 2011. These 'Super Seasonals' have single-handedly contributed creative and innovative monitoring and implementation tools. Several of them have offered outstanding and creative contributions to the CPP that deserve special recognition.

*Steven Krause*, working at Redwood N&SPs, produced first-person perspective photographic field guides for every monitoring site in the park. These guides include annotated photos that show the location of each plant targeted for monitoring along with landmarks to assist in re-locating each tagged plant.

*Ruby Kwan* at Golden Gate NRA created kid-friendly data sheets (that some adults might prefer too!). These include beautiful and informative phenophase photos that Ruby took during her weekly tours of CPP plants.

*Mitzi Harding* at Joshua Tree NP and *Crystal Anderson* at Santa Monica Mountains NRA designed customized data sheets to record a maximum amount of data in a minimum of space (great for our carbon footprint!).

*Sarah Felts* and *Jay Johnson* at Lassen Volcanic NP spearheaded rigorous testing and critiquing of pilot protocols to ensure that they are unambiguous and clear. In addition, they provided helpful suggestions for improving the USA-NPN datasheet templates.

## Meet the CPP Coordinating Team

**The NPS CPP Working Group** facilitates park-based activities, including overall project planning, protocol testing of monitoring and education activities, and coordination of training events for park staff and CPP partners. *Dr. Angie Evenden*, NPS Research Coordinator, Californian Cooperative Ecosystem Studies Unit (CA-CESU), provides leadership and coordination for NPS engagement in the project. NPS working group members include: *Sylvia Haultain* at Sequoia and Kings Canyon NPs, *Dr. Christy Brigham*



Assessing *Rhododendron* phenology at Redwood N&SPs

at Santa Monica Mountains NRA, *Josh Hoines* at Joshua Tree NP, *Janet Coles* at Lassen Volcanic NP, *Stasia Samuels* at Redwood N&SPs, *Alison Forrester* at Golden Gate NRA, *Fernando Villalba* at John Muir NHS, and *Dr. Ben Becker* at the Pacific Coast Science Learning Center.

**The UCSB Team** (also known as the Phenology Stewardship Program) organizes and leads park-based phenological training workshops for NPS staff and CPP partners. The UCSB team also leads the development of CPP infrastructure and monitoring tools for each pilot park (e.g., maps with geo-referenced

CPP plants and park-specific monitoring guides), outreach and education materials, and communication tools (e.g., the CPP website, listserv, and newsletter). The UCSB team includes: *Dr. Susan Mazer*, Project Principal Investigator and Professor of Ecology & Evolution; *Dr. Liz Matthews*, Project Scientist; and *Brian Haggerty*, M.S., Ph.D. student.

**The USA National Phenology Network (USA-NPN)** has provided capacity and a broader national context for the development of the California Phenology Phenology Project. The USA-NPN provides standardized protocols, a user interface, database management, and IT infrastructure for the CPP. At the USA-NPN's National Coordinating Office, *Dr. Kathy Gerst* is spearheading overall documentation of CPP monitoring protocols, developing protocols for annual plant species, and assembling phenophase photos of CPP taxa. She is also working with *Ellen Denny* to revise the phenophase descriptions of the CPP focal species, which will be included in the CPP species-specific monitoring guides. USA-NPN Director, *Dr. Jake Weltzin*, and Assistant Director, *Alyssa Rosemartin*, provide project oversight and assist in linking the CPP with other relevant efforts in California and nationwide. *Dr. Kathryn Thomas* represented the USA-NPN during the project development and start-up.

## New CPP Partner: UC Natural Reserve System

With seed funding from the University of California's Office of the President, the CPP is launching a parallel and coordinated effort with the UC Natural Reserve System (UC-NRS). Covering over 135,000 acres, harboring extensive research and teaching resources, and providing habitat for over 3000 plant species, the UC-NRS is the world's largest university-operated network of natural reserves.

The UCSB team is initiating the design and implementation of phenological monitoring in 8 of the 37 UC Natural Reserves, and looks forward to engaging UC faculty, students, visiting researchers, and reserve docents in the exploration of phenological patterns in

these pristine landscapes and habitats. Please contact UCSB PhD student Brian Haggerty for further information (email address on page 6). To learn of upcoming training workshops and opportunities for engaging with the CPP through the UC-NRS, join the CPP listserv (instructions on page 6).

The CPP is keen to recruit graduate students looking for compelling Master's or Ph.D. research projects at either the national parks or the UC-NRS. Please contact a CPP team member to explore possibilities for investigating phenological patterns in either plants or animals.



With San Francisco in the background, a CPP phenologist records leafing and flowering phenology of coyote brush (*Baccharis pilularis*) at Old Bunker Trail, Marin Headlands, Golden Gate NRA. During the 2011 field season, over 5,000 observations were recorded across the California pilot parks and reported to the USA National Phenology Network's online database, *Nature's Notebook*.



# Phenology and Climate Change Education

The CPP has developed and implemented a variety of educational, outreach, and scientific training activities to help cultivate phenological and climate change literacy among the NPS workforce, park partners, and the public. Visit the **'Education'** tab of the CPP website to browse and download available materials.

To ensure that CPP activities and products have direct relevance to park interpretation and education programs, especially related to climate change, the CPP team conducted one-on-one visits with staff at each of the 19 participating NPS Units. *Margot Higgins*,

Ph.D. student at UC Berkeley, assisted the CPP team in conducting visits with park staff and compiling an outreach report describing existing park education and interpretation programs, identifying where there are opportunities for linking phenology activities to existing efforts, and outlining park staff recommendations for the development of CPP educational products and programs. Visit the **'Resources'** tab of the CPP website to download this report. The CPP team intends to actively cultivate engagement and participation of park interpreters and educators as the project moves forward.

## Reports from the California Phenology Project Pilot Parks

The CPP hit the ground running in 2011 at seven pilot parks. The UCSB team visited each park to lead train-the-trainer workshops for resource management and interpretation park staff, and to coordinate the establishment of phenological monitoring and education programs. These pilot parks were selected to represent and facilitate coordination across parks in each of the five park networks in California (Klamath, San Francisco Bay Area, Mediterranean, Sierra, and Mojave Networks). This design helps to ensure that all 19 parks served by the CPP are provided opportunities to participate in pilot park-based activities and that the ultimate suite of products resulting from the CPP will have wide applicability.

### Golden Gate NRA (GOGA)

With wildflowers withering and shrubs beginning to bloom in early-June, a phenology train-the-trainers workshop was held at the park and attended by resource management and interpretation park staff, cooperators, and other agency staff. Following this, three phenology trails were established at Marin Headlands, Presidio, and Mori Point. Bi-weekly monitoring of target plant species was conducted by Ruby Kwan, Golden Gate National Parks Conservancy, and a combination of NPS and Presidio Trust staff, interns, and Presidio Park Stewards volunteers. Additional phenology presentations were given by NPS staff to the Headlands Institute and the Point Bonita YMCA.

### John Muir NHS (JOMU)

At the height of wildflower blooms in mid-April, a CPP informational booth was hosted at the John Muir Earth Day Celebration by University of California, Berkeley Ph.D. student Margot Higgins. The CPP team has been working with park staff and collaborators with the 'New Leaf Collaborative' education program to initiate phenology activities at JOMU in late 2011. JOMU has been added as the newest pilot

park in the CPP – a train-the-trainers workshop is being held in late November when phenology trails and monitoring sites also are established for data collection and interpretation activities.

### Joshua Tree NP (JOTR)

Just as Joshua trees were coming into bloom in late-March, the first of the pilot park train-the-trainers workshops was hosted by JOTR with natural resource and interpretation staff and park cooperators in attendance. Following this, four phenology trails were established at Ryan Mountain, Park Boulevard, High View Trail, and Oasis Visitors Center. At the end of the training week, an additional full-day phenology field course was led by the UCSB team for the public through the Desert Institute, demonstrating that phenology trails can be put to use immediately for monitoring and education. Weekly monitoring has been maintained by NPS staff and interns.

### Lassen Volcanic NP (LAVO)

With a lingering seven-foot roadside snow bank in mid-July(!), a train-the-trainers workshop was conducted for natural resource and interpretation park staff as well as NPS staff from surrounding parks.



In order to cultivate phenological and climate change literacy among the NPS workforce and park partners, the UCSB Team led train-the-trainer workshops at each CPP pilot park. Each workshop included hands-on training and brainstorming activities focused on observing the effects of climate change on natural resources through phenological monitoring. Here, they discuss the CPP's goals and progress with new partners - reserve magagers and stewards for each of the 37 reserves in the UC Natural Reserve System. Photo credit: staff, Sedgwick Natural Reserve.

## New Education Materials Available

Are you interested in getting your students and visitors involved in phenology but not sure where or how to start? The UCSB team has made it simple by developing a variety of in-class and field-based lesson plans and activity guides.

Whether you are looking for a one-time activity or you are developing a multi-faceted year-round program, visit the **'Education'** section of the CPP website to download a wide range of phenology science and education materials, including:

- Annotated Powerpoint lectures for university and public audiences
- Standards-aligned lesson plans for K-12 classrooms
- Interactive hands-on activities and games for all ages, for indoor and outdoor settings
- Guides to establishing and using phenology gardens
- A primer for using herbarium specimens to detect the effects of climate change on plant phenology
- Guided analytical exercises with a real phenological data set
- Examples of linking phenology-based activities with Science, Technology, Engineering & Mathematics (STEM) and humanities subjects
- Seminar modules (peer-reviewed primary literature included) for advanced undergraduate and graduate students

## Announcement!

### CPP workshop for teachers

Santa Monica  
Mountains NRA

Santa Monica Mountains NRA and the UCSB Phenology Stewardship Program are collaborating to host two workshops for a total of 40 teachers in 2012.

Both workshops will focus on the concepts and practice of phenological monitoring and its link to climate change. Teams of teachers will work with CPP staff to test CPP lesson plans and outdoor activities, and to design novel lesson plans of their own.

In order to develop phenology educational tools that can be used from middle school through high school, one workshop will target 7th grade science teachers and the other will recruit high school teachers. Both will align with California Science Content standards for Life Science/Biology and Investigation & Experimentation.

Teachers will learn all the plant biology necessary to identify phenological phases and to record and report data using the USA-NPN protocols and online interface.

Participating teachers and their classes will be provided with transportation to the park for a subsequent field trip. Recruitment flyers will be distributed in Winter 2012.

For further information, contact Susan Mazer (email address at right) or Barbara Applebaum (barbara\_applebaum@nps.gov).

Following the workshop, five phenology trails or sites were established at Emigrant Trail, Manzanita Lake, Sunflower Flats, Hot Rock, and Devastation Point. These sites all are on the north side of the park and include six plant species; two additional sites and a seventh species are planned for the south side of the park in the future. Park staff and volunteers completed monitoring twice a week at all sites. Sites near Loomis Museum are located on a nature trail close to the visitor's center – these were used in an interpretive program designed by a member of the park's interpretive staff to introduce the idea of phenological and seasonal changes to the public. Another interpretive program was developed to share stories and songs relating to seasonal changes, helping park visitors to make their own creative connections with phenology.

#### Redwood N&SPs (REDW)

In early June, as *Rhododendron* shrubs were beginning to flower in the foggy redwood forest, a train-the-trainers workshop was conducted for natural resource and interpretation park staff and cooperators. Following this, three phenology trails were established at Ladybird Johnson Trail, Kuchel Visitors Center, and the Crescent Beach overlook. Seasonal vegetation management and interpretation employee, Steven Krause, conducted weekly or twice-weekly monitoring throughout the summer months. Monitoring sites were publically accessible and resulted in many interpretation opportunities. Steven also introduced phenology into each of his ranger-led programs including: 1) The Trillium Falls forest walk called 'A Seasonal Change' which focuses specifically on the CPP, 2) the Prairie Creek walk 'Plant Identification' which includes a piece on how climate change affects redwood ecology and their symbiotic relationships, and 3) a campfire program addressing reptile and amphibian conservation in the face of climate change which concludes with a list of links to citizen science projects including the CPP and the USA-NPN.

#### Santa Monica Mountains NRA (SAMO)

In mid-May, as hillsides were transitioning from spring green to summer brown, two train-the-trainer

workshops were held at the park for natural resource and interpretation park staff and cooperators. Following this, four phenology trails were established at Sandstone Peak, Zuma Canyon, Paramount Ranch, and Rancho Sierra Vista/Satwiwa. These trails span an environmental gradient from the coast, over the mountains, and into the inland valleys. Park staff, volunteers, and partners at NatureBridge conducted monitoring throughout the summer. NPS staff gave three climate change seminars to the entire park staff, portions of which addressed phenology, and two presentations on phenological monitoring to park education staff and state park docents. A George Melendez Wright Intern worked with park staff in developing a fifth grade curriculum for monitoring phenology at the Rancho Sierra Vista/Satwiwa site.

#### Sequoia & Kings Canyon NPs (SEKI)

At the peak of snowmelt in mid-July, train-the-trainers workshops were conducted for natural resource and interpretation staff from areas throughout the two parks. SEKI has selected five species for initial phenological monitoring, and two monitoring locations were established in October at Foothills Visitor Center and the Lower Kaweah air quality monitoring site (on the edge of the Giant Forest). Both sites are co-located with long-term weather and air quality monitoring stations. In a complementary effort, park interpreter Stephanie Sutton developed the SPROUTS program for Central Valley 5th-6th grade students that uses a methodology called "Understanding by Design". This method helps students discover what phenology is and how to detect phenological changes in oak trees which are readily observable in their schoolyards. Two web-based "phenocams" also have been installed at park headquarters for SPROUTS, enabling students to remotely observe the phenology of a blue oak and a California buckeye canopy and compare what is happening in the park with phenological events they observe directly in their schoolyard. Park staff are currently developing a time lapse video using images from the webcams to provide a more dynamic view of the two tree canopies.

Visit the new California Phenology Project website!

[www.usanpn.org/cpp](http://www.usanpn.org/cpp)

Join the conversation... subscribe to the CPP Listserv

Send an email to [listserv@listserv.arizona.edu](mailto:listserv@listserv.arizona.edu) with the following single line in the body of the message (no subject line required): subscribe CPP YourFirstName YourLastName



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