

# Track Plant and Animal Phenology with *Nature's Notebook*

Phenology is the study of recurring plant and animal life cycle events such as leafing and flowering of plants, maturation of agricultural crops, emergence of insects, and migration of animals. Phenology is simple to observe and record and a key indicator of how plants and animals respond to weather and climate.

Nature's Notebook is an off-the-shelf program appropriate for scientists and non-scientists alike, engaging observers across the nation to collect phenology observations on both plants and animals. **We invite you to join us!**



## Getting Started

Observers participating in Nature's Notebook follow explicit protocols to document the status of their target species over time.

## Steps to Participate:

- Create a user profile
- Register a site
- Select plant and/or animal species to observe
- Select individual plants at the site to observe
- Become familiar with observation protocols for each species
- Make periodic observations
- Submit observations via the online interface

**Nature's Notebook is a great way to engage people in climate change science.**

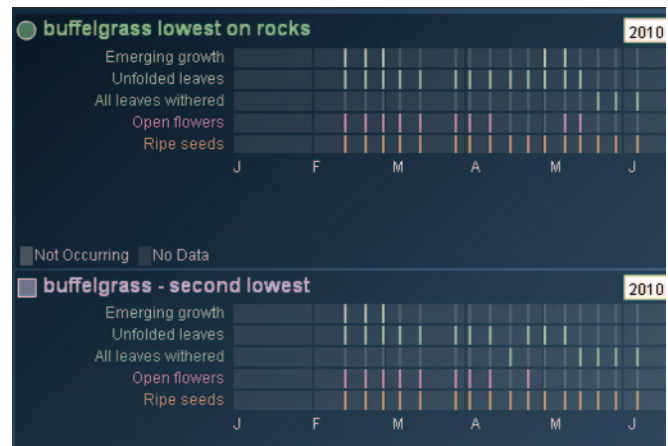
Visit [www.usanpn.org/participate/guidelines](http://www.usanpn.org/participate/guidelines) for information on getting started. Several training resources are also available online, including narrated videos, scripted

PowerPoint presentations, a field handbook, and tip sheets. We can also arrange tailored training webinars for organizations interested in participating.



## Valuable Data for Science and Decision Making

Phenology observations have proved invaluable in advancing our understanding of how plants and animals and ecosystems are changing under variable climate conditions. Observations of lilac phenology captured over the past six decades across the United States have enabled the development of models such as the Spring Index<sup>1</sup>, which uses climatological information to predict phenological events in plants.



Data can be explored using dynamic online visualization tools at [www.usanpn.org/results/visualizations](http://www.usanpn.org/results/visualizations).



The phenology data collected via Nature's Notebook are intended to fill a critical gap in the availability of spatially extensive observations and to address priority research questions, including:

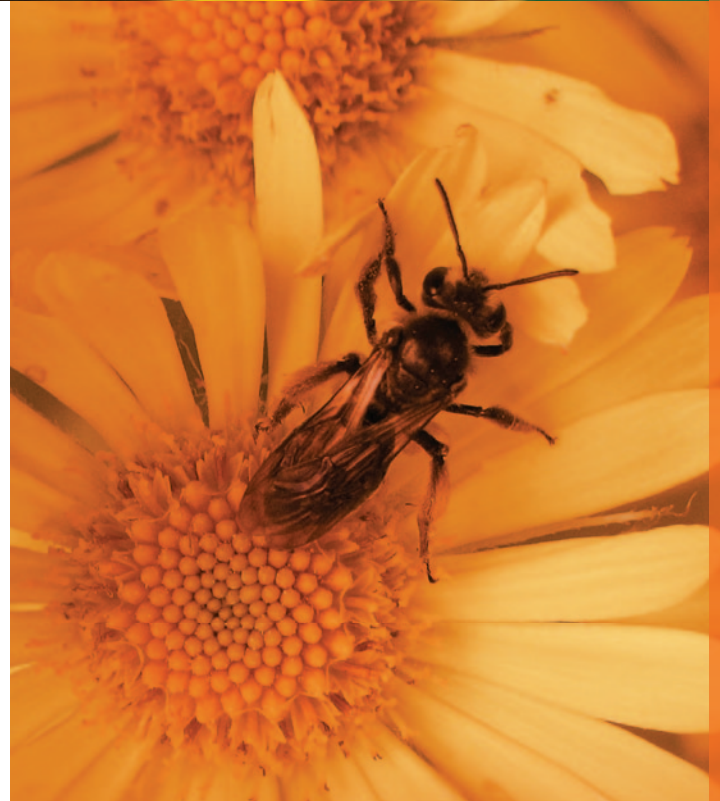
- Determining spatial and temporal trends in phenology across the nation
- Using phenology as an indicator of species and habitat vulnerability to environmental variability and climate change
- Determining the relationship between phenology and ecosystem processes and services

Interested analysts may download data from the national phenology database, [www.usanpn.org/results/data](http://www.usanpn.org/results/data).

#### Nature's Notebook in the Classroom

Nature's Notebook is an off-the-shelf program that can readily be folded into secondary and university curriculum. Many phenological stages are relatively simple to observe and record, making observing phenology an ideal way to engage students and enhance climate change education. Find out more at [www.usanpn.org/education](http://www.usanpn.org/education).

#### Students in the Rocky Mountain Science and Sustainability Network's Summer Academy observe blue grama at the Shortgrass Steppe LTER.



**USA-NPN is a consortium of individuals and organizations that collect, freely share, and use phenological and physical data, models, and related information to help scientists, resource managers, and the public make informed decisions about climate change adaptation and mitigation.**

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