

[Home](#) » [Node](#)

# Nature's Notebook Documentation

Last updated March 14, 2022

## Contents

- [Introduction](#)
- [Instructions Given to Observers](#)
- [Versions](#)

## Introduction

*Nature's Notebook* is an online plant and animal phenology monitoring program developed and maintained by the USA-NPN National Coordinating Office (NCO). It was launched in 2009, and participating observers use a personalized online account, or the associated mobile app, to access the web-based data registry interface which enables them to input observation reports directly into the National Phenology Database. Observers are dispersed and may or may not be involved in a locally-organized monitoring effort that provides training and support. Therefore the USA-NPN has limited ability to ascertain the skill level of individual observers, or to insure their correct implementation of phenology protocols. However, plenty of guidance for these independent observers is provided in the materials found on the *Nature's Notebook* website.

Note that some locally-organized efforts set up one or more group sites at which multiple observers share the responsibility for reporting observations for the same individual plants and animal species over the course of a season. These group sites might ask each observer to enter their own observations (using their unique Observer\_IDs), or they might enlist a "data entry technician" who collects paper datasheets from the observers and enters all data for the site under a single Observer\_ID.

The purpose of this document is to generally describe the online interface and to outline version changes over time in order to facilitate accurate interpretation of *Nature's Notebook* observation data. To see more detail for the current version of *Nature's Notebook*, please use the links below to see each web page. For older versions, please refer to the detailed documentation files accessible through the links in the [Versions](#) section below. For a description of the monitoring methods used in *Nature's Notebook*, see our [published](#)

phenology protocols (Denny et al. 2014) and the plant and animal phenophase definitions.

*Note: Specific phenophases, phenophase definitions, phenophase photos and intensity choices for each species have changed over time and are not fully documented within these files. Please see database output for the exact phenophase definition, photo and intensity choices that were in use at the time of any given observation for any given species.*

## Instructions Given to Observers

The following is a brief paraphrasing of the instructions given to observers for choosing and registering a sampling site, making and recording observations, and entering the data online. The salient points for data analysis and for understanding potential sources of observer error or bias are included.

Participants are introduced to the *Nature's Notebook* program through an introductory web page (<http://www.usanpn.org/nn/become-observer>) which outlines three basic steps: 1) Join *Nature's Notebook*, 2) Set up your account, 3) Start observing! A single link leads to a user registration page and from there new users are directed to registration pages for their sites, species and individual plants, and to guidelines for monitoring.

**Step 1: Join *Nature's Notebook*.** Users register with a name and email address and are asked to provide some other optional personal information, including a questionnaire designed to assess their degree of phenology monitoring-related training and experience (<https://www.usanpn.org/user/register>). Once users register themselves, they are directed to add a site and register a plant or animal, then are directed to their personal online "Observation Deck".

**Step 2: Set up your account.** From the online Observation Deck there are functions to:

**Add or Edit a Site:** Observers are required to provide the location (lat/long) of each their sites either by pinpointing the center of the site on a Google map application, or manually entering the latitude and longitude coordinates (WGS84 datum in decimal degrees with 4 to 6 decimal places is requested). Decimal places in coordinates generated by the Google map can be manually truncated by the user. Users are also requested to provide information about the physical and ecological characteristics of each of their selected sites.

**Add or Edit Plants:** Observers are not required to monitor any plants at their monitoring site, but if they choose to do so, they are required to provide the species and a unique nickname for each individual plant or patch. They are also requested to provide information about the growth environment of each individual plant or patch.

**Add or Edit Animal Checklist:** Observers are not required to monitor any animals at their monitoring site, but if they choose to do so, they are required to create a list of animal species which they will observe.



**Create Datasheets and Phenophase Definition Sheets:** Observers can print out a field packet of datasheets and phenophase definition sheets customized for the species registered at their site. Datasheets and phenophase definition sheets can also be printed for a single registered species. These paper datasheets were designed to mirror the online data entry interface to reduce errors in the process of data entry by observers. Alternatively data can be entered directly from the field via a *Nature's Notebook* mobile app.

**Enter Observation Data:** Observers are required to report the date for each observation. They are also able to report the time. For each observer only one entry is permitted per date-time combination for each phenophase of each individual plant or plant patch, or each animal species at each site. Only one entry for each date is permitted when no time is reported. However, at group sites (formerly called "shared sites"), more than one observer can report on the same individual plants and animal species for a given date-time combination. For each observation, observers are requested to provide the information outlined in "Recording plant and animal observations" below for each of the phenophases for each of their individual plants, plant patches and animal species.

**Step 3: Start observing!** From the introductory web page and from the Observation Deck, there are links to the *Nature's Notebook* species list and to detailed guidelines for monitoring.

The Plant and Animal Species Search page ([http://www.usanpn.org/nn/species\\_search](http://www.usanpn.org/nn/species_search)) provides a number of filters to search for plant and animal species available for monitoring. *Nature's Notebook* limits data entry to species that are on this list, although additional species continue to be added.

Each species on the list generated by the search filter is linked to a species profile page. Each species profile page includes a photograph, some general information about the species, the phenophases (and their definitions) that should be monitored for that species, and a link to a printable monitoring datasheet for that species. For many of the phenophases on each species profile page, a direct link to an entry on the Frequently Asked Questions page (<http://www.usanpn.org/nn/faq>) provides more information about what defines that phenophase.

The Learn How to Observe page (<http://www.usanpn.org/nn/guidelines>) includes an overview of how to set up a site for observation, then how to make and report phenology observations (summarized below) with links to more information about each topic on a Frequently Asked Questions page (<http://www.usanpn.org/nn/faq>).

**Site selection:** Observers are instructed to limit each site to a single habitat type and a size no larger than 15 acres (or 250x250m, the size of a MODIS pixel). If the area they wish to monitor is larger than that or consists of multiple habitat types, they are encouraged to divide the area into multiple sites for reporting purposes. Within this area they may select individual plants for monitoring and observe the presence and activity of animal species.

**Species selection:** Observers are encouraged to choose whichever species they want from the list, trying to include at least one plant campaign species. They are also encouraged to make sure they have properly identified each species before reporting data, and are given links to some resources to help them do that.

**Individual plant selection:** Observers are encouraged to select one or more healthy individuals of each of their chosen plant species to monitor separately over time. For multiple individuals of the same species, they are encouraged to choose individuals that are not direct neighbors but are growing in a similar environment (e.g. similar amount of sun exposure). They are also encouraged to avoid selecting individuals within 20 feet of a road or building.

For small plants that grow in large masses of individuals (e.g., some grasses, forbs and low-growing shrubs), observers are given the option to delineate and monitor a group of individuals as a single "patch".

**Marking sites and plants:** Observers are instructed to mark site boundaries and individual plants or patch corners to insure they are observing the same area and individuals over time.

**Organization:** Observers are encouraged to read the species materials and print out datasheets or download the data entry mobile app before they head out into the field for observation. They are also encouraged to use binoculars for observation of animals and phenophases in tall trees.

**Recording plant and animal observations:** Observers are encouraged to visit their sites at least once a week to make observations, and more frequently during times of rapid phenological change (e.g., spring or fall). For each visit they are instructed to record the date and (optionally) time, snow conditions at the site, and to report on phenophases as described below. They are encouraged to ignore and not report on any phenophases that seem too difficult for them to evaluate.

**Plants:** For each phenophase for each individual plant or patch, observers are asked "Do you see [phenophase name]?" and are instructed to record the following on the datasheet or mobile app:

- Yes (y) – if you saw that the phenophase *is* occurring
- No (n) – if you saw that the phenophase *is not* occurring
- Uncertain (?) – if you were *not certain* whether the phenophase was occurring
- Do not circle anything if you *did not check* for the phenophase

For most of the plant phenophases, observers can also report on the intensity of the phenophase (e.g. the number of total flowers and flower buds present, the percentage of flowers that are open).

**Animals:** Animal monitoring in *Nature's Notebook* is inherently different from plant monitoring in that the same individuals are not followed over time. For animal monitoring,



the boundaries of the site are what stay constant and observers look for any individuals of the species under observation within those boundaries, reporting on the presence and activity (phenophases) of each species. Not only uncertainty in the phenophase is possible, but also in the species identification. Therefore the "Uncertain" choice could be selected for either doubt about the phenophase or doubt about the species.

For each phenophase for each of the animal species chosen for monitoring at the site, observers are asked "Do you see or hear [phenophase name]?" and are instructed to record the following on the datasheet or mobile app:

- Yes (y) – if you saw or heard that the phenophase *is* occurring
- No (n) – if you saw or heard that the phenophase *is not* occurring
- Uncertain (?) – if you were *not certain* whether you saw or heard that species or that phenophase
- Do not circle anything if you *did not check* for the species or phenophase

For most of the animal phenophases, observers can also report on the abundance or intensity of the phenophase (e.g. the number of individuals that were seen feeding).

For animal monitoring, observers are also instructed to report the amount of time spent searching for animals and which of the following search methods was used at each observation:

- incidental (chance sighting while not specifically searching)
- stationary (standing or sitting at a single point)
- walking (a single pass or transect through your site)
- area search (multiple passes through your site, possibly crossing the same point more than once)

Further training materials include *Nature's Notebook* Nuggets (<https://www.usanpn.org/nn/observe/questionsanswered>) (released 2015-16), and a Botany Primer (released 2015) and Phenophase Primer for Plants (first draft released 2017), which can be found on Our Reports page (<https://www.usanpn.org/pubs/reports#Education>).

An instructor-led Local Phenology Leader Certification Course (<https://www.usanpn.org/nn/groups/LPLcertification>) has been offered since 2016 to train leaders of locally based, multi-observer phenology projects across the country. For individual observers, a self-paced Observer Certification Course (<http://learning.usanpn.org>) is offered (Module 1 released 2019; Modules 2 and 7 released late 2020), and observers who complete the course are flagged as "certified observers" in our database.

# Versions

Click on the link for each older version for access to more detailed documentation. The dates each version were active are listed in parentheses. The most significant changes are bulleted here for each version.

## v2.10 (3/10/2022 to present)

- Slight changes to "Falling needles", "Breaking leaf buds", "Leaves", and "Young leaves" phenophase definitions
- Additional modules added to Observer Certification Course

## v2.9 (2/1/2021 to 3/9/2022)

- Slight change to "Falling leaves" phenophase definition
- Slight changes to names of some animal phenophases
- More advanced phenophases added to aquatic insect protocols
- Additional modules added to Observer Certification Course

## v2.8 (2/17/2020 to 1/31/2021)

- More advanced phenophases added to butterfly and grasshopper protocols

## v2.7 (2/5/2019 to 2/16/2020)

- Addition or update of protocols for several insect groups
- Updated mobile phone app
- First module of Observer Certification Course released

## v2.6 (1/17/2018 to 2/4/2019)

- Addition of protocols for a few insect groups

## v2.5 (2/6/2017 to 1/16/2018)

- Update of bird protocols to include breeding phenophases
- First draft of Phenophase Primer released

## v2.4 (2/11/2016 to 2/5/2017)

- Significant change to "Colored leaves" phenophase definition to explicitly include drought coloration
- Addition of "Colored leaves" phenophase to all drought deciduous tree/shrub species
- Slight changes to plant phenophase definitions and intensity questions
- Addition or update of protocols for several insect groups

## v2.3 (3/10/2015 to 2/10/2016)

- Updates to many training materials
- Botany Primer released

#### v2.2 (1/29/2014 to 3/9/2015)

- More advanced phenophases added to bee and moth protocols
- Streamlined steps for new observer registration
- Created ability to document persons who observed vs. entered/updated data

#### v2.1 (2/22/2013 to 1/28/2014)

- Improved website style and navigation

#### v2.0 (2/28/2012 to 2/21/2013)

- Significant changes to plant intensity/abundance reporting
- Slight changes to plant phenophase definitions
- Addition of species-specific fruit phenophase definitions for all plant species
- Addition of capacity for "patch monitoring" where a group of small individual plants can be monitored as a unit within a single delineated patch
- Addition of "incidental" search method for reporting of animal phenophases

#### v1.0 (3/21/2011 to 2/27/2012)

- Addition of intensity/abundance reporting
- Significant changes to plant phenophase definitions
- Addition of capacity to report time of day of observation
- Addition of capacity for "group" (or "shared") sites where multiple registered observers can report for the same individual plants and animal species at a site

#### v0.2 (3/27/2010 to 3/20/2011)

- Renamed to "Nature's Notebook"
- Addition of animal phenology monitoring

#### v0.1 (3/2/2009 to 3/26/2010)

- Improved interface
- Change to status monitoring approach

#### Initial web interface (5/28/2008 to 3/1/2009)

- Interface was not documented
- Primitive interface where entered data could not be displayed for review
- Consisted of phenological event monitoring approach for a number of plant species (see [v0.1 documentation](#) for explanation of event monitoring)

[About Us](#)[Terms Of Use](#)[Accessibility](#)[Contact Us](#)

## NATURE'S NOTEBOOK

[Become an Observer](#)[Species List](#)[Join a Campaign](#)[How Data Are Used](#)[Education](#)[Glossary](#)

## PHENOLOGY DATA

[Visualization Tool](#)[Maps and Models](#)[Observational Data](#)[Data Dashboards](#)[Publications](#)

## COMMUNITY

[Local Phenology Programs](#)[Forum](#)[Partner With Us](#)[National Partners](#)[Global Partners](#)

## WHAT'S HAPPENING

[Status of Spring](#)[Pheno Forecasts](#)[News & Events](#)[Newsletters](#)[Media Kit](#)

## FOLLOW US





