How to Observe
Nature’s Notebook
Plant and Animal Phenology Handbook

September 2013

usanpn.org
USA-NPN Education & Engagement Series 2013-001
USA National Phenology Network

USA National Phenology Network Plant and Animal Observation Handbook


Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Although this report is in the public domain, permission must be secured from the individual copyright owners to reproduce any copyrighted material contained within this report.
# Table of Contents

**About This Handbook** ............................................................................................................................................. 2

**Overview** .......................................................................................................................................................... 3

1. Join *Nature’s Notebook* ..................................................................................................................................... 4

2. Set Up Your Account .......................................................................................................................................... 7
   a) Choose a Site .................................................................................................................................................. 7
   b) Choose Plant and Animal Species ............................................................................................................... 10
   c) Set Up Your Sites and Species Online ......................................................................................................... 14

3. Start Observing .................................................................................................................................................. 25
   a) Get Organized to Go Outside ...................................................................................................................... 25
   b) Record Plant Observations ........................................................................................................................ 36
   c) Record Animal Observations ...................................................................................................................... 36
   d) Submit Observation Online ........................................................................................................................ 39

Appendix A – Recording Phenology Observations: A concrete example of how to complete datasheets ........................................................................................................................................ 44

Appendix B – Creating a Group in *Nature’s Notebook* for a Monitoring Program at a Site *(coming soon)*
How to Observe  

*Nature’s Notebook* is the USA National Phenology Network’s (USA-NPN) plant and animal phenology observation program. **Phenology** refers to recurring plant and animal life cycle stages, or phenophases, such as leafing and flowering, maturation of agricultural plants, emergence of insects, and migration of birds.

Phenology records can help us understand plant and animal responses to climate change. Changes in phenological events like flowering and bird migrations are among the most sensitive biological responses to climate change. Across the world, many spring events are occurring earlier—and fall events are happening later—than they did in the past. However, not all species are changing at the same rate, and some are not changing at all. These different shifts in timing are shaking up ecosystems and altering interactions and processes (like pollination and carbon cycling) that took place in the past. The valuable data collected using *Nature’s Notebook* will help scientists and managers identify which species are changing the timing of their life cycles, and how, so that we can better predict the impact of changing phenologies on natural systems and people.

About This Handbook

This Handbook is intended to be a reference for participants in *Nature’s Notebook*. It includes information that may be useful out in the field; it is intended to be taken to your observation sites, at least as you are getting started.

As part of *Nature’s Notebook*, you are invited to observe both plants and animals. Some of the information in this document is specific to plant phenology observations; headings for this information are preceded by a leaf icon 🌿. Other information is specific to making animal observations; headings for this information are preceded by a bird icon 🦅. Information that pertains to either plant or animal phenology observations has standard black text headings.

Additional *Nature’s Notebook* training materials are available on the *Nature’s Notebook* website:

- **Online instructions and training videos** for creating an account, joining an existing group, and recording plant and animal phenology can be found at [www.usanpn.org/nn/guidelines](http://www.usanpn.org/nn/guidelines).
- **Frequently Asked Questions** can be found at [www.usanpn.org/nn/faq](http://www.usanpn.org/nn/faq).
- Lists of other resources for observing, including suggested field guides and web resources (link for this??)
- An online **Glossary** can be found at [www.usanpn.org/glossary](http://www.usanpn.org/glossary)
- **Botany and Phenophase Primers** (coming soon)

You can also email us with questions at [support@usanpn.org](mailto:support@usanpn.org) or with biological/plant and animal phenology questions at [observe@usanpn.org](mailto:observe@usanpn.org).
Overview

As part of *Nature’s Notebook*, you are invited to observe both plants and animals. Observing phenology is very similar for both, however, because animals move around and plants do not, there is one important difference in the way we ask you to observe the two groups:

- **For plants**: Observe the same individual plants each time you visit your site. For example, you should observe the same red maple in your back yard all through the year.

- **For animals**: Create a checklist of animal species and look for all of them each time you visit your site. For example, if your checklist has robins, wood frogs, and tent caterpillars on it, you should record whether or not you see or hear those species anywhere in your site each time you visit.

Whether you choose to observe both plants and animals or only one or the other, there are several steps to setting up your observation program. More information is provided on each of these steps in the sections below and can also be accessed on the website via the following link: [www.usanpn.org/nn/guidelines](http://www.usanpn.org/nn/guidelines).

There are three main steps to get started with a *Nature’s Notebook* observation project. They include more details about how to get set up online, how to choose a site and species to monitor, how to monitor, and how to record your observations on both paper datasheets and the *Nature’s Notebook* online interface. This handbook provides information about each of these steps as well as screen shots to guide you through the process.

This *How to Observe Handbook* corresponds to the online materials found at [www.usanpn.org/nn/guidelines](http://www.usanpn.org/nn/guidelines). Both follow the same outline:

1. **JOIN Nature’s Notebook**
2. **SET UP YOUR ACCOUNT**
   a) Choose a Site
   b) Choose Plant and Animal Species
   c) Set Up Your Sites and Species Online
3. **START OBSERVING!**
   a) Get Organized to Go Outside
   b) Record Plant Observations
   c) Record Animal Observations
   d) Submit Observations Online

Let’s begin!
1. JOIN Nature’s Notebook

Your first step is to create a Nature’s Notebook account. You will create a unique user name and password. Visit the main Nature’s Notebook webpage to get started, [www.nn.usanpn.org](http://www.nn.usanpn.org), click on the **BECOME AN OBSERVER** callout and follow the instructions on the screen (Figure 1).

![Figure 1 The Join Nature’s Notebook Screen where you’ll create your account.](image)
Once you have created an account, you will be able to log in to Nature’s Notebook and access your personal Nature’s Notebook Observation Deck (see Figure 3 on the next page). This is the page you will return to for all activity. From this page, you can register a site, register individual plants, create an animal checklist, and enter your observation data. These key functions in Nature’s Notebook are found underneath the Sites, My Plants & Animals, Details for this Organism, and Enter Observations boxes. The links that you can click on will always appear in ORANGE. Returning to your Observation Deck is easy. The link is accessible on each page in Nature’s Notebook by clicking on the OBSERVE drop down menu and then My Observation Deck.

![Nature's Notebook Observation Deck](image)

Figure 2 Return to Observation Deck
Figure 3 Full Observation Deck
2. SET UP YOUR ACCOUNT

a) Choose a Site

A site is the area within which you will look for your chosen animal species, and which encompasses any plants you choose to observe. When you select a site, such as your yard or a nearby natural area, consider these guidelines:

Convenience: You will be visiting your site(s) regularly, so it should be convenient and easily accessible.

Representative location: As much as is practical, the selected site(s) should be representative of the environmental conditions for your area.

What is a representative location?

We welcome all observations, even if your site is unusual for your area, but we encourage people to select sites that are representative of the local environment when possible. For example, if possible, we recommend that you select a site in a relatively flat or gently sloping area. We also recommend that you avoid areas that are subject to drifting snow or funneled or channeled winds. The site should ideally be neither excessively dry nor wet for your area. In forested areas, the site should be generally similar to the surrounding forest, reflecting the overall canopy composition and stature. If you are observing wild plants, we suggest you avoid locations where plants are watered or fertilized. If your site is unusual for your area, just record the unusual characteristics in the comments section of the Nature’s Notebook Add a New Site page when you register your site.

Uniform habitat: The conditions of your selected site(s) should be relatively uniform across the site. If you would like to observe two adjacent but distinct habitats, please document them as separate sites. For example, a wetland adjacent to or surrounded by a drier grassland or forest should be documented as a separate site from the grassland or forest.

In this example, the area has been divided into three sites: Site 1 is deciduous forest, Site 2 is conifer forest, and Site 3 is deciduous forest.
**Appropriate size:** A site should be **no larger than 15 acres** (6 hectares or 250 x 250 meters, or the size of a pixel from a land surface satellite image), a square with sides the length of 2 ½ football fields. A site can certainly be smaller than this, and larger areas can be divided into multiple sites.

In this example, the site is slightly larger than the length of one football field, so it is well within the recommended 15-acre size limit.

**How do I choose an appropriate size for my site?**
The best size for your site depends on the scale of your landscape and the distance over which you can easily see or walk. It also depends on whether you are observing animals or only plants. For plants, a site is the area that surrounds the individual plants you are observing. For animals, a site is the area where you look for the animals on your checklist. If you are observing both plants and animals, your site(s) can serve in both of these ways.

**If you are observing both plants and animals or only animals:** Because you will be reporting observations of animals you see or hear **in your site**, your site can include the area that you can see and hear well while standing still or the area that you can walk in a relatively short amount of time. If you are observing in an open grassland or near a body of water, your site might be the maximum recommended size (15 acres), because you may be able to identify animals that are far away. In contrast, if your site is in a dense forest, it might be relatively small, as you may not be able to identify species at great distances.
If your site is in open grassland or at a lake or coastline, you may be able to see well and identify animals that are far away. Your site might be as large as the maximum recommended size (15 acres). If your site is in a dense forest, your site might be quite small because you aren’t able to see far.

Even if you can identify animals over a large area, an area should be divided into different sites if it includes habitats that are obviously different. For instance, if you are making observations at a pond in a meadow, the pond and the meadow should be registered as separate sites. In that case, just report your animal observations for the site at which you saw or heard them, for example, at either the pond or the meadow.

If you are observing only plants: For plants, the size of your site does not matter much as long as the conditions are pretty similar throughout your site. If you are observing just one plant, your site can simply be the small area immediately around that plant, say within 3 feet of the plant. If you are observing several plants near one another, you can consider them all to be at one site, as long as the site conditions are pretty similar and the site is no larger than 15 acres or 6 hectares.

When selecting the plants to observe at your site, you will want to strike a balance between how much time it will take to walk between plants, while ensuring that the individual plants that you are observing are not too close together. If you choose to observe multiple plants, we recommend that you select plants that are not direct neighbors – that is, selected plants should not be closer than two or three times the width of one of the plants.

Proper permission: If you do not own the property where the site is located, you must get permission from the landowner before marking any plants or reporting the site location information (such as latitude/longitude coordinates).

Many public agencies encourage observations of this kind and would be glad to know that you are reporting your observations to Nature’s Notebook. However, you should get permission to make observations from the appropriate department of the federal government, state, or municipality that has responsibility for the property. Land managers often issue written permits for land access, which will help ensure that you can mark your sites and plants and can regularly visit your site.

Mark your site
Regardless of whether you are observing only plants, only animals, or both, you will make your observations repeatedly at the same site(s) over time. You will want to somehow mark your site(s) so that you can find it again in the future.

Because plant monitoring requires that you observe the same individual plants repeatedly, you will also need to mark each plant so that you can find it on each visit. We recommend that you mark each individual plant with a unique label. For example, you could mark pieces of flagging tape with “red maple-1”, “red maple-2”, etc. and then tie them to each of the red maples you are observing.
Remember that if you do not own the property where your site is located, you must get permission from the landowner to put up any markers.

How can I best mark my site?
There are many options, but the most important thing is that you mark your site so that you can find it again in the future. For most sites, it is probably easiest to mark the four corners with colorful flagging, scrap cloth, or something similar. You can also use natural or man-made landmarks, like the edge of a yard, big rocks, a bend in a trail, a road, or something similar, to define the boundaries. You will need to replace your markers periodically as they weather and become unreadable. Also, remember that if you are observing a site on public land, you will need to get permission before marking the site.

b) Choose Plant and Animal Species

Choose one or more species from our list of plant and animal species. For plants, we encourage you to select at least one species from our annual campaigns (https://www.usanpn.org/nn/connect/region). For animals, we recommend that you select several species that occur in your local area or in your state.

Make sure that you have correctly identified the plant and animal species at your site before reporting your observations for those species online.

How do I identify my plants and animals?
Correct plant and animal identification is important when reporting your observations in Nature’s Notebook. We know it can be tricky to identify a plant or animal, and luckily there are many field guides and online resources that can help. Many communities also have gardening, birding, native plant or naturalist groups, cooperative extension offices, nature centers, local colleges, herbaria, state or national parks, or wildlife refuges where you can find people to help identify plants or animal in your area.

If you are uncertain of your plant’s identity, you can certainly record your observations on a datasheet until you have identified it (see FAQ “Can I start observing a plant if I am unsure which species it is?”). Please do not record the information in the database until you are sure you are observing the correct species.

If you uncertain whether an animal you saw was a species on your list that you are observing, it is best to record your observation of that species as uncertain by filling in the question mark (?) on your data sheet (see section 3 b & c, Record Plant and Animal Observations). The USA-NPN National Coordinating Office staff is small, so unfortunately, we cannot visit your site or identify your plant or animal from a photograph, but we will continue to add more information to our website to help
make identifying plants and animals, and their phenophases easier.

Here are some resources that may help you to identify species:

**Online field guides**

- Discover Life’s ID nature guides ([www.discoverlife.org](http://www.discoverlife.org))
- eNature ([www.enature.com/home](http://www.enature.com/home))
- Arbor Day Foundation (for trees, [www.arborday.org/trees/whattree](http://www.arborday.org/trees/whattree))
- Smithsonian Institution’s *Encyclopedia of Life* ([www.eol.org](http://www.eol.org))

**Other online resources for plants**

- USDA PLANTS ([www.plants.usda.gov](http://www.plants.usda.gov))
- Lady Bird Johnson Wildflower Center ([www.wildflower.org/explore](http://www.wildflower.org/explore))

**Other online resources for birds and animals**

- All About Birds ([www.allaboutbirds.org](http://www.allaboutbirds.org))
- National Cooperative Extension Resources ([www.extension.org](http://www.extension.org))

**Field Guide books**

Look for plant or animal field guides at a local or online book store. Field guides that are particular to your region are often the best choice.

**What can I do if the plant or animal I would like to observe is not on the recommended species list?**

The *Nature’s Notebook* species list includes plants and animals that are important to observe for a variety of reasons, including their ecological and economic importance, conservation value, importance as game species, association with health issues such as allergies, or importance to ecosystem services such as food supply, and major partner priorities.

We are do regularly revise the species list to meet research objectives. In the end, our goal is to have a deep dataset on a relatively small number of species indicative of a changing climate. A dataset with a lot of data on a few species can be of greater value to researchers than a dataset with sparse data on many species.

We welcome your suggestions for additions or changes. Our data management team reviews these
requests on an annual basis, usually in the fall. To make a species addition suggestion, make a comment on the species list, or ask a question about a plant or animal, please email observe@usanpn.org.

In the meantime, if you would like to start observing a plant or animal not currently on our species list, you can observe that species using a datasheet appropriate for a similar species, and submit your observations to Nature’s Notebook later if we decide to add that species to the list. You may also consider participating in one of the many other observation programs that are tracking the phenology of particular groups of plants and animals (view a list of other observation programs at https://www.usanpn.org/nn/connect/friends).

Select individual plants
At your site(s) select one or more individuals of each of your chosen plant species to observe. Choose plants that appear to be healthy, undamaged, and free of pests and disease. If you want to observe several individuals of the same species, try to select individuals that are not direct neighbors, but are still growing in a similar environment.

For annuals (which only survive one growing season) and biennials (which survive for two growing seasons), avoid choosing the first or the last seedling to emerge in the spring since they may not be representative of the larger population at your site.

How many individual plants of the same species should I observe?
For most observers, we recommend observing between one and three individuals of the same plant species at a site. Observers at research sites may wish to choose three to five individuals per site. Observing multiple individuals helps to give scientists an idea of the variation in phenology among individuals at your site. In some years and for some phenophases, multiple individuals will exhibit identical timing in their phenology, and in other years or phenophases they will not. Even if all your individuals seem to exhibit the same timing, that is still interesting to know and valuable data to collect!

When you choose the number of individuals to observe, you should consider the time it will take to make the observations. If you do decide to observe multiple individuals of the same species, try to select plants growing in a similar environment (for example, have similar amounts of sun or shade), but which are not direct neighbors—selected plants should not be closer than two or three times the width of one of the plants. For example, an observer might select three lilacs growing in his or her yard, each growing in full sun and spaced three plant widths apart from each other. If the lilacs are growing as a hedge, this would mean every third lilac plant could be selected. If you are observing the same species at multiple sites but have limited time, you may want to observe multiple individuals of each species at one of the sites, and only observe one of each species at the other sites.
Figure 9 Three creosote bush plants selected for monitoring in an observer’s back yard.

Are there other things I should consider when selecting my plant(s)?
Yes. Although we welcome all observations, we encourage observers to avoid selecting plants that are closer than 20 feet to a road or building. Also, please read the “Special Considerations for Observing” section of the species profile to find out if there are other considerations for your plant species. For example, some species grow clonally and form large clumps of stems growing from the same roots. If your plant can be clonal, try to choose individual stems from different clumps. Where it is not possible to follow these guidelines for a specific individual, mention that in the comments section of your Nature’s Notebook Add or Edit Plants page online.

How can I best mark the plant(s) that I am observing?
For trees and shrubs, you can attach flagging tape or small, inconspicuous aluminum tags (which you can buy at a hardware store or forestry supply company) to the trunk or a branch on each plant. For grasses and forbs, you can place labeled toothpicks, popsicle sticks, or skewers in the ground next to each plant, or loosely tie colored string around the base of the plant. However you mark your individual plants, you will want to make sure you do not change the growing conditions of the plant. For example, avoid placing a broad stake next to a small plant that would shade it or cause root damage. You will need to replace your markers periodically as they weather and become unreadable.

What if the plant I am observing dies?
If an individual dies or is obviously declining in health (when others of the same species around it are still healthy), you should select a new individual to observe. However, be sure to report the old individual as dead on your Nature’s Notebook Add or Edit Plants page and add the replacement as a new plant with a different nickname. If you are observing any annual or biennial species at your site, you will need to select a new plant on a regular basis since the individual plants die after one and two years, respectively.
What is ‘patch monitoring’, and how do I set up a patch?
For small plants that grow in large masses of individual stems, it can be difficult to single out a few individuals to observe over time. Instead you can set up a patch of designated size and report on the phenophases for the patch as a whole. This method works well for grasses, clonal species that tend to grow as a groundcover, annuals, and very small forbs that tend to grow in clumps of individuals.

To set up a patch, mark the four corners of a square within the area the species takes up over the ground. We recommend a square that is three feet (or one meter) on each side, but the square can be smaller (such as one foot on each side) if the species does not cover an area as large as nine square feet (or a square meter). When you register the plant on your Nature’s Notebook, Add or Edit Plants page, simply click the check box for Patch? to indicate you are observing a patch rather than a single individual, and report the size of your patch. If the species covers enough area at your site, you could create several patches to observe separately just as you might choose several individual trees of the same species to observe.

c) Set Up Your Sites and Species Online
As you collect data during the season, you will need to log in to Nature’s Notebook and enter the observations you have recorded. When you first visit Nature’s Notebook online, you will need to follow these steps to get set up before you can begin to enter your observations.

Register your site
Add a personal site
To register a site, click Add a New Site link under the Sites box on your Observation Deck. On the Add a New Site page, enter a name for your site and use the map interface to pinpoint its location. You can locate your site by entering an address (which will be automatically geo-located on the map), by clicking directly on the location on the interactive map, or by typing the latitude and longitude into the boxes below the map.

Below is an example of where you can find the Add a New Site link on your Observation Deck and an example of the Add a New Site Screen.
Figure 12 Add a New Site link on your Observation Deck

Figure 13 Add a New Site Page in Nature's Notebook

Please fill out as much of the “Optional Additional Information” about your site as possible. This additional information helps scientists to better interpret the observations you make at your site. There are three tabs for overall information about the site, information specific to plant observation at the site, and information specific to animal observation at the site. You can find more information about each question by holding your cursor over the icon.

nn.usanpn.org
Optional Additional Information
Please answer as many of the following questions as you can. Hover over the symbol for further explanation of the choices. If you do not know how to best answer a question for your site, please leave it blank.

**Overall**

The degree of development surrounding the site can best be described as:

- Select one

This site is best described as:

- Select one

How close is the nearest paved or maintained dirt road to the site?

- Units

How close is the nearest permanent body of water to the site?

- Units

What is the area of the site?

- Units

Comments:

---

**Plants**

Answering these questions about your sites will help the scientists who use your data on plant observations.

If there are trees at this site, they can best be described as:

- Select one

Is this site on or near a slope?

- No, the surrounding terrain is relatively flat
- Yes, and the site is...
  - On the top of the slope or on a ridge
  - In the middle of the slope
  - At the bottom of the slope or in a valley between slopes

If yes, the slope faces:

- Select one

Comments:

---

**Animals**

Figure 14 Optional Information Page – Overall Tab

Figure 15 Optional Information Page – Plants Tab
When you are done, click the **Save Changes** button. Now, when you return to your **Observation Deck** you will see the site just created appear in the **Sites** box under the My Sites drop down box. See the example below. From here, you can click the **Edit Site** button to return your site’s page at any time to edit the information you entered.
Once you have successfully registered a site, you can add individual plants to that site by clicking **Add or Edit Plants** under the **My Plants & Animals** box.

To register a plant at your site, first ensure that the site to which you would like to register the plant is selected in the **My Sites** drop-down box under the **Sites** box. See the screen shot above. Clicking on the **Add or Edit Plants** link will take you to the page to add plant species. An example can be found below.
Click on the link for **Add new plant** and you will be presented with a box to begin typing the species of your choice. You can also search the list of 900 available species by clicking on the link for **available plants**.

Then, begin typing the common or scientific name of the plant species in the Plant species box. In the example above, we are selecting buffelgrass. Once you start typing, you will be offered suggested plant species from the *Nature’s Notebook* plant species list. Click on the plant species you would like to register, and it will automatically be given a nickname in the **Nickname** box. You can keep this default nickname or change it to something else. The purpose of the nickname is for you to distinguish between different individuals at your site, in case you register more than one individual of the same species.

Choose answers to the remaining questions, and add the planting date (of non-wild plants) if you happen to know what it is. Planting date is important primarily for individual plants that were planted within a year of when you began observations.

When you are done, click the **Save this plant button**, and the registered plant will appear in the **Your Plants** window on the left. Click the **Add new plant** link to add your next plant. To edit the information for any of your registered plants, at any time, select the plant in the **Your plants**
window, and its information will appear on the page. When you are done, return to your Observation Deck and notice that your plant has now been added to your My Plants & Animals box in the center of your Observation Deck.

**Figure 19** Plant species successfully added to the Observation Deck

**Deleting a Plant Species**

Later on, if you need to delete a plant, or report that it died, you may do so by checking the appropriate box located just above the comments section for the plant. You will then be asked a number of questions as to why you are deleting the plant or when and how you think it died. When you are finished answering these questions, click on either the “Delete” or “Mark as Dead” buttons. See the example on the following page.
Once you have successfully registered a site, you can create a checklist of animals to look and listen for at that site by clicking Add or Edit Animals under the My Plants & Animals box on your Observation Deck.

To add animals to your checklist, first ensure that the site to which you would like to register the plants is selected in the Site drop-down box at the top of the Add or Edit Animal Checklist page, as in the example below.
Next, select animal species from the **Species Available** window on the left. You can filter the animals in this list by choosing options in the drop-down menus for “State”, “Species group” and monitoring “Partner”. Click the **Add to Checklist** button in the middle to move the selected species into the **My Checklist** window on the right. You can also use the **Remove** button to remove species from your checklist.

Once you are finished adding animals to your checklist, click the **Save checklist** button in the lower-left corner of the screen. **Be sure to save your checklist** before you change any filter choices.

Once you have successfully created an animal checklist for your site, you should see the animal species appear on your **Observation Deck** in the **My Plants & Animals** window, as in the example below.
You can always sort the order of appearance of the plants and animals in your My Plants & Animals list by clicking on the Sort Plants & Animals link. This allows you to move them up or down in the list. See below for an example.
Sort Plants & Animals

Set the order of your plants and animals on your Observation Deck and Field Datasheets. Select one or more species and use the controls to change the plant or animal’s position in the list.

Select the site where your plant is located. Site: Pima Extension Office (P)  

<table>
<thead>
<tr>
<th>Species</th>
<th>Nickname</th>
</tr>
</thead>
<tbody>
<tr>
<td>velvet mesquite</td>
<td>PROVEL-1</td>
</tr>
<tr>
<td>velvet mesquite</td>
<td>PROVEL-2</td>
</tr>
<tr>
<td>saguaro</td>
<td>CARGIG-1</td>
</tr>
<tr>
<td>ocotillo</td>
<td>FOUPL-1</td>
</tr>
<tr>
<td>ocotillo</td>
<td>FOUPL-2</td>
</tr>
<tr>
<td>creosote bush</td>
<td>LARTRI-1</td>
</tr>
<tr>
<td>creosote bush</td>
<td>LARTRI-2</td>
</tr>
<tr>
<td>jojoba</td>
<td>SIMCHI-1</td>
</tr>
<tr>
<td>jojoba</td>
<td>SIMCHI-2</td>
</tr>
<tr>
<td>Florida hopbush</td>
<td>DODVIS-1</td>
</tr>
<tr>
<td>Florida hopbush</td>
<td>DODVIS-2</td>
</tr>
<tr>
<td>ocotillo</td>
<td>FOUPL-3</td>
</tr>
<tr>
<td>blue paloverde</td>
<td>PARFLO-1</td>
</tr>
<tr>
<td>Anna’s hummingbird</td>
<td>Anna’s hummingbird</td>
</tr>
<tr>
<td>black-chinned hummingbird</td>
<td>black-chinned hummingbird</td>
</tr>
<tr>
<td>broad-tailed hummingbird</td>
<td>broad-tailed hummingbird</td>
</tr>
<tr>
<td>calliope hummingbird</td>
<td>calliope hummingbird</td>
</tr>
<tr>
<td>Costa’s hummingbird</td>
<td>Costa’s hummingbird</td>
</tr>
<tr>
<td>rufous hummingbird</td>
<td>rufous hummingbird</td>
</tr>
<tr>
<td>bumblebee</td>
<td>bumblebee</td>
</tr>
<tr>
<td>cabbage white</td>
<td>cabbage white</td>
</tr>
<tr>
<td>common buckeye</td>
<td>common buckeye</td>
</tr>
<tr>
<td>Lyside sulphur</td>
<td>Lyside sulphur</td>
</tr>
<tr>
<td>monarch</td>
<td>monarch</td>
</tr>
<tr>
<td>orange sulphur</td>
<td>orange sulphur</td>
</tr>
<tr>
<td>piopepe swallowtail</td>
<td>piopepe swallowtail</td>
</tr>
<tr>
<td>queen</td>
<td>queen</td>
</tr>
<tr>
<td>Sonoran humble bee</td>
<td>Sonoran humble bee</td>
</tr>
<tr>
<td>valley carpenter bee</td>
<td>valley carpenter bee</td>
</tr>
<tr>
<td>buffelgrass</td>
<td>buffelgrass-1</td>
</tr>
<tr>
<td>blue paloverde</td>
<td>parlor</td>
</tr>
</tbody>
</table>

Submit
3. START OBSERVING!

a) Get Organized to Go Outside

Now that you have set up your site outside and created your account online, you are ready to go out and observe. This section provides information about how to make observations on your datasheets and enter your observations into the online Nature’s Notebook interface. You will find more information on the Nature’s Notebook website, and we’ve got resources available to help you with basic botany and phenophase identification.

To assist you with phenophase identification and to create consistency throughout the database, the USA-NPN and Nature’s Notebook staff have developed specific phenophase protocols and definitions for all species on the list. These phenophase definitions are unique to plant and animal type, and in some cases, to the species. All of the definitions are accessible on each species profile page online and can either be printed directly from there or via the Observation Deck.

Access the species profiles using The Plants and Animals link in the Nature’s Notebook navigation menu.
From **The Plants and Animals** you can enter a species of your choice and search for its availability in the system. The search page offers a number of ways to filter your search: by scientific or common name, by state, by partner, or by plant and/or animal type.

![Search for Plants and Animals to Observe](image)

**Figure 24** Search for Plants and Animals to Observe
The next figure demonstrates what you will see when you click on the link for *red maple (Acer rubrum)* and go to its species profile page. You will find the phenophase definition sheets including information about the species, where they can be found, links to more information, and the appropriate phenophase definitions. Click on the icon for datasheets to download a datasheet and phenophase definition sheet to take into the field with you.
Acer rubrum

red maple

What does this species look like?

Red maple is a deciduous tree growing 30 to 90 feet tall. Its tiny, usually red, male and female flowers mostly occur separately on the same tree but occasionally can occur on different trees.

Red maple is often found in swamps and on moist soils, but can also thrive in drier habitats. It occurs on moist soils along stream banks, and in swamps, moist to drier woodlands, and occasionally on dry rocky hillsides and sand dunes. It is moderately shade-tolerant.

Why observe this species?

Red maple is a USA-NPN calibration plant species. Calibration species have broad distributions and are ecologically or economically important. The NPN integrates observations on calibration species to get "the big picture" of plant responses to climate across the nation. In addition, this species is an allergen. Observations on its phenology will provide valuable information to benefit people with allergies and the public health community.

Where is this species found?

States & Provinces:
AL, AR, CT, DC, DE, FL, GA, IA, IL, IN, KY, LA, MA, MD, ME, MI, MN, MO, MS, NB, NC, NH, NJ, NL, NS, NY, OH, OK, ON, PA, PE, QC, RI, SC, TN, TX, VA, VT, WI, WV

Special Considerations for Observing

If drought seems to be the cause of leaf color or fall for a plant, please make a comment about it for that observation.

This species has separate male and female flowers. If you know whether the flowers you are observing are male or female (or both), please make a comment about it for that observation.

Note that individuals of this species with only male flowers will not produce fruit.

Which phenophases should I observe?

LEAVES

Do you see...

Breaking leaf buds
One or more breaking leaf buds are visible on the plant. A leaf bud is considered "breaking" once a green leaf tip is visible at the end of the bud, but before the first leaf from the bud has unfolded to expose the leaf stalk (petiole) or leaf base. For Acer rubrum, leaf tips may appear reddish

Figure 26 Species profile page for Red Maple
You can also access your phenophase definition and datasheets by clicking on the link for Print Field Datasheets via the Observation Deck. When you select a site in the My Sites box, all the plants and animals you registered to that site will appear in the My Plants & Animals box. When you select a plant or animal in this window, its information appears to the right under Details of this Organism. Buttons below these windows allow you to return to the Add or Edit Plants and Add or Edit Animals pages to make changes, sort the order in which individual plants and animals appear in your list, return to the species profile page in order to review the phenophases you are asked to observe for each plant or animal, and create datasheets.

Below is an example of all of the places these documents are accessible.
Figure 28 Observation deck with accessible locations for printing species definition and datasheets From the Nature’s Notebook Home page, you can sort your plants and animals (1), print field datasheets (2), return to the species profile page (3), and create datasheets (4).

For example, if you click on Print Field Datasheets, a window will appear prompting you to create all or some of the datasheets in your datasheet packet. Once you make a choice, a .pdf file will be downloaded (or you will be prompted to download it) on your computer. You can then print the datasheets to use for recording your observations in the field.
Figure 29 Create Species by Species Datasheet pop-up window

To begin we recommend you choose Create All Datasheets and print the entire packet for your site. The packet includes a Cover Sheet, an Animal Checklist (if you have added animals to your checklist), a Plant Phenophase Datasheet for each individual plant you are observing, and an Animal Phenophase Datasheet for each species of animal you are observing (see Appendix A, Recording Phenology Observations: A concrete example of how to complete datasheets for help).

We also provide the option of printing datasheets for a particular site on a day-by-day basis. This is useful for visits to public and shared sites, or for one time visits to a location. The day-by-day datasheets include all plant and animal phenophase data entry boxes in order they appear at the site. This method is also useful for site leaders who host workshops and introduce participants to collecting data on each species along a trail.

As you fill these up and need new datasheets for each plant and animal, you can generate them individually by selecting the plant or animal in the My Plants & Animals box on your Observation Deck and clicking on the Create Single Datasheet (PDF) button under the Details for this Organism window. A new Cover Sheet or Animal Phenophase Checklist can be printed by clicking on “Create Datasheets” and selecting your choice from the window that appears.
Once you have printed your datasheets, you are ready to go out into the field. There are several things we recommend you take with you.

To make your phenology observations, you will need the following:

- **Phenophase definitions and instructions:** Check the profile page for each of your selected plant and animal species to see the list of phenophases for those species and instructions on how to recognize them.

- **Datasheets, clipboard, pencil**

- **Binoculars** (optional, yet helpful for observing animals as well as phenophases in tall trees)

- **Mobile device and mobile app**

*Note* that there are *Nature’s Notebook* mobile applications available to you via the iTunes (iPhone, iPad) and Google Play (Android) stores. For more information, visit this page: https://www.usanpn.org/nn/mobile-apps.

It’s best to set up your account on a laptop or desktop computer first, rather than attempt to add sites, plants and animals on a smartphone. While it can be done, it is not easy. You will have a better experience if you use the apps only for submitting observations on pre-registered sites, plants and animals.
The Android app works offline, so that when there is no data service (3G, 4G or WiFi) observations are stored locally on the phone and uploaded to our servers when you re-enter data coverage, or when you click Settings > Manual Sync in the app. Similar capability for the iPhone and iPad apps is coming soon.

Making your observations

★ For plants: Visit each of your individual plants and check their phenophases. To determine which phenophases to watch for, check the plant species profile pages on the USA-NPN website (www.usanpn.org/nn/species-search). For each visit when you make an observation, you will record the date and time on your plant phenophase datasheet, and for each phenophase, circle one of the following choices:

- **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.

Examples of a plant datasheet can be found at the end of this section.

*It is very important to record this information, even if nothing has changed on your plant since your last visit!* Knowing when a plant is not in a given phenophase is just as important as knowing when it is. This allows someone who is viewing the data to understand more precisely when the phenophase began and ended.

For most plant phenophases you can also report on the intensity (or abundance) that you observe, like the number of open flowers you see or how close to full size the new leaves have grown. Phenophase intensity choices vary by species and can be found on the profile page for each species.

Once a phenophase has ended you should continue to look for signs of it and record whether or not it occurs again. Sometimes phenophases will occur a second or third (or more) time in a season, whether because of a killing frost, rain, pests, etc.

If there are phenophases and/or intensity measures on which you do not want to report for a species because you find them too difficult to observe or identify, or don’t have time just ignore them. You can cross them out on your datasheets, and do not circle or enter anything for them when you enter your data online.

☑️ For animals: Look and listen for all of the species on your Animal Checklist. You can do this by one of three methods:

- **walking** (a single pass or transect through your site)
- **stationary** (standing or sitting at a single point)
- **area search** (multiple passes through your site, possibly crossing the same point more than once)

Try to spend about the same amount of time looking for animals at each visit. We recommend three minutes as a standard, but you can spend as much or as little time as you like. You will probably not see most, or any, of the animals during each visit, which is ok.
For each visit when you make an observation, record the amount of time you spent looking and which of the three methods you used. To determine which phenophases to look and listen for, check the animal species profile pages on the USA-NPN website (www.usanpn.org/species_search). Record whether or not you saw or heard each animal species on your animal checklist, and for each animal you did see or hear, you will need to fill out the animal phenophase datasheet. On this datasheet, record the date and time, and for each phenophase, circle one of the following choices:

- **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

**It is very important to record this information, even if you did not see a particular animal species!** Knowing when an animal is not present, or when an animal is not in a given phenophase is just as important as knowing when it is.

**For both Plants and Animals**

For most plant and animal phenophases you can also report on the intensity (or abundance) that you observe, like the number of individuals you see feeding or the degree of overlap in frog calls, or the number of leaves or flowers present on an individual plant. Phenophase intensity choices vary by species and can be found on the profile page in the phenophase definitions for each species. See Figure 27 above.

If there are phenophases and/or intensity measures on which you do not want to report for a species because you find them too difficult to observe, *just ignore them.* You can cross them out on your datasheets, and do not circle or enter anything for them when you enter your data online.

**What if I never see some of the animals I am observing?**

On most days you will probably not see or hear most of the animals you are observing. You may not see or hear some species all year. Even though it can be frustrating to look for animals that are not there very often, information about when and where a species is and is not is very important to scientists, so please continue to record that you DO NOT see phenophases for these animal species on each day you observe. In some ways the information about when and where a species is not present is more important than information about where it is, because those observations (called negative data) are more rare. This is why we suggest that you observe species from our animal species list that occur in your state, even if you do not see them often, or at all.

**How often should I make my observations?**

You should make observations as often as is convenient for you, preferably at the same time of day. Ideally, we would like observers to make observations once a week or even as frequently as every two or three days, particularly during the spring and fall when plant and animal phenology is changing quickly in many parts of the country. Plants and animals can often be active during the winter, but if you live in a cold region where their activity is reduced, you can lengthen the time between observations during this season. **Most importantly, you should record all the observations you make—your observations, no matter how often you make them, provide valuable data!**
What if a phenophase does not occur when expected?
If you are watching for a phenophase and it does not seem to be starting when you expect it would, continue to watch for it and record that it is not occurring. This could mean the phenophase is occurring later or not at all in a given year, and could be very valuable information. Many phenophases do not occur in every year—birds may not breed in a certain area, trees may not flower or fruit, turtles may not lay eggs. Information about when and where these phenophases did and did not occur is very important to scientists studying these species and the interactions between species.

Why should I continue looking for a phenophase even after it has passed?
Many phenophases may occur two or more times in a year. Many birds lay a second clutch of eggs in the summer after the first clutch has fledged. If a frost or pest kills many of the leaves on a tree, it will often have a second flush of breaking leaf buds and new leaves. In dry climates, some phenophases repeat after multiple rain events. Also, climate change is changing the timing and frequency of life cycle events, which is extremely important to capture! For example, as temperatures warm and growing seasons get longer, many species are reproducing more frequently—some birds are having more broods, some plants flower more often, and insects like butterflies and dragonflies may go through more generations in a single year.

Once a phenophase has ended you should continue to look for signs of it and record whether or not it occurs again. Sometimes phenophases will occur a second or third (or more) time in a season, whether because of rain, pests, or climate change.

Why should I record my observations when nothing seems to be happening?
Having a full record of your observation dates allows scientists to more confidently estimate the date a phenophase began or ended. For example, if you first report that you heard wood frog calls on your April 6 visit, and your last visit (when you did not hear them) was April 2, we know that the wood frogs started calling sometime within those four days. If you only report the April 6 visit and no previous visit, we only know that the frogs started to call sometime between April 6 and the last time you reported visiting your site, which might have been 3 months earlier! This example also illustrates why more frequent observations are useful when conditions change rapidly, such as in the spring or fall. If you can make observations every two or three days, you improve scientists’ ability to estimate the day a phenophase actually started or ended.

What if I missed a phenophase?
If you miss the occurrence of a phenophase entirely, and you see evidence that the phenophase did occur, then make a note of this in the comments section of the Enter Observations page. For example, if your plant flowered while you were away on vacation, and you see dried flowers on the ground below the plant, feel free to note this in the comments section of the Enter Observations page. You can note similar occurrences with animals, for example, if you see chicks in a new bird nest, but never saw nest building.

For more details on making plant and observations, visit our Frequently Asked Questions page accessed from the bottom of the Learn How to Observe Page (www.usanpn.org/nn/guidelines).
Record Your (b) Plant & (c) Animal Observations
Visit your site(s) as often as possible. **At least once a week** is good, but several times a week or even once a day is even better during times of the year when things are changing quickly (for example, spring and fall).

Filling in the Plant and Animal Phenophase Datasheets
For making your plant and animal phenology observations, there are three types of datasheets you are asked to complete, and one optional form:

- 🐷 Animal Phenophase Datasheet (if you are observing animals)
- 🌿 Plant Phenophase Datasheet
- 🐦 Optional Animal Checklist
- Cover Sheet

The 🐷 Animal Phenophase Datasheet (if you are observing animals) and 🌿 Plant Phenophase Datasheet are for tracking your phenophase observations for each animal species or each individual plant. The 🐦 Optional Animal Checklist lists all of the animal species (if you are observing animals) you’ve selected at your site and provides a quick summary. It also saves you from printing out a lot of extra Animal Phenophase Datasheets when you do not see or hear many of the species on each day you observe. The purpose of the Cover Sheet is to report information to describe each visit to your site (and is most easily completed at the end of your visit each day).

On each of the Plant and Animal Phenophase Datasheets, fill out a column for each visit and indicate whether or not you saw or heard each of the phenophases and what intensity or abundance you observed. For Animal Phenophase Datasheets, you do not need to fill out a column for dates that you circled “n” on your Animal Checklist and thus did not see or hear that species.

Below are some examples of: Animal Phenophase Datasheet, Plant Phenophase Datasheet, Optional Animal Checklist, and Cover Sheet.

A complete example illustrating how to fill in the suite of datasheets for plant or animal phenology observations is provided in Appendix A.
Figure 31 Example of a Plant (Red Maple) Datasheet

Figure 32 Example of an Animal (Songbird) Datasheet

Feel free to search and download other datasheets from the species search page for examples of other types of plant and animal. We capture data on select species of Wildflowers & Forbs, Deciduous Trees & Shrubs, Evergreen Trees & Shrubs, Grasses, Sedges & Rushes, and Cacti. For animals, we capture data on select species of Mammals, Fish, Reptiles & Amphibians, Birds, and...
Insect. Each phenophase definition sheet is specific not only to the type of plant or animal, but to the individual species as well.

**Animal Checklist**

Directions:
Please list below all the animal species from the animal checklist you visited online for this site:

- If you see or hear this species,
- If you do not see or hear this species.
- Do not circle anything if you did not check for this species.

For each species you clicked yes to, enter a column in your Animal Phenophase Data sheet for this species to report on the status of each of the phenophases for that visit.

For each species you clicked no to, do not need to fill in a column in the Animal Phenophase Data sheet, and can simply click “Circle a No!” if you did not see or hear any phenophases for that species when observing your observations online for that visit.

<table>
<thead>
<tr>
<th>Date:</th>
<th>Date:</th>
<th>Date:</th>
<th>Date:</th>
<th>Date:</th>
<th>Date:</th>
<th>Date:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you see or hear...?</td>
<td>Time:</td>
<td>Time:</td>
<td>Time:</td>
<td>Time:</td>
<td>Time:</td>
<td>Time:</td>
<td>Time:</td>
</tr>
<tr>
<td>Anole's hummingbird</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Black-chinned hummingbird</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Broad-billed hummingbird</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Calliope hummingbird</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Costa's hummingbird</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Rufous hummingbird</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Hummingbird</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Cabbage white</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Common buckeye</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Cabbage sulphur</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Monarch</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Orange sulphur</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Papilio swallowtail</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Queen</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Sonoran bramble bee</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
<tr>
<td>Valley carpenter bee</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
<td>y n</td>
</tr>
</tbody>
</table>

**Figure 33 Example of the Optional Animal Checklist**

**Filling in the Cover Sheet**

In addition to tracking the phenophases you observe for the plants and animals on your list, we ask that you provide information about each visit you make to your site on a Cover Sheet. The purpose of the Cover Sheet is to track the amount of time you contribute to the project, the time and method of your animal observations, and snow cover (if any) at your site.

**Time: Cover Sheet** you are asked to report ‘Time spent observing’, ‘Time spent in travel’ and ‘Time spent looking for animals’. We ask you to report these three things for very different reasons. The purpose of the first two are purely administrative, to estimate the volunteer time contributed to the project and demonstrating the value brought to the program by you – the participants. These estimates can be important to groups for securing funding to keep the project going. The purpose of the third, ‘Time spent looking for animals’, is scientific, to estimate the time that went into animal sampling which will affect how many animals you see or hear. This third estimate is very important to scientists using your data.
d) Submit Observations Online

Once you have collected data outside you’ll need to report the data in the online *Nature’s Notebook* interface. If you don’t enter the data online, researchers (and you!) won’t be able to access it to answer science questions in an easy way. Therefore, entering your data is an important next step. You don’t need to enter the data each time you observe, but do try to enter your data on a regular basis (at least once a month).

When you are ready to submit observations online, return to your **Observation Deck**, select the site for which you would like to enter observations, and click the **Enter Observation Data** button. See the example below.
Figure 35 Observation Deck with Enter Observation Data link selected

You will be taken to the Enter Observations page. The items from the Cover Sheet and each of the Plant and Animal Datasheets that you have registered to this site will appear in expandable blue menus. Click on the menus to access the data entry interface for each item and each plant and animal.

On the Enter Observations page you will need to enter a new date at the top of the column for which you are entering data. You may see the last time you entered data show up in the first column when you log in. Simply move to the second column to enter today’s data.

Each column represents a visit’s worth of observations. Following what you have written on your Cover Sheet, enter the date and time of your visit at the top of the column, and type in the information on the Cover Sheet for that visit.
Then for each of your individual plants, click “y”, “n”, or “?” for each phenophase choice you circled on the Plant Phenophase Datasheet. If you did not circle anything on the datasheet (meaning you did not check for that phenophase), do not click any of the choices.

In entering observation data for your animals, you should refer to your Animal Checklist. If “n” is circled for the species on that visit, click “Circle all no” at the top of the column in that species’ data entry interface and all phenophases will be set to “no”. If there was a particular phenophase that you did not bother to look or listen for (for instance, you were ignoring bird calls at your site because you do not know how to recognize them), please click the circled “n” for that phenophase so it becomes uncircled and no selection is made for the phenophase. If a “y” or “?” is circled for a species, refer to the Animal Phenophase Datasheet for that species and enter the information recorded there for each phenophase for that visit.

For both plants and animals, report the intensity or abundance you observed for any phenophase for which you clicked “y” or “?” by selecting a value from the “What value?” dropdown menu, or entering a number in the “How many?” box.

Below is an example of the online entry for a mourning dove based on the Animal Checklist and Animal Phenophase Datasheet.
Figure 37 Completed online data entry for mourning dove, including abundance and intensity

Once you have entered all of your observations, click the SUBMIT OBSERVATIONS button in the lower left corner of the screen. This will save your data. You should receive a message that your observations were successfully saved. **IF YOU DO NOT CLICK THE SUBMIT OBSERVATIONS BUTTON AT THE BOTTOM OF THE SCREEN AFTER EACH DATA COLUMN IS ENTERED, YOUR DATA WILL NOT BE SAVED.**

Figure 38 The SUBMIT OBSERVATIONS button
You will know your data are saved when you receive the All observations successfully saved message at the top of the screen.

![Figure 39 All observations saved message](image)

If you’d like to enter another day’s worth of data, click on the ENTER MORE DATA and follow the same procedure.
APPENDIX A. Recording Phenology Observations: A concrete example of how to complete datasheets

This section provides a full example of how to make plant or animal phenology observations and to complete the three types of datasheets and the cover sheet. The Animal Checklist, the Animal Phenophase Datasheet, Plant Phenophase Datasheet, and the Cover Sheet.

In this example, you have three animal species on the checklist for your site:

- house wren
- mourning dove
- bumblebee

You also have three individual red maple trees that you observe at your site.

**Taking animal observations**

You travel to your site and opt to observe your animal species before checking your plants. You select your central observing location, then stand still and look and listen for three minutes. During that time, you:

- See two house wrens fly through the site
- Hear (but do not see) one mourning dove singing
- See two bumblebees visiting flowers

On your Animal Checklist, write the date and time of your visit and then circle “y” next to “house wren and bumblebee”, as you did observe these species at your site. Because you did not observe mourning dove, you would circle “n” next to “mourning dove”. Below you will find an example of this sheet completed.
Next, on your Animal Phenophase Datasheet for house wren you would circle “y” for ‘Active individuals’ and write “2” in the blank to the right, as you saw two house wrens flying through the site. You would circle “n” for the remainder of the phenophases, as you did not observe the house wren:

- Feeding
- Engaging in song
- Mating
- Building a nest
- At a feeder

And you also did not observe any dead house wrens at your site.

See the example below of a completed Animal Phenophase Datasheet for the house wren.
On your Animal Phenophase Datasheet for mourning dove you would circle “n” for ‘Active individuals’ since you did not observe any at the site. You would circle “y” for ‘Calls or song’, and write “1” in the blank, as you heard a mourning dove singing. You were not certain whether it was a male or a female mourning dove singing, or whether the song fits the specific definition for ‘Singing males’ (which refers to territorial proclamation), so you would circle “?” for ‘Singing males’ and write “1” in the blank. You would circle “n” for the remainder of the phenophases, as you did not observe the mourning dove:

- Feeding
- Mating
- Building a nest
- At a feeder

And you also did not observe any dead mourning doves at your site.

See the example below of the completed Animal Phenophase Datasheet for the mourning dove.
On your Animal Phenophase Datasheet for bumblebee, you would circle “y” for ‘Flower visitation’ and write “2” in the blank, as you saw two individuals visiting flowers. You would also circle “y” and write “2” for ‘Active adults’, as the criteria for this phenophase (“one or more adults are seen moving about or at rest”) was also met. You would circle “n” for the remainder of the phenophases, as you did not observe bumblebees mating and you also did not see any dead bumblebees at your site.

See the example below for the completed Animal Phenophase Datasheet for the bumblebee.
You have now completed the suite of Animal Phenophase Datasheets for your observations for today.

**Taking plant observations**
Next, you check the three individual red maple trees you are observing.

You walk to your first tree and carefully look at and compare what you see to the phenophases you are asked to observe for red maple on the phenophase definition sheets. It seems to be in full flower and upon close inspection you see breaking leaf buds. As of yet you do not see any unfolded leaves or any fruits. You determine that your plant fits the definition for ‘Breaking leaf buds’, but not the definitions for any of the other leaf phenophases. You circle “y” for the ‘Breaking leaf buds’ phenophase on your datasheet for this individual plant, and “n” for all of the other leaf phenophases. You review the intensity choices for ‘Breaking leaf buds’ on red maple and determine there are 10 or more on this plant, but not more than 100, so you write “11-100” in the blank to the right. For help on the abundance and
intensity questions, please refer to the phenophase definition sheets provided for each species as well as our Frequently Asked Questions guide.

Next you check the flowers on your tree. This red maple is covered in fresh, open flowers and meets the definition for both ‘Flowers or flower buds’ and ‘Open flowers’, so you circle “y” for both of those phenophases on your datasheet. You review the intensity choices for these phenophases and the best choice for ‘Flowers or flower buds’ is “More than 10 but less than 100”, while the best choice for ‘Open flowers’ is “Peak flower”. You write “11-100” in the blanks for these phenophases. Since you cannot reach any of the flowers to see if pollen falls in your hand when you shake it, you do not circle anything for this phenophase.

You do not see any fruits so you circle “n” for all of the fruit phenophases.

Below is an example of a completed Plant Phenophase Datasheet for your first red maple. The information corresponds to what you saw on the tree.

![Figure 46 Completed Plant Phenophase Datasheet for your first red maple](nn.usanpn.org)
Next, you take observations for the two other red maple trees you are observing and fill out your **Plant Phenophases Datasheets** for each of them.

**Completing the Cover Sheet**
Before leaving your site, you fill out your **Cover Sheet**. Write in the date and time of the visit at the top of the column. An approximate time, such as rounding to the nearest 15 minutes is fine.

Then indicate the time you spent observing. Recall, this is an indication of the total time you spent observing. If you were observing both plants and animals, this estimate would include the time you spent both looking and listening for your animals and also inspecting your plants. In our example the approximate observing time was one hour and five minutes.

In this example, you looked and listened for animals for ten minutes. It took you 45 minutes to check your three red maple trees, review the phenophase definitions and fill out the datasheets. This time also included the time spent filling out your animal data sheets. You also spent five minute sharpening your pencil at the beginning and filling out the cover sheet at the end. This resulted in a total of 60 minutes, or one hour, spent observing.

Indicate the time you spent traveling to and from your site. In this example, let’s say the site is in a park across the street from your house. You spent five minutes walking to the park and five minutes walking back to your house, for a total of ten minutes in travel.

![Figure 47 Entering the date and time on the Cover Sheet](image)
Next, indicate the amount of time you spent looking for animals. Recall in this example you took observations for three minutes. Also indicate which method you used to search for the animals on your checklist. Recall that in this example, you stood still at a single point for three minutes. You would circle “s” for ‘Stationary’.

Indicate whether there was snow at your site on this day. In this example, there was not snow on the ground, so you circled “n” for both questions regarding snow on the ground and in the tree canopy.

You are finished – you have successfully taken your plant and animal phenology observations and completed all of the datasheets. Thank you for your efforts!

The next step is to enter your observations online via the *Nature’s Notebook* interface (log in at [www.nn.usanpn.org](http://www.nn.usanpn.org)). Remember, for the citizen science project to be effective, you also need to record your data online so others can use it too. The datasheets include a space to check when you have entered your data online. See the example below.