



How to Observe

Nature's Notebook Plant and Animal Phenology Handbook

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How to Observe

Nature's Notebook Plant and Animal Phenology Handbook

Nature's Notebook is the USA National Phenology Network's 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, 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 is given standard black text headings.

Additional Nature's Notebook training materials are available on the USA-NPN website:

- Online instructions for recording plant and animal phenology using Nature's Notebook at www.usanpn.org/participate/guidelines. (Much of this information is also presented within this document.)
- Training videos explaining the various steps of the observation process can be accessed online at www.usanpn.org/participate/guidelines

How to Observe

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.

Overview

Whether you choose to observe both plant and animals or only one or the other, there are several steps to setting up your observation program. You do not have to follow these steps in this particular order. For example, you may select your observation site before you select particular plant or animal species. More information is provided on each of these steps in the sections below.

1. Select a site
2. Select plant and animal species
3. Select individual plants
4. Mark your sites and individual plants
5. Record your observations
6. Enter your observations online

1. Select 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.

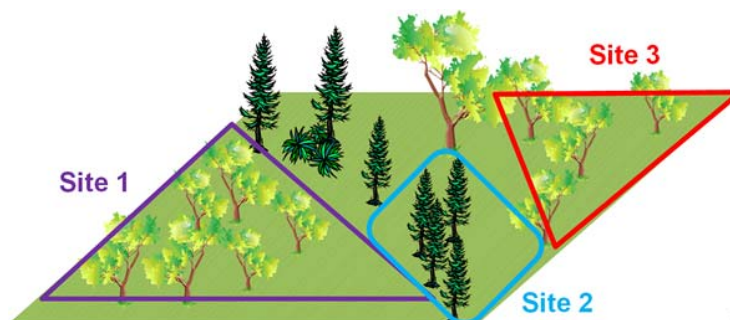
Representative location: As much as is practical, the selected site(s) should be representative of the environmental conditions for your area.

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

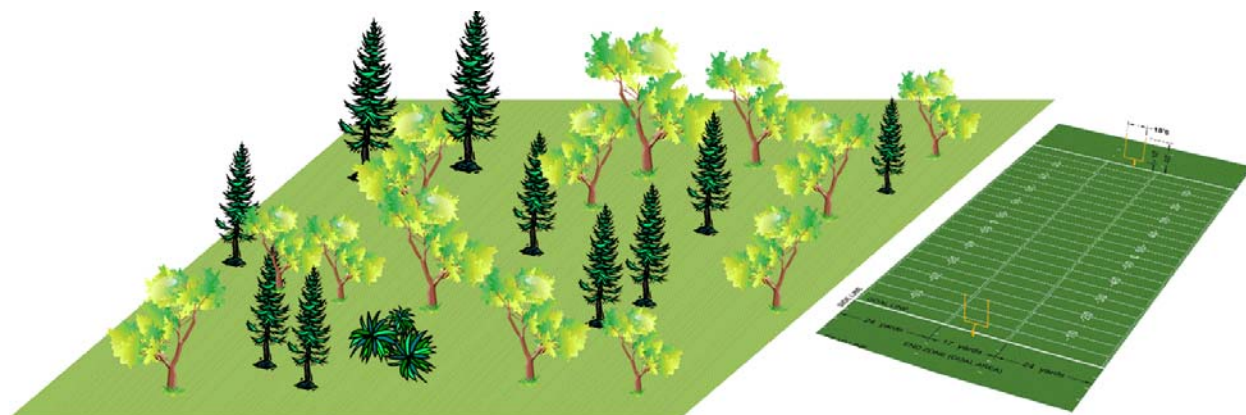
excessively dry nor wet for your area. In forested areas, the site should be generally similar to the surrounding forest, reflecting the overall canopy composition and stature. If you are observing wild plants, we suggest you avoid locations where plants are watered or fertilized. If your site is unusual for your area, just record the unusual characteristics in the comments section of the Nature's Notebook Add a New Site form (see section 6 of this document for more details) when you add 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), 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.



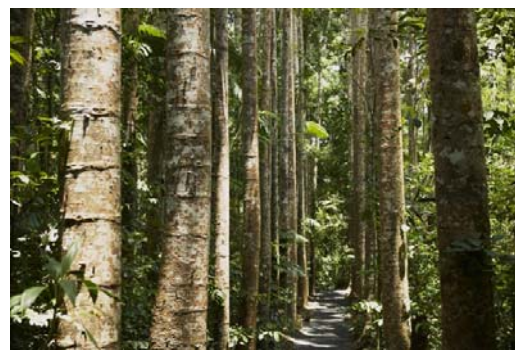
In this example, the site is slightly larger than the length of one football field, so it is well within the recommended 15-acre size limit.

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.

2. Select plant and animal species

Choose one or more species from our list of recommended plant and animal species. For plants, we encourage you to select at least one **calibration species**. 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.

What is a calibration species?

A Nature's Notebook plant calibration species is one of 20 plants selected to help "calibrate" phenological measurements across the United States. These species have broad distributions and are ecologically or economically important. Scientists use observations of these species to get "the big picture" of phenology across the nation. We encourage observers to include at least one calibration plant species in their observations. We need many observations of calibration species to understand the changes taking place in the timing of seasonal events across the nation, particularly in relationship to climate change, and to inform decisions that must be made in response to some of these changes.

If you are uncertain of your plant's identity, you can certainly record your observations on a datasheet until you have identified it (see "Can I start observing a plant if I am unsure which species it is?", below). 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 5, "Record your observations", below). 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 easier.

Online field guides

- Discover Life's IDnature guides (www.discoverlife.org)
- eNature (www.enature.com/home)
- Arbor Day Foundation (for trees, www.arborday.org/trees/whattree)

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.

Other online resources for plants

USDA PLANTS (plants.usda.gov)

Lady Bird Johnson Wildflower Center (www.wildflower.org/explore)

Other online resources for animals

All About Birds (www.allaboutbirds.org)

Can I start observing a plant if I am unsure which species it is?

Yes, you can keep track of observations on a field datasheet, but please do not enter your observations online until you have identified the species with reasonable confidence. When a plant is dormant, it may be difficult to tell which species it is, but you probably have a good idea about whether it is a forb, grass, deciduous tree, or another kind of plant. The phenophase definitions within these broad groups are fairly standard, so we recommend you find a similar species and use the datasheet and phenophases for that species (see some choices below).

- Deciduous tree/shrub with flowers
- Deciduous tree/shrub with catkins
- Broadleaf evergreen tree/shrub
- Broadleaf evergreen groundcover
- Conifer
- Deciduous conifer
- Forb
- Grass
- Cactus

Once you have identified the plant, please check the phenophases for that species to make sure they are consistent with what you had been recording. If they are consistent, you can enter the data online (see section 6 of this document for instructions on entering your data online). If they are not consistent, please do not enter your old observations. Instead start fresh now that you have identified your plant.

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 list of recommended species includes plants and animals that

are important to observe for a variety of reasons, including widespread distribution and ease of identification as well as 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. We are constantly working to revise and expand the list of species and the related materials and welcome your suggestions for additions or other changes. Additionally, some time in the future, you will be able to enter observations for *any* plant or animal species using Nature's Notebook.

In the meantime, if you would like to start observing a plant or animal not currently on our list of recommended species, you can observe that species using a datasheet appropriate for a similar species, and submit your observations to Nature's Notebook later. 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 (see a list of other observation programs at www.usanpn.org/participate/other-programs).



Please send your comments on our list of recommended species to observe@usanpn.org.

🌱 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 note the death in the comments section of your Nature's Notebook Add or Edit Plants form (see section 6 of this document for more details) 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.

Recently dead glacier lily

Cloned Plants Project



Two plant species, the common lilac (*Syringa vulgaris*) and a cloned Chinese lilac (*Syringa chinensis* 'Red Rothomagensis'), are part of a historic and scientifically important effort to calibrate phenological observations across the country. This program has now been incorporated into the USA-NPN's Cloned Plants Project.

You are invited to participate in the USA-NPN Cloned Plants Project by observing either lilac species. You may request a cloned lilac when you register with Nature's Notebook. You can also purchase cloned lilacs directly from the supplier, Jung Seed Company. Orders can be placed through Jung's web page (www.jungseed.com) or by calling their order department at 1-800-247-5864. Common purple lilacs (*Syringa vulgaris*, usually called "old fashioned" or "hedge" lilac) can also be purchased from any nursery.

I requested cloned lilacs but have not received them. What is the status of my request?

We still have more requests for cloned lilac plants than we can immediately satisfy. The number that we can distribute each year is limited by available funds. We are trying to fill requests in a way that will distribute cloned lilacs to all areas across the country, but also send them as soon as possible to people interested in receiving them.

A second option, which can speed the arrival of your cloned lilacs and help us stretch our limited resources, is to purchase cloned lilacs directly from the supplier, Jung Seed Company (see above for contact information).

As a third option, you may purchase a common purple lilac (*Syringa vulgaris*, usually called "old fashioned" or "hedge" lilac) from any nursery and observe it. Common purple lilacs make good "partners" with cloned lilacs, because their phenologies are quite similar. If you have also ordered a cloned lilac you may plant it and observe it along with the common lilac.

What type of lilac do I have? Aren't the cloned lilacs you sent me common lilacs?

If you received cloned lilacs from us, they are not common lilacs. Rather, they are specially cultivated Chinese lilacs (*Syringa chinensis* 'Red Rothomagensis'), which have leaves that are about twice as long as they are wide (much narrower than common purple lilac leaves). These are the same lilacs that were distributed to people who made phenology observations as a part of the historical lilac phenology networks run through the U.S. Department of Agriculture and the University of Wisconsin-Milwaukee. Most lilacs that you might purchase from a nursery or that are growing in yards or in parks are common lilacs (*Syringa vulgaris*, also called "hedge" or "old-fashioned" lilacs). These plants are NOT clones, and occur in the wild in many areas of the United States, although they are not native here. Common lilacs have leaves that are somewhat "heart" shaped (much wider than cloned lilac leaves).

3. Select individual plants 🌱

If you are observing only animals at your site, you will not need to refer to this section.

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**.

🌱 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 your multiple individuals seem to always 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.



Three creosote bush plants selected for monitoring in an observer's back yard.

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.

🌿 **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 form (see section 6 of this document for more details).

4. Mark your site and individual plants

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.

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.



Marking a site corner with painted rebar and flagging tape

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. Also, remember that if you are observing at a site on public land, you will need to get permission before marking the plants.



Using aluminum plant tags, wooden stakes, and colored toothpicks to mark plants.

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.

5. Record your observations

To make your plant and/or animal 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:** You can download and print a datasheet for each of your plant or animals from the profile page for that species, or generate a personalized datasheet packet from your Nature's Notebook Home page.
- **Binoculars** (optional, helpful for observing animals as well as phenophases in tall trees)
- **Marking equipment for first trip:** Flagging, markers, stakes, plastic tags, popsicle sticks

 **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/species_search). For each day that you make an observation, record the date and other appropriate information on your datasheet, and for each phenophase, record 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, or if you did not check for the phenophase

Please see “Filling in Datasheets” below for more details on how to record these observations.

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.

 **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) or an
- **area search** (multiple passes through your site)

On the animal checklist, circle yes (y) if you see the species, no (n) if you do not and

uncertain (?) if you are not sure or not able to identify the species. 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 day that 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 each animal species on your checklist, and for each animal you circled 'yes' for on your checklist, you'll need to fill out a phenophase datasheet. On the phenophase datasheet, record 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 you saw or heard that species or that phenophase, or if you did not check for the phenophase

Please see “Filling in Datasheets” below for more details on how to record these observations.

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.

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 recommended animal species list that occur in your state, even if you do not see them often, or at all.

Completing the Datasheets

For making your plant and animal phenology observations, there are 3 types of datasheets you are asked to complete:

- **Phenophase Datasheets** – for each individual plant you are observing, you will complete a Plant Phenophase Datasheet. For each species of animal you are observing, you will complete an Animal Phenophase Datasheet.
-  **Animal Checklist**, if you are observing animals

- **Cover Sheet**

The purpose of the Cover Sheet is to report information to describe each day you visit the site. The Animal Checklist (if you are observing animals) provides a quick summary of the animal species seen or heard at your site on each date. The individual plant and animal Phenophase Datasheets are for tracking your phenophases observations for each animal species or each individual plant. An example of how to make plant or animal phenology observations and to complete the three types of datasheets is provided in Appendix A.

Filling in the Plant and Animal Phenophase Datasheets

On each of the **Plant and Animal Phenophase Datasheets**, please fill out a column for each visit and indicate whether or not you saw or heard each of the phenophases. 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.

Plant Phenophase Datasheet

Species Mayapple Plant Nickname Mayapple-front yard

Directions:

Fill in the date in the top row and circle the appropriate letter in the column below it: y (ph

Do you see...?	Date	5/5/10				
Emerging growth	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Unfolded leaves	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
All leaves withered	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Open flowers	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Ripe fruits	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Check when data entered online:	☐	☐	☐	☐	☐	☐

Comments:

Sample Plant Phenophase Datasheet.

Animal Phenophase Datasheet

Species American robin Site My front yard Year 2010 Observer

Directions:

Fill in the date in the top row and circle the appropriate letter in the column below it: y (phenophase c

Do you see/hear...?	Date	5/5/10					
Active individuals	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Calls or song	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Singing males	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Fruit/seed consumption	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Mating	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Nest building	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Dead individuals	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Individuals at a feeder	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Check when data entered online:	☐	☐	☐	☐	☐	☐	☐

Comments:

Sample Animal Phenophase Datasheet.

Filling in the Animal Checklist

The Animal Checklist provides a quick summary of the animal species seen or heard at your site on each date. On the  **Animal Checklist**, please list the species of animals you are looking for at the site, and for each day you visit your site, circle “y” if you saw or heard that species and “n” if you did not see or hear that species. If you were unsure whether you saw or heard that species, circle “?”.

Do you see/hear...?	Date	4/8/10	4/15/10	5/1/10
Robin		y n ?	y n ?	y n ?
Goldfinch		y n ?	y n ?	y n ?
Black-capped chickadee		y n ?	y n ?	y n ?
Gopher snake		y n ?	y n ?	y n ?
		y n ?	y n ?	y n ?
		y n ?	y n ?	y n ?
		y n ?	y n ?	y n ?
		y n ?	y n ?	y n ?
		y n ?	y n ?	y n ?
		y n ?	y n ?	y n ?

Sample Animal Checklist.

For any species with a circled “y” or “?”, you will fill out a column in your Animal Phenophase Datasheet to indicate which of the phenophases you saw or were unsure you saw. However, if you circled “n” for a species, you do not need to fill out a column in your Animal Phenophase Datasheet for that date. Instead you can simply click “Circle all no” when entering your data online to automatically circle “n” for all phenophases on that date. Using the Animal Checklist in this way can save 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.

Filling in the Cover Sheet

In addition to tracking the phenophases you observe for the 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 at your site.

On your observation Cover Sheet and in the online interface for entering observations 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. These estimates can be important in 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.

For each date, please indicate how much time you spent taking observations, under “Time spent observing”. You should include the total time you spent getting organized, observing animals, and checking your plants.

Cover Sheet									
Site _____	Year _____	Observer _____							
Date									
Report your contribution of time									
Time spent observing	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min
Time spent in travel	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min
Report your animal observation methods									
Time spent looking for animals	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min
Animal survey method	w s a	w s a	w s a	w s a	w s a	w s a	w s a	w s a	w s
Report on snow									
Is there snow on the ground?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n
% of ground covered									
Is there snow in the canopy?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n

Record the time you spent observing, in hours and/or minutes.

For each date indicate how much time you spent traveling to your site. This includes any time spent in a vehicle as well as time spent walking or hiking to get to your site. However, do not include travel time that you would be taking anyway, even if you were not making observations. For instance, if you make your observations from your regular work location, do not include the time spent driving to work.

Cover Sheet									
Site _____		Year _____		Observer _____					
Date									
Report your contribution of time									
Time spent observing	hr	min	hr	min	hr	min	hr	min	hr
Time spent in travel	hr	min	hr	min	hr	min	hr	min	hr
Report your animal observation methods									
Time spent looking for animals	hr	min	hr	min	hr	min	hr	min	hr
Animal survey method	w	s	a	w	s	a	w	s	a
Report on snow									
Is there snow on the ground?	y	n	?	y	n	?	y	n	?
% of ground covered									
Is there snow in the canopy?	y	n	?	y	n	?	y	n	?

Record the time you spent traveling to your site, in hours and/or minutes.

Next, report details about your animal observation methods. First, indicate how much time you spent actually looking for the animals on your Animal Checklist. You should not include any time in which you were not aware of the animals around you, for instance, while you were busy organizing datasheets or focused solely on checking your plants.

Cover Sheet									
Site _____		Year _____		Observer _____					
Date									
Report your contribution of time									
Time spent observing	hr	min	hr	min	hr	min	hr	min	hr
Time spent in travel	hr	min	hr	min	hr	min	hr	min	hr
Report your animal observation methods									
Time spent looking for animals	hr	min	hr	min	hr	min	hr	min	hr
Animal survey method	w	s	a	w	s	a	w	s	a
Report on snow									
Is there snow on the ground?	y	n	?	y	n	?	y	n	?
% of ground covered									
Is there snow in the canopy?	y	n	?	y	n	?	y	n	?

Record the time you spend looking for animals on your checklist.

Next, please indicate which animal survey method you used:

- Circle “**w**” if you walked a single line or transect through your site
- Circle “**s**” if you stood or sat at a single point for the duration of your observation period
- Circle “**a**” if you conducted an area search, defined as multiple passes through your site, where you may be crossing the same point more than once.

Cover Sheet

Site _____ Year _____ Observer _____

Date								
Report your contribution of time								
Time spent observing	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min
Time spent in travel	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min
Report your animal observation methods								
Time spent looking for animals	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min
Animal survey method	w s a	w s a	w s a	w s a	w s a	w s a	w s a	w s
Report on snow								
Is there snow on the ground?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n
% of ground covered								
Is there snow in the canopy?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n

Indicate your animal survey method (**w**alking in a single line, **s**tanding at a single point, or **a**rea search).

Finally, we ask you to report on snow conditions at your site. Indicate whether there is snow on the ground. If there is snow on the ground, please estimate how much of the ground is covered by snow and also whether there is snow in the tree canopy or treetops. This information is critical for analyzing satellite images of vegetation as reflected snow and bright green leaves can look the same from space.

Cover Sheet

Site _____ Year _____ Observer _____

Date								
Report your contribution of time								
Time spent observing	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min
Time spent in travel	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min
Report your animal observation methods								
Time spent looking for animals	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min
Animal survey method	w s a	w s a	w s a	w s a	w s a	w s a	w s a	w s
Report on snow								
Is there snow on the ground?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n
% of ground covered								
Is there snow in the canopy?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n

Indicate snow conditions at your site.

An example of a Cover Sheet filled in for several days of observations appears below.

Cover Sheet									
Site	<u>My front yard</u>			Year	<u>2010</u>		Observer	<u>USA-NPN Fan</u>	
Date	4/1/10	4/3/10	4/9/10	4/11/10	4/15/10				
Report your contribution of time									
Time spent observing	15 ^{hr} min	15 ^{hr} min	18 ^{hr} min	19 ^{hr} min	15 ^{hr} min	hr	min	hr	min
Time spent in travel	2 ^{hr} min	2 ^{hr} min	2 ^{hr} min	2 ^{hr} min	2 ^{hr} min	hr	min	hr	min
Report your animal observation methods									
Time spent looking for animals	5 ^{hr} min	5 ^{hr} min	5 ^{hr} min	5 ^{hr} min	5 ^{hr} min	hr	min	hr	min
Animal survey method	w s a	w s a	w s a	w s a	w s a	w s a	w s a	w s a	w s
Report on snow									
Is there snow on the ground?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n
% of ground covered									
Is there snow in the canopy?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n

Example filled in Cover Sheet.

Please see Appendix A for a complete example of how to make plant or animal phenology observations and to complete the three types of datasheets.

How often should I make my observations?

You should make observations as often as is convenient for you. 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!***

At what time of day should I make my observations?

You should make observations at a time of day that is convenient for you. Because some animal species tend to be more active at certain times of day and plant activity can vary over the course of the day, it will be helpful if you make your observations consistently around the same time. However, if you are observing both species that are active most during the day (like most plants and animal species on our recommended species list) and those that are most active at dusk or at night (like frogs, bats, and some flowers), you may want to make your observations twice a day, once during the day and once at dusk or night.

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 to five 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.

How do I print the datasheet packet?

Whenever you click "Create Datasheet (PDF)" or "Create All Datasheets (PDF)" from your Nature's Notebook Home page, a pdf file with a datasheet packet will be downloaded (or you will be prompted to download it) on your computer. You can then print all or a selection of the datasheets to use for recording your observations in the field.

To start, we recommend you choose "Create All Datasheets (PDF)" 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.

As you fill 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" window of your Nature's Notebook Home page and clicking on "Create Datasheet (PDF)" under the "Details for this Organism" window. A new Cover Sheet and Animal Checklist is included each time, but you may not need to print extras of those if you have already done so with new datasheets for a previous plant or animal.

Special Cases

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 your Nature's Notebook Enter Observations form. 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 your data entry form. You can note similar occurrences with animals, for example, if you see chicks in a bird nest, but never saw the eggs.

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.

Why is it valuable to know that a phenophase did not occur at all in a given year?

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.**

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 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 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.

 **Can I still report seeing 'Active individuals/adults' or 'Individuals/adults on land/water' if I also report seeing another more specific phenophase?**

Yes, you should report “Yes” for ALL the phenophases you see occurring on a given date. For animals, if you see a specific activity, like nest building, you are also seeing one or more active individuals, and should be reporting “Yes” to both of those phenophases for that species.

 **Can I still report 'Emerging leaves/needles' (trees and shrubs) or 'Emerging growth' (forbs and grasses) once I see 'Unfolded leaves/needles' or 'Young unfolded leaves/needles' on the plant?**

Yes, you should judge each leaf bud, needle bud, or shoot separately. As long as some buds or shoots on the plant are still breaking or initiating growth and have not yet produced an unfolded leaf or needle, you are seeing ‘Emerging leaves/needles’ or ‘Emerging growth’. For plants that have more than one bud or shoot, in most cases you will still be seeing ‘Emerging leaves/needles’ or ‘Emerging growth’ in some buds or shoots for many days after you first begin seeing ‘Unfolded leaves/needles’ or ‘Young unfolded leaves/needles’ from other buds or shoots. It is also possible to see multiple episodes of leaf/needle bud break or initial growth within a season. This might occur after a period of severe drought or after a plant is defoliated by insects. However, once ALL the active leaf/needle buds or shoots on the plant have at least one unfolded leaf, you should be reporting that you no longer see ‘Emerging leaves/needles’ or ‘Emerging growth’.

 **How can I judge when a leaf is '≥75% of full leaf size'?**

This is a little difficult the first year you try it, but gets easier with practice. If you are in doubt, you can measure full leaf size during summer of the first year and then use that measure to better judge 75% of full leaf size for subsequent years. We are asking observers to note when leaves become 75% of full leaf size in order to create an

estimate of the point in time when leaves are almost, but not quite full size. Including this measure allows scientists to keep track of the length of the "green-up" period (the time it takes leaves to grow to full size), which is an important aspect of a plant's response to climate change.

When should I report I no longer see 'Unfolded leaves/needles'?

You should continue to report seeing 'Unfolded leaves/needles' as long as fresh green or colored leaves/needles remain on the plant. Do not include dried, dead leaves or dead, brown needles that remain on the plant, such as occurs with some species throughout the dormant season (e.g. winter or dry season). In some cases, green leaves will remain on the plant in a frozen condition for part or all of the winter. If more than about 5% of the leaves have remained on the plant in this condition, you should continue to report seeing 'Unfolded leaves' until they fall off or appear wilted.

When should I stop reporting 'Yes' to seeing phenophases with an unclear endpoint?

For deciduous plants, there are certain phenophases with no distinct endpoint other than the end of the growing season. These include '≥75% of full leaf size', '≥50% of leaves/needles colored', 'All leaves/needles colored', '≥50% of leaves/needles fallen', 'All leaves/needles fallen', and 'All leaves withered'. For phenophases which have another phenophase that follows in a logical sequence, you can stop recording the first when the next phenophase begins. For example, you can stop recording '≥50% of leaves/needles colored' when you see 'All leaves/needles colored.' You can then stop recording 'All leaves/needles colored' when you see 'All leaves/needles fallen' or when you begin seeing new leaves or needles on the plant.

How can I tell if mature fruit have dropped from my plant since my last visit?

Evidence of 'Recent fruit drop' may include mature fruits on the ground below the plant that were not there on your last visit, or fruits missing from the plant which were present on your last visit. For this phenophase, do not include the dropping of fruits that are clearly immature and unripe, as often happens in a heavy rain or wind storm.

6. Enter your observations online

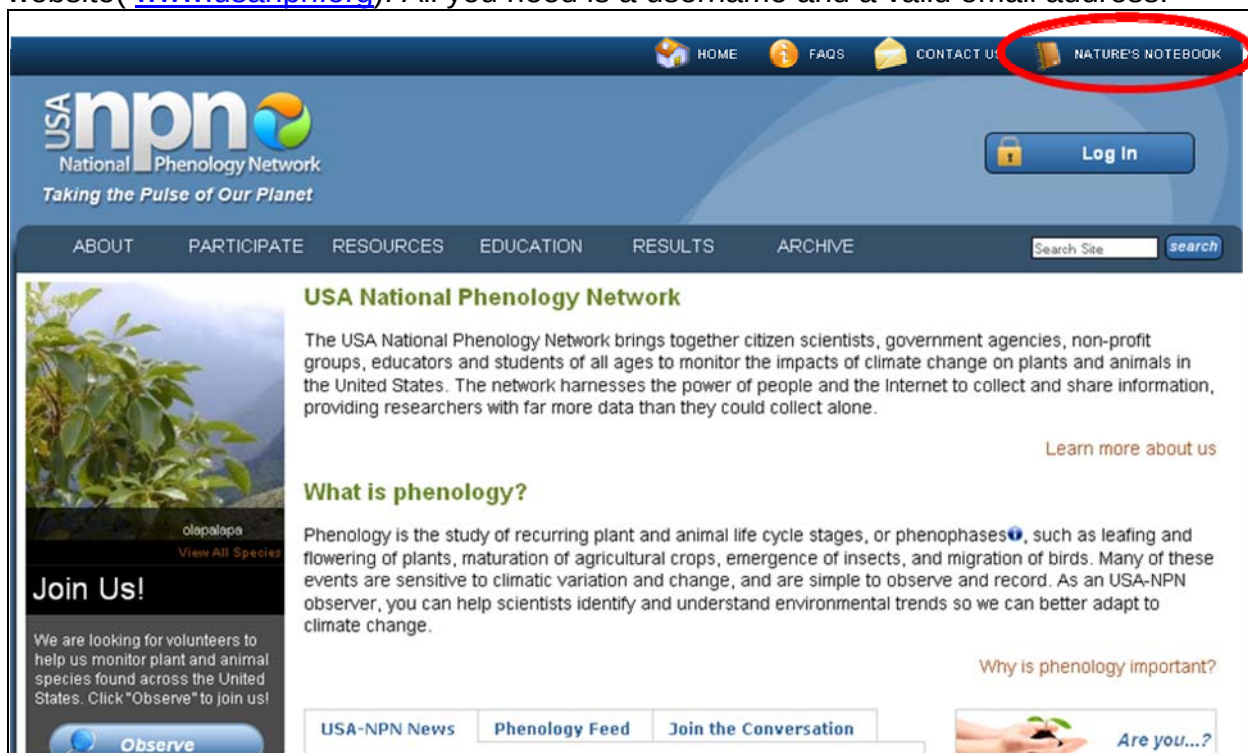
As you collect data during the season, log in to Nature's Notebook and enter the observations you have recorded.

When you first visit Nature's Notebook online, you will go through several steps to get set up before you can begin to enter your observations:

- Create your account
- Register your site
- If you are observing plants, register your plants
- If you are observing animals, create your animal checklist

Create your account

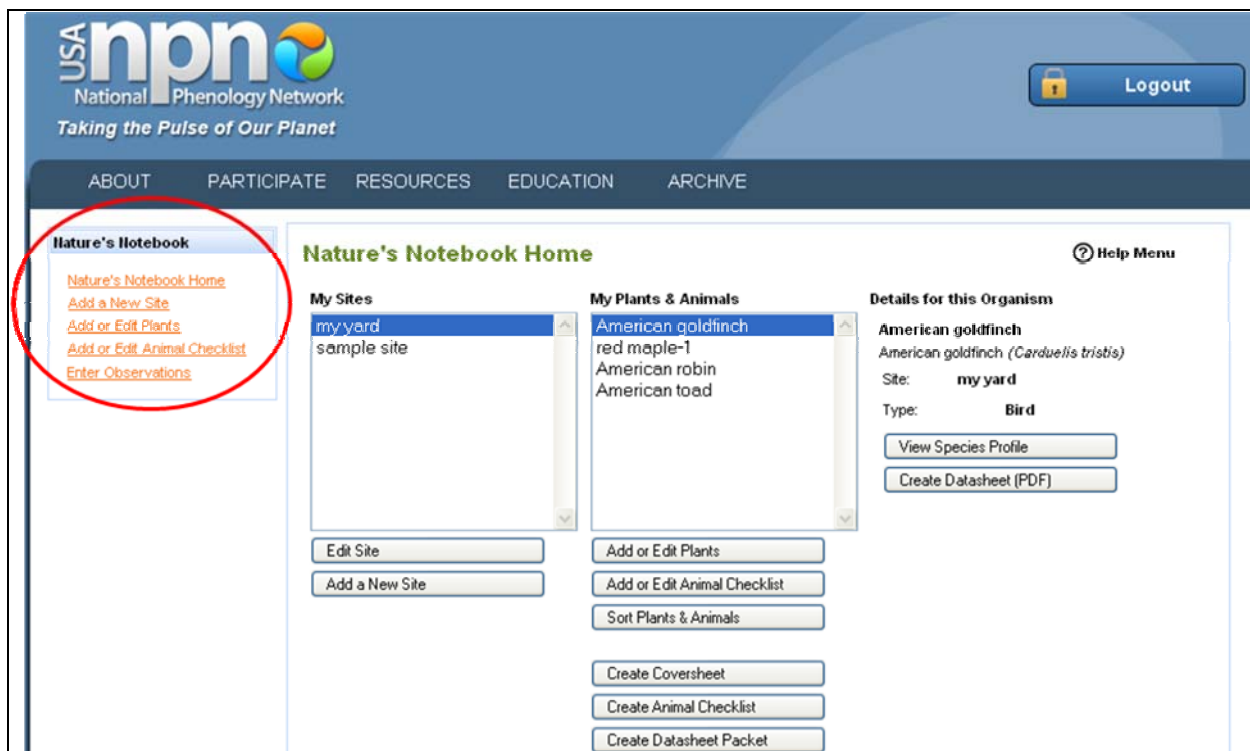
To create an account on Nature's Notebook, you can use the link to the Nature's Notebook online interface in the upper right corner on all pages of the USA-NPN website(www.usanpn.org). All you need is a username and a valid email address.



Link to Nature's Notebook on USA-NPN home page.

Register your site

Once you have created an account, you will be able to log into Nature's Notebook and access your personal Nature's Notebook Home page. From this page, you will be able to register a site. The key functions you will perform within Nature's Notebook are listed in the left sidebar menu.



Nature's Notebook Home page.

Click “Add a New Site” and use the map interface to locate your site. You can locate your site using an address, which will be automatically geo-located on the map, by selecting your site on the interactive map, or by typing the latitude and longitude into the boxes below the map.

🌿 Register your plants

Once you have successfully registered a site, you can add plants to that site. Click “Add or Edit Plants” on the left sidebar menu within Nature’s Notebook.

To register a plant at your site, 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.

Add or Edit Plants

[? Help Menu](#)

Select the site where your plant is located. Site: sample site [Need to add a new site? Click here.](#)

To add a plant, start typing the common or scientific name of a plant in the field marked "plant species". Select from the list of possible matches that will be displayed.
If you don't find a match,

- [View available plants](#)
- [View calibration species](#)

(Help: For more information on each option, hold your cursor over ?)

Your plants:

[Add new plant](#)

Your new plant...

New plant...

Plant Species ?

Nickname ?

Shade status ?

--Select

Wild? ?

Unknown

Watered? ?

Unknown

Fertilized? ?

Unknown

Planting date?

"Add or Edit Plants" page within Nature's Notebook.

Then, select the plant species in the "Plant species" box. Once you start typing the plant name into the box, you'll be offered suggested plant species from the USA-NPN recommended plant species list. Click on one of these suggestions and the fill in answers to the remaining questions. Starred questions are required.

Once you have successfully registered a plant to your site, you should see it appear on your Nature's Notebook Home page.

Nature's Notebook

- [Nature's Notebook Home](#)
- [Add a New Site](#)
- [Add or Edit Plants](#)
- [Add or Edit Animal Checklist](#)
- Enter Observations

Nature's Notebook Home

My Sites

my yard

Edit Site
Add a New Site

My Plants & Animals

red maple-1

Add or Edit Plants
Add or Edit Animal Checklist

A plant named "red maple-1" successfully registered to a site named "my yard" within Nature's Notebook.

From the Nature's Notebook Home page, you can also quickly return to the plant profile

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usanpn.org

for this species to review the phenophases you are asked to observe (1), print a datasheet for just this plant (2), or create a datasheet packet (3). A datasheet packet includes a phenophase datasheet for every plant and animal you have registered for your site, a cover sheet, and an animal checklist, if you are observing animals. You will want to print an entire datasheet packet before going out into the field for the first time to ensure you have all of the datasheets you will need.

The screenshot shows the 'Nature's Notebook Home' interface. It has three main columns: 'My Sites', 'My Plants & Animals', and 'Details for this Organism'. In the 'My Plants & Animals' column, 'red maple-1' is selected. The 'Details for this Organism' column shows information for 'red maple-1' (red maple, *Acer rubrum*) at 'my yard'. Below this information are two buttons: 'View Species Profile' (labeled with a red arrow and '1') and 'Create Datasheet (PDF)' (labeled with a red arrow and '2'). At the bottom of the page, there are two more buttons: 'Create Datasheets' (labeled with a red arrow and '3') and 'Enter Observation Data'.

From the Nature's Notebook Home page, you can quickly return to the plant profile for this species (1), print a datasheet for just this plant (2), or create a datasheet packet (3).

When you click on the “Create Datasheets” button (3), you will be prompted to select whether you would like to print a Coversheet, an Animal Checklist, and/or an entire datasheet packet.

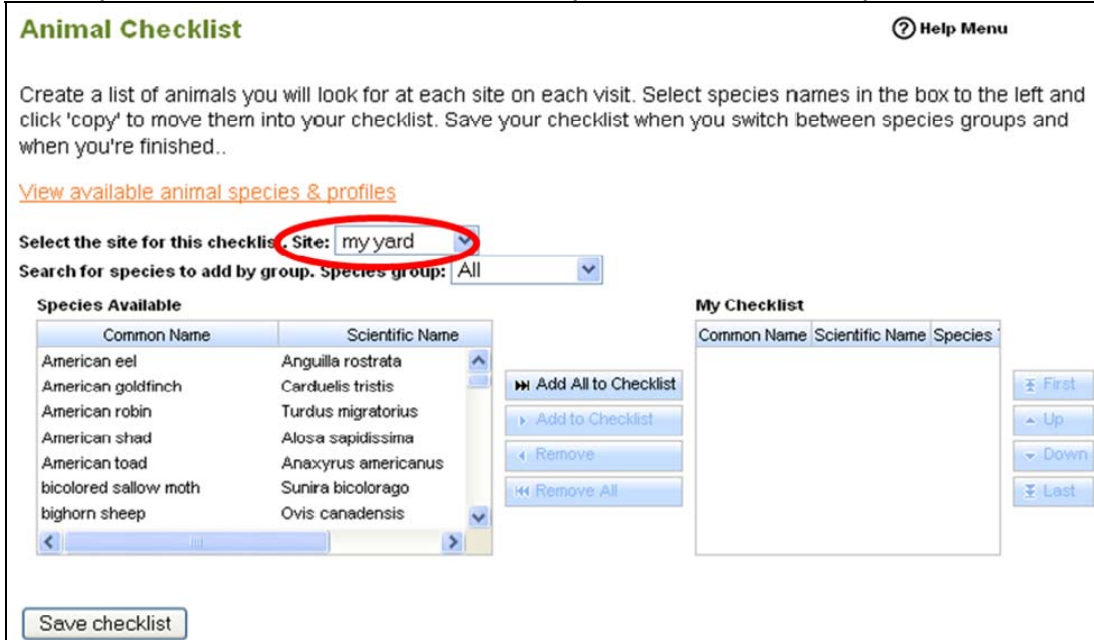
The screenshot shows a pop-up window titled 'Create Datasheets' over the Nature's Notebook Home page. The window contains the following text: 'Use the checkboxes below to select which datasheets you would like to print, and then click "Create Datasheets".' Below this text are three checkboxes: 'Create Coversheet' (unchecked), 'Create Animal Checklist' (unchecked), and 'Create Datasheet Packet' (unchecked). At the bottom of the window is a '[Close]' link. The background page shows the 'Details for this Organism' column for 'Theresa's Yard' with a 'Cardinal' selected.

“Create Datasheets” pop-up window.

Create your animal checklist

Once you have successfully registered a site, you can create a checklist of animals to look and listen for at that site. Click “Add or Edit Animal Checklist” on the left sidebar menu within Nature’s Notebook.

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.



Animal Checklist [Help Menu](#)

Create a list of animals you will look for at each site on each visit. Select species names in the box to the left and click 'copy' to move them into your checklist. Save your checklist when you switch between species groups and when you're finished..

[View available animal species & profiles](#)

Select the site for this checklist. Site: **my yard**

Search for species to add by group. Species group: All

Species Available

Common Name	Scientific Name
American eel	Anguilla rostrata
American goldfinch	Carduelis tristis
American robin	Turdus migratorius
American shad	Alosa sapidissima
American toad	Anaxyrus americanus
bicolored sallow moth	Sunira bicolorago
bighorn sheep	Ovis canadensis

Buttons: Add All to Checklist, Add to Checklist, Remove, Remove All

My Checklist

Common Name	Scientific Name	Species
-------------	-----------------	---------

Buttons: First, Up, Down, Last

[Save checklist](#)

“Animal Checklist” page within Nature’s Notebook.

Then, select animal species from the “Species Available” window on the left. You can filter the animals in this list using the “Species group” drop-down menu. Be sure to save your checklist before you switch between species groups. Click the “Add to Checklist” button in the middle to move species into the “My Checklist” window on the right.

Animal Checklist

Help Menu

Create a list of animals you will look for at each site on each visit. Select species names in the box to the left and click 'copy' to move them into your checklist. Save your checklist when you switch between species groups and when you're finished..

[View available animal species & profiles](#)

Select the site for this checklist. Site: my yard

Search for species to add by group. Species group: All

Species Available

Common Name	Scientific Name
American eel	Anguilla rostrata
American goldfinch	Carduelis tristis
American robin	Turdus migratorius
American shad	Alosa sapidissima
American toad	Anaxyrus americanus
bicolored swallow moth	Sunira bicolorigo
bighorn sheep	Ovis canadensis

► Add All to Checklist

► Add to Checklist

◀ Remove

◀ Remove All

My Checklist

Common Name	Scientific Name	Species
-------------	-----------------	---------

First

Up

Down

Last

Save checklist

Adding animals to "My Checklist" for a site called "my yard" within Nature's Notebook.

Once you are finished adding animals to your checklist, click the "Save checklist" button in the lower-left corner of the screen.

Once you have successfully created an animal checklist for your site, you should see it appear on your Nature's Notebook Home page. In the example below, three animals have been added to the checklist for the site called "my yard": American goldfinch, American robin, and American toad. A red maple tree, called "red maple-1", has also been registered to this site.

Nature's Notebook Home

Help Menu

My Sites

my yard
sample site

Edit Site
Add a New Site

My Plants & Animals

American goldfinch
red maple-1
American robin
American toad

Add or Edit Plants
Add or Edit Animal Checklist
Sort Plants & Animals
Create Coversheet
Create Animal Checklist

Details for this Organism

American toad

American toad (*Anaxyrus americanus*)

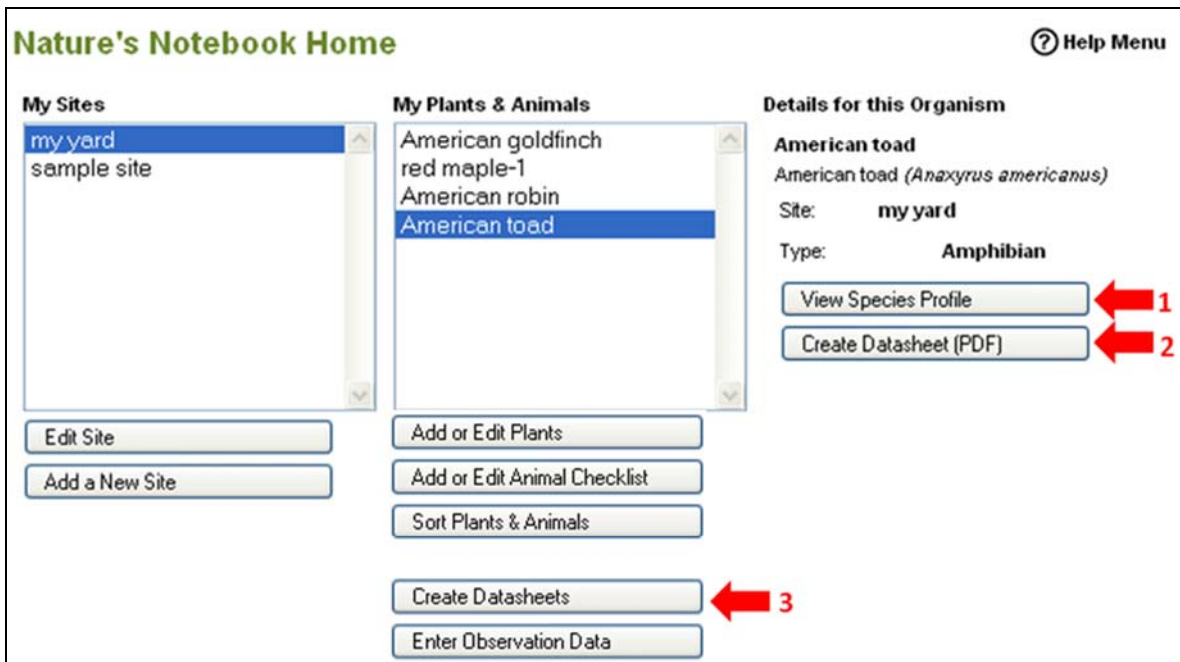
Site: **my yard**

Type: **Amphibian**

View Species Profile
Create Datasheet (PDF)

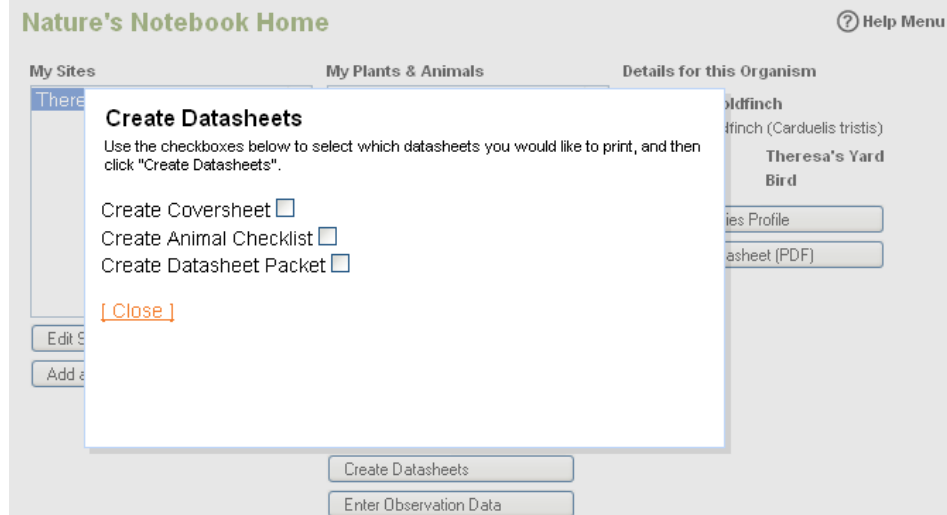
American goldfinch, American robin, and American toad successfully added to the animal checklist for a site named "my yard" within Nature's Notebook.

From the Nature's Notebook Home page, you can also quickly return to animal profile pages to review the phenophases you are asked to observe (1), print a datasheet for a single animal species (2), or create a datasheet packet (3). A datasheet packet includes a phenophase datasheet for every plant and animal you have registered for your site, a cover sheet, and an animal checklist, if you are observing animals. You will want to print an entire datasheet packet before going out into the field for the first time to ensure you have all of the datasheets you will need.



From the Nature's Notebook Home page, you can quickly return to a species profile page (1), print a datasheet for a single species (2), or create a datasheet packet (3).

When you click on the “Create Datasheets” button (3), you will be prompted to select whether you would like to print a Coversheet, an Animal Checklist, and/or an entire datasheet packet.



“Create Datasheets” pop-up window.

Enter your observations

Once you're ready to submit observations online, return to your Nature's Notebook Home page, select the plant or animal species for which you'd like to enter observations, and click the “Enter Observation Data” button.

Nature's Notebook Home ? Help Menu

My Sites

- my yard
- sample site

Edit Site

Add a New Site

My Plants & Animals

- American goldfinch
- red maple-1
- American robin
- American toad

Add or Edit Plants

Add or Edit Animal Checklist

Sort Plants & Animals

Create Datasheets

Enter Observation Data

Details for this Organism

American toad
American toad (*Anaxyrus americanus*)

Site: my yard

Type: Amphibian

View Species Profile

Create Datasheet (PDF)

"Enter Observation Data" button on the Nature's Notebook Home page.

You will be taken to the "Observation Data Entry Form". The plant and animal species that you have registered to this site will appear in expandable blue menus. Click on one of the species names to access the data entry interface for that species.

Each column represents a day's worth of observations. To enter a day's worth of observations, enter the date at the top of the column. Next, click "Y" or "N" for any phenophase for which you heard or saw the animal species. The default is set to "?". If you would like to enter "N" for all phenophases for this animal on this date, click the "Circle all no" at the top of the column. You may wish to use this function because for many animal species, you will not hear or see them on most of your visits to your site.

Select the site where your plant is located. Site: **my yard** ▼

Date: 06/10/2010

» Report your contribution of time

» Report your animal observation methods

» Report on snow

» American goldfinch

» red maple-1

» American robin

« American toad

	<u>Circle all no</u> 6/10/2010	<u>Circle all no</u>	<u>Circle all no</u>	<u>Circle all no</u>	<u>Circle all no</u>
Adults on land	y n ?	y n ?	y n ?	y n ?	y n ?
Adults in water	y n ?	y n ?	y n ?	y n ?	y n ?
Vocalizing	y n ?	y n ?	y n ?	y n ?	y n ?
Mating	y n ?	y n ?	y n ?	y n ?	y n ?
Dead adults	y n ?	y n ?	y n ?	y n ?	y n ?
Comments					

Expanded data entry interface for American toad within Nature's Notebook.

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.

Select the site where your plant is located. Site: **my yard** ▼

• Observations successfully saved!

Date: 06/10/2010

» Report your contribution of time

» Report your animal observation methods

» Report on snow

» American goldfinch

» red maple-1

» American robin

« American toad

	Circle all no 6/10/2010	Circle all no	Circle all no	Circle all no	Circle all no
Adults on land	y n ?	y n ?	y n ?	y n ?	y n ?
Adults in water	y n ?	y n ?	y n ?	y n ?	y n ?
Vocalizing	y n ?	y n ?	y n ?	y n ?	y n ?
Mating	y n ?	y n ?	y n ?	y n ?	y n ?
Dead adults	y n ?	y n ?	y n ?	y n ?	y n ?

Observations successfully saved for American toad at a site named "my yard".

From here, you can enter further observations, or use the left-side menu to navigate to other functions within Nature's Notebook.

You will also need to enter the information from your Cover Sheet, including the time you spent observing, the time you spent in travel to and from your site, your animal observation methods, and snow conditions at your site. Each of these elements can be accessed through the blue expandable menus on the "Enter Observations" page.

Select the site where your plant is located. Site: **my yard**

Date: 06/10/2010

Report your contribution of time

Time spent observing: [dropdown] [dropdown] [dropdown] [dropdown] [dropdown]

Time spent in travel: [dropdown] [dropdown] [dropdown] [dropdown] [dropdown]

» Report your animal observation methods

» Report on snow

» American goldfinch

» red maple-1

» American robin

« American toad

	6/10/2010	Circle all no	Circle all no	Circle all no	Circle all no	Circle all no
Adults on land	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Adults in water	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?

Entering Cover Sheet information within Nature's Notebook.

Tips for streamlining your data entry process

After each visit to your site, please enter the information recorded on your datasheets in your Nature's Notebook Enter Observations form. Start by entering the information you recorded on your Cover Sheet for each date. Then enter your observations for each of your plants and animal species. For plants, simply enter the information written on each Plant Phenophase Datasheet. For animals, refer to your Animal Checklist. For the dates where "n" is circled for a species, click "Circle all no" at the top of the column for that date and all phenophases will be set to "no". For the dates where "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 date.

How do I change observation data once I have entered it?

If you wish to correct your observation data for a particular date, navigate to that day's column using the arrows at the bottom of your Nature's Notebook Enter Observations form. Then change the "Yes", "No" and "?" responses to the correct ones for that day. Unfortunately you cannot edit the date for which observations are reported in a given column. If you have correct data entered for the wrong date, please change all the responses in the column with the wrong date to "?", and add a new column with the correct date and responses. You can add a comment describing the correction to help us keep track of your change.

Much of the value of phenology data is in observations from the same sites and plants over many years, so ***please come back next year!***

Appendix A. Recording Phenology Observations: A Complete Example

This section provides an example of how to make plant or animal phenology observations and to complete the three types of datasheets.

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

- American robin
- Black-capped chickadee
- Bumblebee

You also have three individual mayapple plants 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:

- 1 robin fly through the site
- 2 bumblebees visiting flowers

And you hear one robin singing.

On your Animal Checklist, write the date you observed and then circle “Y” next to ‘robin’ and ‘bumblebee’, as you did observe these species at your site. Because you did not observe Black-capped chickadee, you would circle “N” next to ‘black-capped chickadee’.

Animal Checklist				
Do you see/hear...?	Date	5/5/10		
Robin		☒ y n ?	y n ?	y n ?
Black-capped chickadee		y ☒ n ?	y n ?	y n ?
Bumblebee		☒ y n ?	y n ?	y n ?
		y n ?	y n ?	y n ?
		y n ?	y n ?	y n ?
		y n ?	y n ?	y n ?
		y n ?	y n ?	y n ?
		y n ?	y n ?	y n ?
		y n ?	y n ?	y n ?

Completed Animal Checklist.

On your robin Phenophase Datasheet, you would indicate a “Y” for ‘active individuals’, as you saw robins flying through the site. You would also circle “Y” for ‘calls or song’, as

you heard a robin singing. You weren't certain whether it was a male or a female robin singing, so you would circle "?" for 'singing males'.

You would circle "N" for the remainder of the phenophases, as you did not observe robins:

- Eating seeds or fruit
- Mating
- Building a nest or
- At a feeder

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

Animal Phenophase Datasheet						
Species <u>American robin</u>		Site <u>My front yard</u>		Year <u>2010</u>		Observer
Directions:						
Fill in the date in the top row and circle the appropriate letter in the column below it: y (phenophase c						
Do you see/hear...?	Date	5/5/10				
Active individuals	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Calls or song	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Singing males	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Fruit/seed consumption	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Mating	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Nest building	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Dead individuals	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Individuals at a feeder	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Check when data entered online:		☐	☐	☐	☐	☐
Comments:						

Completed Phenophase Datasheet for robin.

On your bumblebee Phenophase Datasheet, you would circle "Y" for 'individuals visiting flowers', as you saw two individuals visiting flowers. You would also circle "Y" for 'active adults', as you also met the definition for this phenophase, "one or more adults seen moving about or at rest". You would circle "N" for the remainder of the phenophases, as you did not observe bumblebees mating and you also didn't see any dead bumblebees at your site.

Finally, because you did not see or hear any black-capped chickadees at your site, you do not need to fill out a column on your black-capped chickadee Animal Phenophase datasheet. You have already indicated that you saw or heard no evidence of chickadees on your Animal Checklist.

Animal Phenophase Datasheet

Species Bumblebee Site My front yard Year 2010 Obs

Directions:

Fill in the date in the top row and circle the appropriate letter in the column below it: y (phenophase)

Do you see/hear...?	Date	5/5/10				
Active adults	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Individuals visiting flowers	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Mating	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Dead individuals	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Check when data entered online:	☐	☐	☐	☐	☐	☐
Comments:						

Completed Phenophase Datasheet for bumblebee.

Next, you check the three individual mayapple plants you are observing.

Taking plant observations

You walk to your first plant and carefully look at and compare what you see to the phenophases you are asked to observe for mayapple. You see bright green, fully unfolded leaves, but no flowers or fruits. You determine that your plant fits the definition for “unfolded leaves”, but not the definitions for “emerging growth”, “all leaves withered”, “open flowers”, or “ripe fruits”. You circle “y” for the “unfolded leaves” phenophases on your datasheet for this individual plant, and “n” for all of the other phenophases.



Plant Phenophase Datasheet

Species Mayapple Plant Nickname Mayapple #1 front yard

Directions:

Fill in the date in the top row and circle the appropriate letter in the column below it: y (phenophase)

Do you see...?	Date	5/5/10				
Emerging growth	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Unfolded leaves	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
All leaves withered	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Open flowers	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Ripe fruits	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?
Check when data entered online:	☐	☐	☐	☐	☐	☐
Comments:						

Completed phenophases datasheet for mayapple #1.

Next, you take observations for the two other mayapple plants you are observing and fill out your phenophases datasheets for each of them.

Completing the Cover Sheet

Before leaving your site, you fill out your Cover Sheet. Write in the date at the top of the column.

Cover Sheet								
Site	<u>My front yard</u>			Year	<u>2010</u>		Observer	<u>USA-NPN Fan</u>
Date	<u>5/5/10</u>							
Report your contribution of time								
Time spent observing	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min
Time spent in travel	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min
Report your animal observation methods								
Time spent looking for animals	hr min	hr min	hr min	hr min	hr min	hr min	hr min	hr min
Animal survey method	w s a	w s a	w s a	w s a	w s a	w s a	w s a	w s
Report on snow								
Is there snow on the ground?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n
% of ground covered								
Is there snow in the canopy?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n

Fill in the date on the Cover Sheet.

Next, indicate the amount of time you spent looking for animals. Recall in this example you took observations for 3 minutes.

Cover Sheet									
Site	My front yard			Year	2010		Observer	USA-NPN Fan	
Date	5/5/10								
Report your contribution of time									
Time spent observing	hr	min	hr	min	hr	min	hr	min	hr
Time spent in travel	hr	min	hr	min	hr	min	hr	min	hr
Report your animal observation methods									
Time spent looking for animals	3	hr	min	hr	min	hr	min	hr	min
Animal survey method	w	s	a	w	s	a	w	s	a
Report on snow									
Is there snow on the ground?	y	n	?	y	n	?	y	n	?
% of ground covered									
Is there snow in the canopy?	y	n	?	y	n	?	y	n	?

Indicate that you spent three minutes looking and listening for the animals on your checklist.

Next, 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'.

Cover Sheet									
Site	My front yard			Year	2010		Observer		
Date	5/5/10								
Report your contribution of time									
Time spent observing	hr	min	hr	min	hr	min	hr	min	hr
Time spent in travel	hr	min	hr	min	hr	min	hr	min	hr
Report your animal observation methods									
Time spent looking for animals	3	hr	min	hr	min	hr	min	hr	min
Animal survey method	w	s	a	w	s	a	w	s	a
Report on snow									
Is there snow on the ground?	y	n	?	y	n	?	y	n	?
% of ground covered									
Is there snow in the canopy?	y	n	?	y	n	?	y	n	?

Indicate that you stood stationary ("s") to make your observations of animals.

Next, 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.

Cover Sheet									
Site	<u>My front yard</u>			Year	<u>2010</u>		Observer	<u>USA-NPN Fan</u>	
Date	<u>5/5/10</u>								
Report your contribution of time									
Time spent observing	hr	min	hr	min	hr	min	hr	min	hr
Time spent in travel	hr	min	hr	min	hr	min	hr	min	hr
Report your animal observation methods									
Time spent looking for animals	3	hr	min	hr	min	hr	min	hr	min
Animal survey method	w	s	a	w	s	a	w	s	a
Report on snow									
Is there snow on the ground?	y	n	?	y	n	?	y	n	?
% of ground covered									
Is there snow in the canopy?	y	n	?	y	n	?	y	n	?

Indicate that you did not see snow on the ground or in the tree canopy.

Next, indicate the time you spent traveling to and from your site.

Cover Sheet									
Site	<u>My front yard</u>			Year	<u>2010</u>		Observer	<u>USA-NPN Fan</u>	
Date	<u>5/5/10</u>								
Report your contribution of time									
Time spent observing	hr	min	hr	min	hr	min	hr	min	hr
Time spent in travel	2	hr	min	hr	min	hr	min	hr	min
Report your animal observation methods									
Time spent looking for animals	3	hr	min	hr	min	hr	min	hr	min
Animal survey method	w	s	a	w	s	a	w	s	a
Report on snow									
Is there snow on the ground?	y	n	?	y	n	?	y	n	?
% of ground covered									
Is there snow in the canopy?	y	n	?	y	n	?	y	n	?

In this example, as your site is your front yard, you spent one minute traveling to your site, and one minute traveling back to your house, for a total of two minutes in travel.

Finally, 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 this example, you looked and listened for animals for 3 minutes. It took you 11 minutes to check your three mayapple plants and fill out the datasheets. You also spent 1 minute sharpening your pencil at the beginning and filling out the cover sheet at the end. This resulted in a total of 15 minutes spent observing.

Cover Sheet									
Site	<u>My front yard</u>			Year	<u>2010</u>			Observer	<u>USA-NPN Fan</u>
Date	<u>5/5/10</u>								
Report your contribution of time									
Time spent observing	<u>15</u> hr	min	hr	min	hr	min	hr	min	hr
Time spent in travel	<u>2</u> hr	min	hr	min	hr	min	hr	min	hr
Report your animal observation methods									
Time spent looking for animals	<u>3</u> hr	min	hr	min	hr	min	hr	min	hr
Animal survey method	<u>w s a</u>	w s a	w s a	w s a	w s a	w s a	w s a	w s a	w s
Report on snow									
Is there snow on the ground?	<u>y n</u> ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n
% of ground covered									
Is there snow in the canopy?	<u>y n</u> ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n ?	y n

Completed Cover Sheet.

You are finished – you have successfully taken your animal and plant 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.usanpn.org, and then click on 'Nature's Notebook' on the upper right).