

Nature's Notebook
Student Observation Guide

Your class has an important challenge ahead – making and recording observations on plant and animal species in your area. The **observations** you make are not only important and interesting for you and your instructor, but also important to scientists interested in understanding how species may be responding to environmental conditions. Plants and animals survive best when they are within optimum habitat conditions, so if those conditions change it will be important to understand what will happen.

More specifically you will be observing the **life cycles** of plant and animal species. All plants and animals go through very specific life cycle stages, often cued to move into the next phase by something in the environment. You will be recording when you see certain things happening throughout the semester or school year, such as bird migration, pollinator visitation to plants leaf color change, and availability of fruits.

		Milkweed-3: Do you see...?	Status										
		Initial growth	No										
		Leaves	Yes										
		Flowers or flower buds	Yes										
		Open flowers	Yes										
		Fruit	No										
		Ripe fruit	No										
Recent fruit or seed drop	No												
<table border="1"> <tr> <td>Date</td> <td>07/05/12</td> </tr> <tr> <td>Time</td> <td>4:30 pm</td> </tr> <tr> <td>Site</td> <td>Wilson Park</td> </tr> <tr> <td>Plant</td> <td>Milkweed-3</td> </tr> <tr> <td>Observer</td> <td>Willow Tamias</td> </tr> </table>		Date	07/05/12	Time	4:30 pm	Site	Wilson Park	Plant	Milkweed-3	Observer	Willow Tamias	Monarch: Do you see...?	Status
		Date	07/05/12										
		Time	4:30 pm										
		Site	Wilson Park										
		Plant	Milkweed-3										
		Observer	Willow Tamias										
		Active adults	Yes										
Flower visitation	Yes												
Migrating adults	No												
Mating	No												
Active caterpillars	No												
Caterpillars feeding	No												

Figure 1 Examples of phenophases Monarchs and milkweed

The study of these recurring life cycle events is called **phenology**. An “-ology” is the study of, and “pheno” (or “phaino”) means to show or appear. Therefore, we are interested in studying and recording when plants and animals “show” these events, called **phenophases**, and understanding if the timing is same or different each season and from year to year.¹

In the long-term, your observations will be used by scientists to compare what we see today to what has happened before. They will be contributed to a national phenology database and be available to scientists interested in understanding changes and patterns, but also available to **you**. You can go back through time and see what you recorded. Your instructor may also wish to

have you look at or analyze your class’ data, or data from multiple classes or sites.

The information you record will be entered into our *Nature’s Notebook* observation program. Details from these observations will be collected either on paper datasheets, entered directly into the computer, or entered using a mobile app, depending upon how your instructor has set up your course.

¹ From: 2013. Rosemartin, A.H, et al. *Organizing phenology data resources to inform natural resource conservation*.

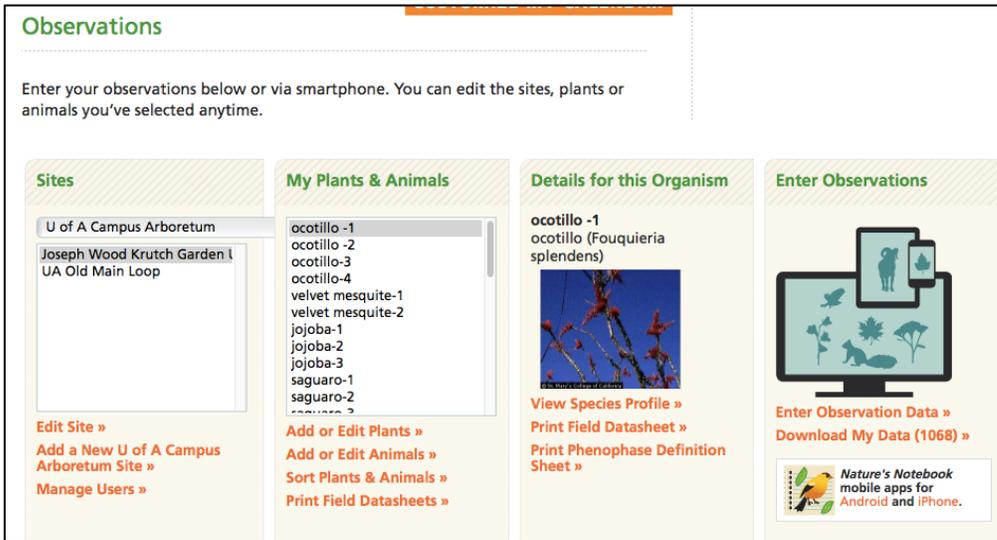
How to get started

Begin by visiting the *Nature's Notebook* website: <http://www.nn.usanpn.org>.

Click on the link to **BECOME AN OBSERVER**

Set up your account by answering the questions that appear on the screen. When you get to the section that says **PARTNER GROUPS**:

Click on the + next to the TUCSON PHENOLOGY TRAIL Partner Group. Find the U of A Campus Arboretum Group and place a check mark in the box next to it.



Be sure to save your account information at the bottom of the account creation screen. Once you have saved your information you will be taken to, your **Observation Deck** (as seen here) and view your sites. You can toggle between **My Sites** and **Group Sites** using the dropdown menu in the **Sites** box. For this class **you will be entering your observations at the Joseph Wood Krutch Garden site.** If you need help setting up your

Figure 2 *Nature's Notebook* Observation Deck

account, instructions can be found on our **Learn How to Observe** page here: www.usanpn.org/nn/guidelines.

What else do I need to know?

Some questions you might have before you begin include:

1. *How do I identify the species? Where do I figure out what I am looking for?*
2. *How do I know if individuals are already tagged?*
3. *What do the phenophases (leaves, flowers, fruits) on the plant that I am observing (or the animal!) look like?*

We've got some information online to help you in our **Frequently Asked Questions** section here: <https://www.usanpn.org/nn/faq>. You should find a good field guide or ask your instructor to review what the phenophases look like.

We encourage people to observe many phenophases, but you should only record what you are comfortable with identifying. For each phenophase you can record either a **YES**, a **NO**, or a **?** if you are not sure. For more information on what to look for, you can visit our Learn How to Observe page (www.usanpn.org/nn/guidelines) and click on the link for **3. START OBSERVING**.

What's next?

Depending upon what your instructor has challenged you to do, you will want to consider how and when to make some observations. Observations should be made regularly, if possible, perhaps at the same time of day. Changes may occur quickly so you want to be sure you don't miss something. Have a great time out there and good luck with your project!