Use this annotated agenda with the sample training course PowerPoint and materials developed for one 6-hour workshop or two separate 3-hour workshops. We have found it easier to break up introductory materials from navigating Nature’s Notebook and practicing observations in the field.

**Pre-workshop Activity**
See handouts (editable Word doc or PDF):
https://www.usanpn.org/online-setup
Provide participants with information about the USA-NPN after they register for your workshop. Participants should generally familiarize themselves with the website and create an account in Nature’s Notebook before they arrive for training. These documents are editable to match the description of your group’s name and location. If participants have created an account, they can also download the mobile app from the iTunes or Google Play store (depending upon their device). *Note that the apps work best if an account is already created on the website because it is more difficult to create an account on the small screen than it is on the computer.*

You may also choose to hand out the KWL activity ahead of time (see #4 below) and ask the participants to bring their worksheets to class.

Encourage participants to bring their own laptops and tables for the data entry practice portion of the workshop, if you have access to an internet connection. This can also be completed as a homework assignment between day one and day two.

**Workshop 1 Content: 3 hours**

1. **Welcome and Ice-breaker**
   - **20 minutes**
   - See Life Cycle Bingo (or Phenology Bingo): [https://www.usanpn.org/PhenologyBingo](https://www.usanpn.org/PhenologyBingo) for ideas.

2. **Overview of the day, intro to facility, etc.**
   - **5 minutes**

3. **POWERPOINT PRESENTATION BEGINS**
   - **80 minutes**
   - *Note* that the order of the PowerPoint was developed to create a baseline of understanding for participants before jumping into a discussion of phenology. The order is entirely up to the instructor, but I’ve found this works pretty well, regardless of the participant experience. Discussing the value of observation, in general, and then some basic ecological principles is a great review for volunteer groups. I’ve also compared the information to the recently released teaching resources on the [www.climate.gov](http://www.climate.gov) website, and the information dovetails nicely. The PowerPoint itself is annotated with details included for scripting purposes.
Suggested annotated PowerPoint outline:

⇒ Course objectives (slides 3-4). Will vary depending upon length of training.

⇒ Define Phenology (slides 5-21)
  - Phenology KWL - Activity 1  5 minutes
    - See handout: https://www.usanpn.org/KWL
    - Participants should think, pair, share, and complete the first two boxes on the worksheet:
      1. What I know about Phenology, and 2. What I’d like to Know about Phenology.
      Instructor can have the group share some thoughts aloud with the full group after about 3 minutes of discussion. The final box should be saved for review at the end of the workshop.
    - Technical definitions, who utilizes phenology, why it is important
    - Observing is experiencing
      - Personal anecdote about observations
      - How observation enhances experiences, makes it richer
      - Observable life cycle events are phenophases. They recur through time.
      - Recording observations of life cycle events is helpful for remembering what happened in the past and making comparisons to what has changed
      - The timing of life cycle events is an important indicator of change
      - Examples of real world need for understanding life cycle events
    - Define USA-NPN Mission and Goals; Nature’s Notebook is how we deliver.

⇒ Observations and Record Keeping (slides 22-30)
  - Using nature as a guide
    - Traditional cultures and nature
    - Nature guided daily activities, named things for happenings in nature
      - Needed to be tuned in for survival
      - Everything was cyclical
      - Recent historical figures also recorded information that has become valuable today for understanding what has changed, using for gardening and management decisions
      - Having a record of natural history and natural resource “schedules” is valuable for making decisions on many levels
  - Introduction to Journaling & Observation - Activity 2  30-40 minutes
    - See handout: https://www.usanpn.org/intro-pheno-journal
    - This activity is best conducted outside. There are instructions and reflection questions included on the online link above. In general, though, participants should take at least 15-20 minutes outside, in a designated space, to make observations. The questions are written in simplistic format, related to the Nature’s Notebook observation protocols.

⇒ Ecology and Phenology (slides 31-39)
  - Basic ecology definitions and components
  - Climate is the driving factor –determines what can live where, provides resources
- Biomes, populations, abundance
- Difference between climate (long-term) and weather (day to day)
- Phenology, definitions, life cycle events, phenophases
- Implications of climate change
- Local connections
- Why is climate important to ecology and phenology?

⇒ *Phenology and Climate change* (slides 40-48)
- Provide local examples of potential climate change impacts from research
- Discuss invasive species and their effect on the environment
- Discuss potential species mismatch (see Both et al. 2005), study about Pied flycatcher and winter moth mismatch
- Share content from National Climate Assessment, [www.globalchange.gov](http://www.globalchange.gov) and highlight local/regional effects
- Discuss why a changing climate may be problematic for species, including humans, moving forward

⇒ *Observations Shared for science* (slides 48-68)
- Discuss the benefits of citizen science
- Take a closer look at Nature’s Notebook citizen and professional science program
- Review how to make observations, in general, using Nature’s Notebook
- Share details about plant phenophase definitions on a locally familiar species, such as an oak, maple, mesquite.
- Share details about animal phenophase definitions on a local species
- Emphasize that when beginning, only observe those phenophases that are comfortable to participants – e.g. leaves, open flower, fruits. One needs to be able to identify the species as well as individual phenophases by site before one can make accurate observation.
- It is OK to say I DON’T KNOW.
- Observation data paints a picture of what is happening in the ecosystem at any given time, and can tell us more about species interaction
- Data must be entered online to be useful to others, part of the USA-NPN Mission
- What has the data extracted told us? Use local examples where possible.

⇒ *Next steps* (slides 69-73)
- Share upcoming events and training information

⇒ *Closing activity* (slide 74)
- **Phenology KWL – Part 2**
  - See handout: [https://www.usanpn.org/KWL](https://www.usanpn.org/KWL)
  - Complete last column, *What did I Learn*, individually and share aloud

⇒ Evaluation and feedback (slide 75-76)
- Check for comprehension on day’s objectives, as outlined in the beginning
- Hand out evaluation forms, see USA-NPN Education website for a sample: [https://www.usanpn.org/reflection](https://www.usanpn.org/reflection)
⇒ Time permitting, Activity to explore tagged plants and make some general observations

Workshop 2 Content: 3 hours, in the field

1. Welcome and ice breaker 10 minutes

2. Site set-up - Activity 1 40 minutes
   See handout: https://www.usanpn.org/site-set-up
   Take the group outside, divided in teams, armed with both worksheets found at the above link.
   The worksheets provide some guiding questions and things to think about when establishing a site at your location. The task is to delineate a space on the grounds that would be ideal for hosting a phenology walk. The group should decide what plants and animals to monitor (using field guides, if appropriate), and why. They should develop a hypothesis for monitoring those species, and take into consideration the parameters listed on the tip sheet in the design process. This exercise is ideal; even if a monitoring site is already established at your location, because the discussion about how the site is created will help people better understand the project as a whole. If you already have a walk and site created for your location, compare the existing details to those the group developed.

⇒ It is important to consider implementing a phenology program rather than just an activity at your site. This means when planning, think about the benefits of conducting a monitoring program for more than one year. Can phenology monitoring also benefit an existing management or science program? Will it be an addition to an existing volunteer or outreach program that is already happening at your site? Can you tie together some activities under the umbrella of phenology and include a monitoring program for visitors and/or volunteers?

⇒ Decide if you will mark the selected species and individuals of species at this time
   – If you are tagging, have enough plant markers available and you have permission to select the individuals
   – If you are creating a new site, plan to make accurate notes and a hand drawn map so that you can find the individuals again, and then create a site in Nature’s Notebook when you return to your computer. Make a plan for creating a group site to which people can return and record observations
   – Don’t forget that you have the option of selecting animal species too

3. Data collection – Activity 2 60 minutes
   See website for plant example: https://www.usanpn.org/nn/Quercus_alba
   See website for animal example: https://www.usanpn.org/nn/Turdus_migratorius
   We recommend taking the group outside and practicing data collection using data sheets and phenophase definitions from our website. Even if you do not have an established site in Nature’s Notebook, you can still select a few species at your location to monitor, and print out the data sheets and phenophase definitions. Keep a list of animal species that could be spotted while you are observing and note them as incidental sightings.

You may want to spend a few minutes familiarizing everyone with the species, phenophase definitions, and abundance categories before heading out into the field.
We recommend selecting about 5 individual plants to observe during this activity. Begin with the most familiar species and practice just observing the basic phenophases for the plant – the leaves, open flowers, fruits. If you have photos of the individual or species to bring into the field that match the definitions, that can be helpful for looking at the plant outside. As a group, discuss what you think is occurring, mark the datasheet, and move on to the next. As everyone becomes more comfortable with the definitions, you can move on to the abundance categories.

It is important to note that each individual plant of each species is going to look a little bit different. This is one reason we recommend regular (once a week) observations on the same individual so that observers can become comfortable with that plant in its habitat.

This, by far, is the most challenging thing to teach about phenology monitoring. Be sure to tell everyone that it takes some time to familiarize themselves with their species, and as time goes on, it gets easier.

4. Data entry – Activity 3

NOTE: You may choose to assign this activity as a homework assignment for everyone, or come back for a second advanced training where your participants can practice again with paper data sheets and mobile applications in the field. You also may need to do this if you had not yet created the account in Nature’s Notebook with the selected individual plants and animals.

Everyone should enter the data using their own user account and computer if possible. Help the group with troubleshooting and discuss their findings as you move along. We suggest giving people time to enter the data on their own, so they can become familiar with the site and its functionality, rather than taking everyone step by step through every individual plant.

Alternatively, if classroom space is available, you can adjourn there and go through the online application and set up.

⇒ Next steps/a challenge/charge to volunteers
– This will vary depending upon why you are hosting the workshop and where you’d like to go from here. If you are tasking the group with coming up with a weekly schedule for monitoring at your location, maybe you will include some time to develop a calendar for monitoring, with assignments, etc. If you’d like for volunteers to create a phenology walk or trail, maybe your charge is to support them in developing it for your location. If you are asking them to help you by recruiting others, then have them brainstorm ideas about programs that they might host to encourage others to participate.