The Arnold Arboretum Tree Spotters

Basic Training: Fall 2019

Wolkovich Temporal Ecology Lab
Arnold Arboretum of Harvard University

USGS science for a changing world

nature's notebook

The ARNOLD ARBORETUM of HARVARD UNIVERSITY

USA npn National Phenology Network

Tree Spotters Team

Suzanne Mrozak, Volunteer Coordinator

Danny Schissler, Program Coordinator

Catherine (Cat) Chamberlain, Graduate Student

Agenda

- Overview of the Tree Spotters program.
- Being a Tree Spotter – Part 1.
- Tree Spotter resources.
- What happens next: A preview of Beyond the Basics.

Overview of the Tree Spotters program

- Phenology, climate change, and citizen science: How are they linked? Why are we asking for your help?
- What is Tree Spotting and what are we asking Tree Spotters to do?
- What trees are we Spotting and why?
- Where are our trees?
- What phenophases are we observing and why?
- What are the personal benefits of Tree Spotting?
- Meet your fellow Tree Spotters

Phenology

- The USA National Phenology Network (US-NPN) definition "The study of the timing of recurring plant and animal life-cycle stages, or ***phenophases***, and their relationship to environmental conditions."

We bring together citizen scientists, government agencies, non-profit groups, educators and students of all ages to monitor the impacts of climate change on plants and animals in the United States.

Phenology

- Emergence
- Blooms, buds, fruits
- Migration, hibernation, dormancy

- Easy to observe

Climate change

Citizen Science

- Working definition (Cornell Lab of Ornithology) *“Projects in which volunteers partner with scientists to answer real-world questions.”*
- Can involve one person or millions. Public involvement is typically in data collection, analysis, or reporting.
- Allow for investigations at continental and global scales and across decades leading to discoveries that single scientists could never achieve on their own.

The Tree Spotters program

Why are we asking for your help?

- Plant phenology is now the most reported biological indicator of anthropogenic climate change.
- Harvard affiliated researchers investigate the effects of climate change on phenology in plant communities.
- We want to establish a robust database of phenology data to support research being done here and all over the world.

Our goals

- Recruit and retain volunteers to visit the Arboretum on a regular basis during the growing season to observe plant phenology.
- Foster curiosity and promote stewardship of the natural world among volunteers.
- Maintain a robust volunteers database in order to develop and maintain an ongoing relationship with our volunteers.
- Develop a central repository for Tree Spotters assets that is open to anyone.
- Continuously evaluate and improve program infrastructure.

What is Tree Spotting?

- Observing the life-cycle stages of fifteen different species of trees/shrubs at the Arnold Arboretum through the seasons and through the years.
- Recording your observations.
- Entering your observations into an online database managed by the USA National Phenology Network (NPN) via Nature's Notebook.

What are we asking Tree Spotters to do?

- Visit as many of our trees/shrubs as possible as often as possible (at least twice/month).
- Observe and record the phenophases for each tree/shrub you visit on a Nature's Notebook datasheet.
- Enter the datasheet information into your Nature's Notebook Observation Deck.

What are we asking Tree Spotters to do?

- Give us your feedback.
- Attend occasional educational sessions.

Photo: S. Mrozak

Trees/shrubs we are Spotting

- *Acer rubrum* **Red Maple**
- *Acer saccharum* **Sugar Maple**
- *Aesculus flava* **Yellow Buckeye**
- *Betula alleghaniensis* **Yellow Birch**
- *Betula nigra* **River Birch**
- *Carya glabra* **Pignut Hickory**
- *Carya ovata* **Shagbark Hickory**
- *Fagus grandifolia* **American Beech**
- *Hamamelis virginiana* **Common Witch-hazel**
- *Populus deltoides ssp. deltoides* **Eastern Cottonwood**
- *Quercus rubra* **Northern Red Oak**
- *Quercus alba* **White Oak**
- *Tilia americana* **American Linden (aka Basswood)**
- *Vaccinium corymbosum* **Highbush Blueberry**
- *Viburnum cassinoides* **Withe-rod (aka *Viburnum nudum*)**

Why these specific plants?

- Relevant to research work being done here.
- Native.
- Deciduous.
- Arboretum specimens.
- Tree Spotter friendly.

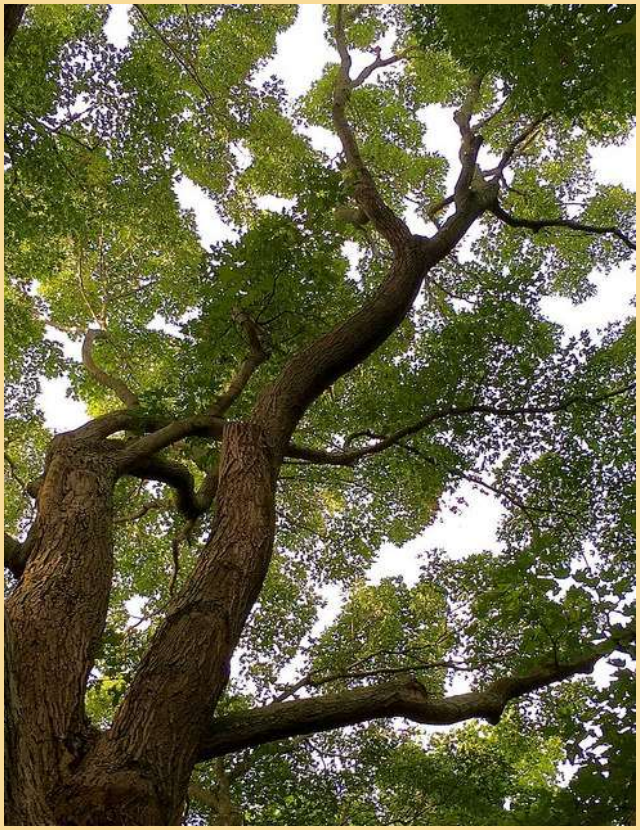


Photo: K. O. Linehan

Where are our trees/shrubs?

Photos: S. Mrozak

Look for our signs!

Photos: S. Mrozak

What phenophases are we observing?

- Breaking leaf buds
- Leaves
- Increasing leaf size
- Colored leaves
- Falling leaves
- Flowers or flower buds
- Open flowers
- Pollen release
- Fruits
- Ripe fruits
- Recent fruit or seed drop

Photo: S. Mrozak

Why these phenophases?

- The US National Phenology Network maintains a major Citizen Science database centered on phenology research that is referenced by scientists around the world.

- These phenophases were chosen and defined by US-NPN and are ideal for long-term study.

What are the personal benefits of Tree Spotting?

- You have the opportunity to learn something new.
- You have the satisfaction of knowing you are contributing to the greater good.
- You have an opportunity to meet like-minded people.
- Spending time outdoors, among the trees, is good for your health.

Meet your fellow Tree Spotters!

- **Overview**

  Pair up with someone you don't know. **Each person should be prepared to listen and to take notes**. You will be interviewing each other in Part A and introducing the person you interviewed to the entire group in Part B.

- **Part A**

  You have 90 seconds each to interview each other, using the questions on the next slide as your guide. At the end of 90 seconds, I will say SWITCH – and if you haven't switched already, you know what to do ☺

  At the end of three minutes total I'll say STOP. That's the end of Part A.

- **Part B**

  We will go around the room and each person will introduce the person he or she interviewed to the whole group.

Meet a fellow Tree Spotter!

Interview Questions

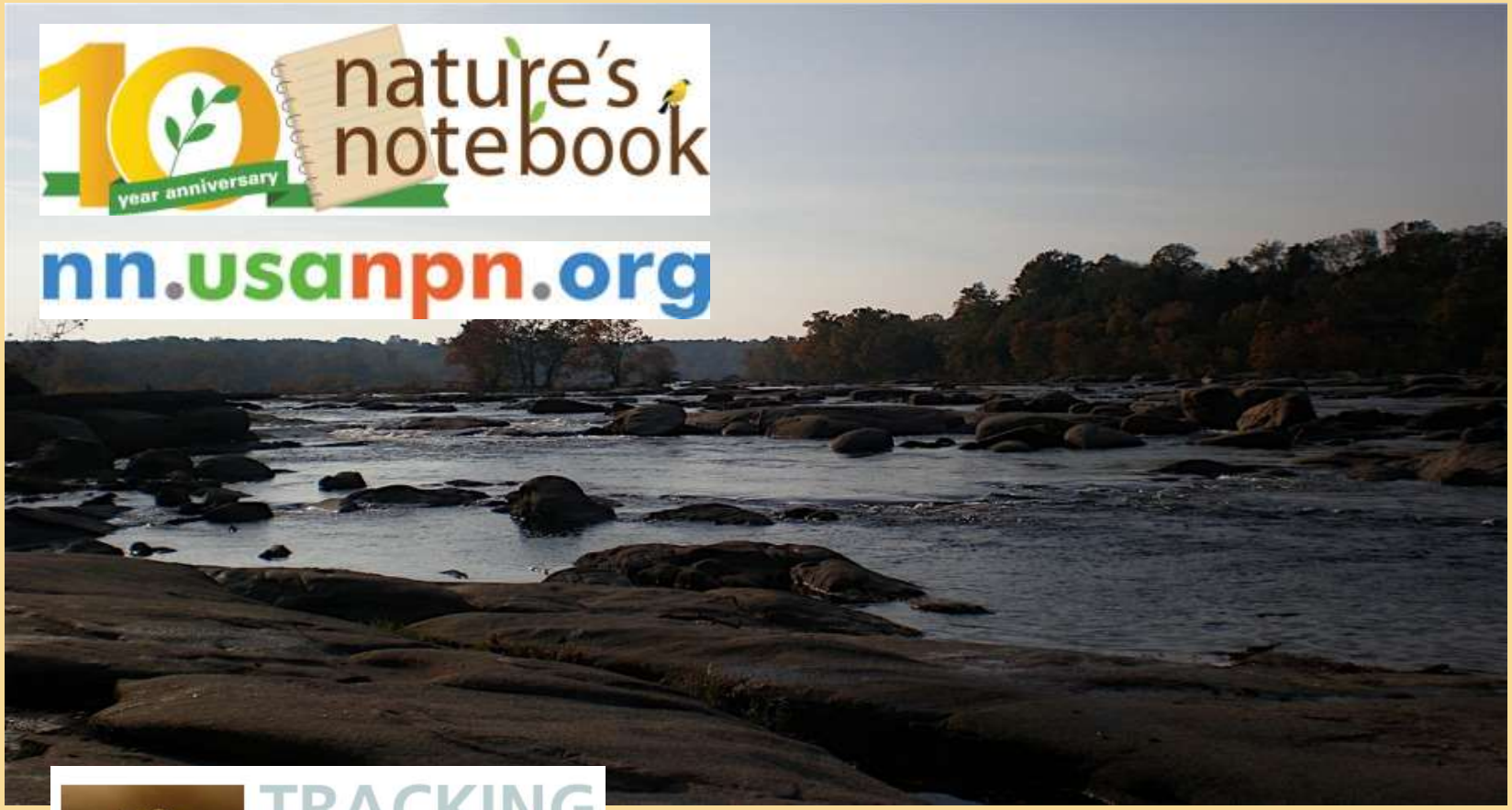
1. What is your name?
2. Where do you live?
3. How long have you lived there?
4. What is your favorite outdoor place and why?
5. What aspect of Tree Spotting appeals to you most?

5 minutes

Being a Tree Spotter – Part 1

- Overview of Nature's Notebook.
- Understanding phenophase definitions.
- Creating your account in Nature's Notebook.
- Mobile app for recording observations (optional).

Overview of Nature's Notebook



TreeSpotters@fas.harvard.edu

Primary goal

- Create a standardized, long-term dataset for use in multiple types of research.

Mission

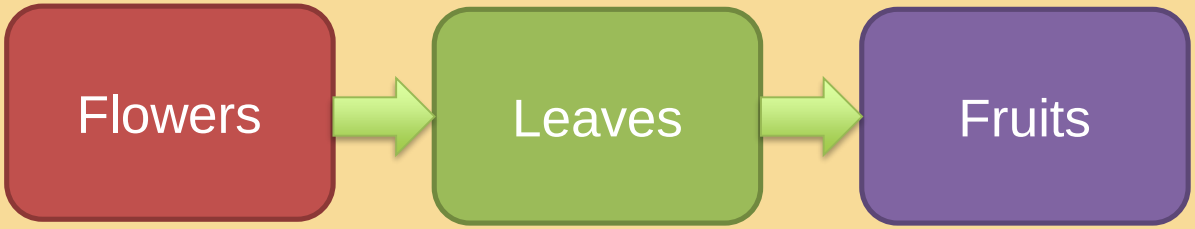
- Make phenology data, models and related information available.
- Encourage people of all ages and backgrounds to observe and record phenology.

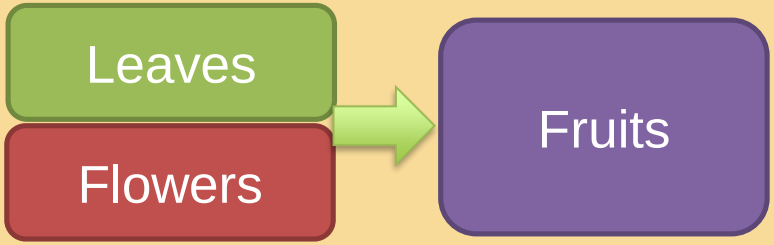
UNDERSTAND HOW **SPECIES AND LANDSCAPES** ARE RESPONDING TO CLIMATE CHANGE.

usanpn.org

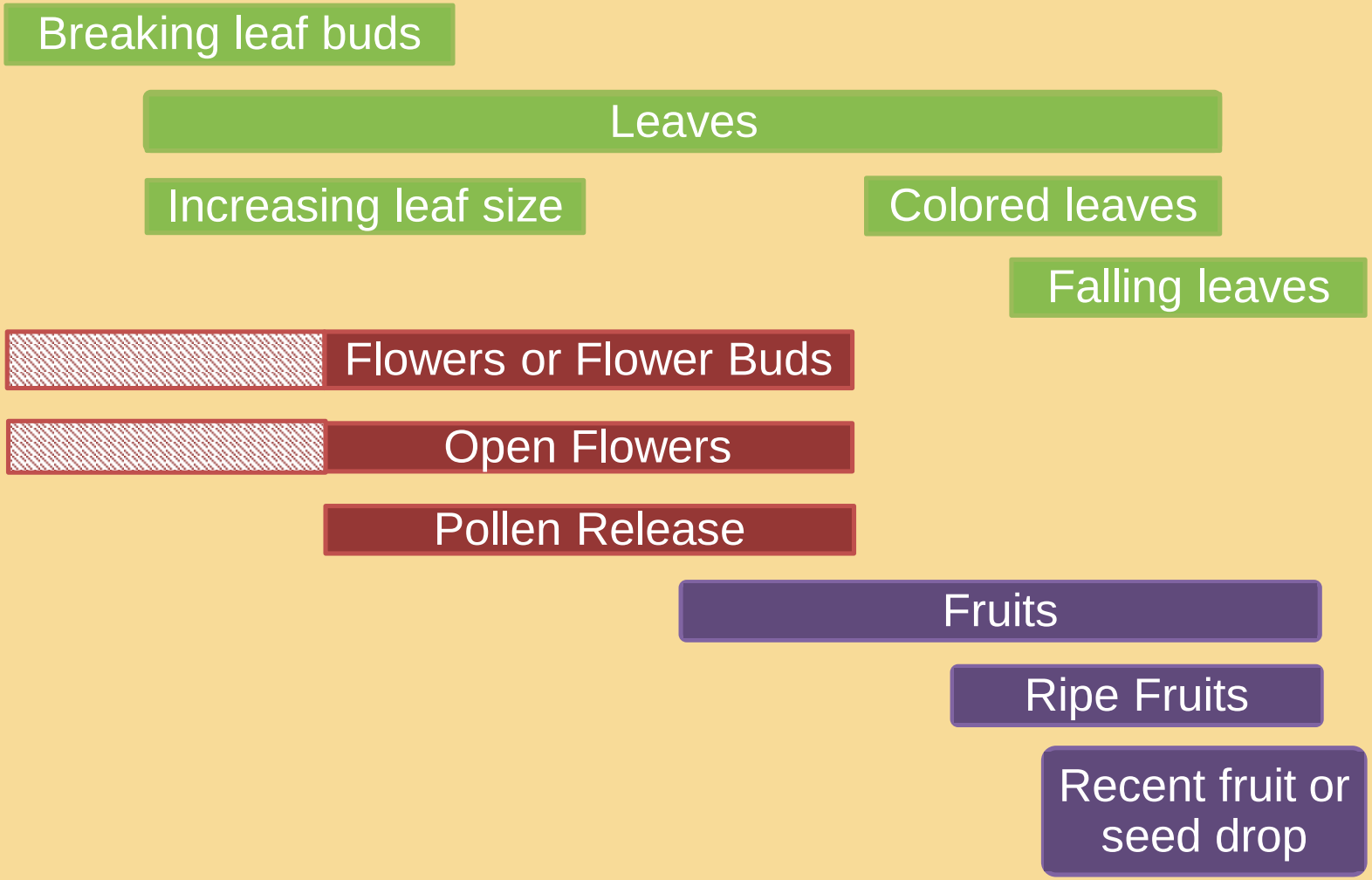
Understanding phenophase definitions

Phenophases: Observable life cycle events





Deciduous Plant Phenophases



Sample phenophase datasheet

	Date:
Do you see...	**Time:**
Breaking leaf buds	y n ? _____
Leaves	y n ? _____
Increasing leaf size	y n ? _____
Colored leaves	y n ? _____
Falling leaves	y n ? _____
Flowers or flower buds	y n ? _____
Open flowers	y n ? _____
Pollen release	y n ? _____
Fruits	y n ? _____
Ripe fruits	y n ? _____
Recent fruit or seed drop	y n ? _____
Check when data entered online:	☐
Comments:	

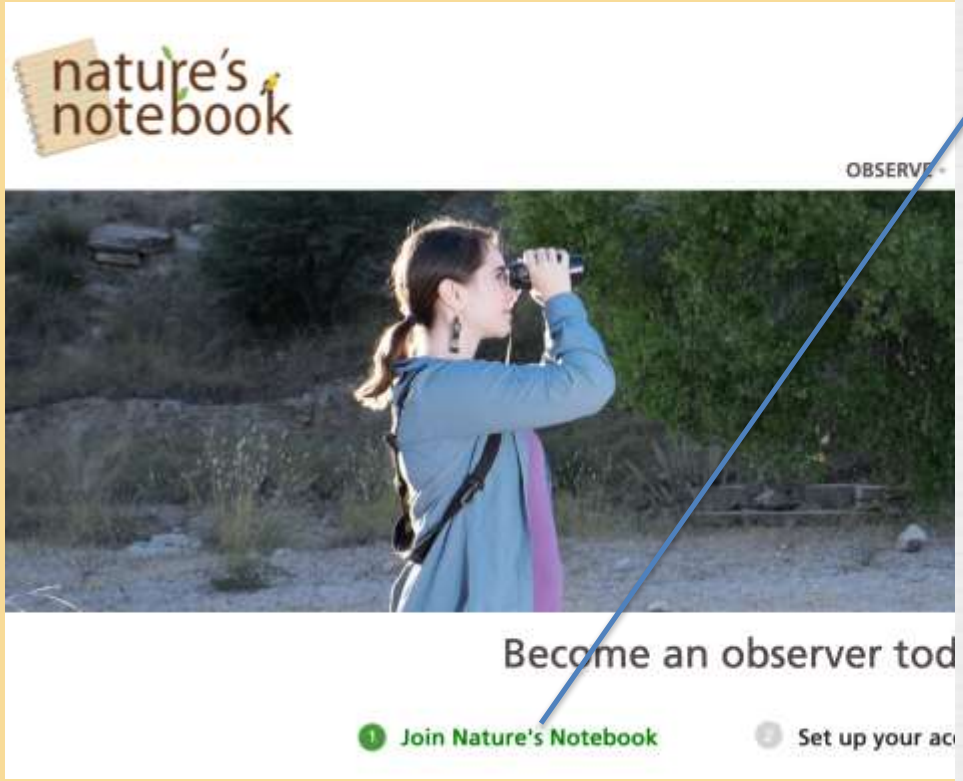
Leaves

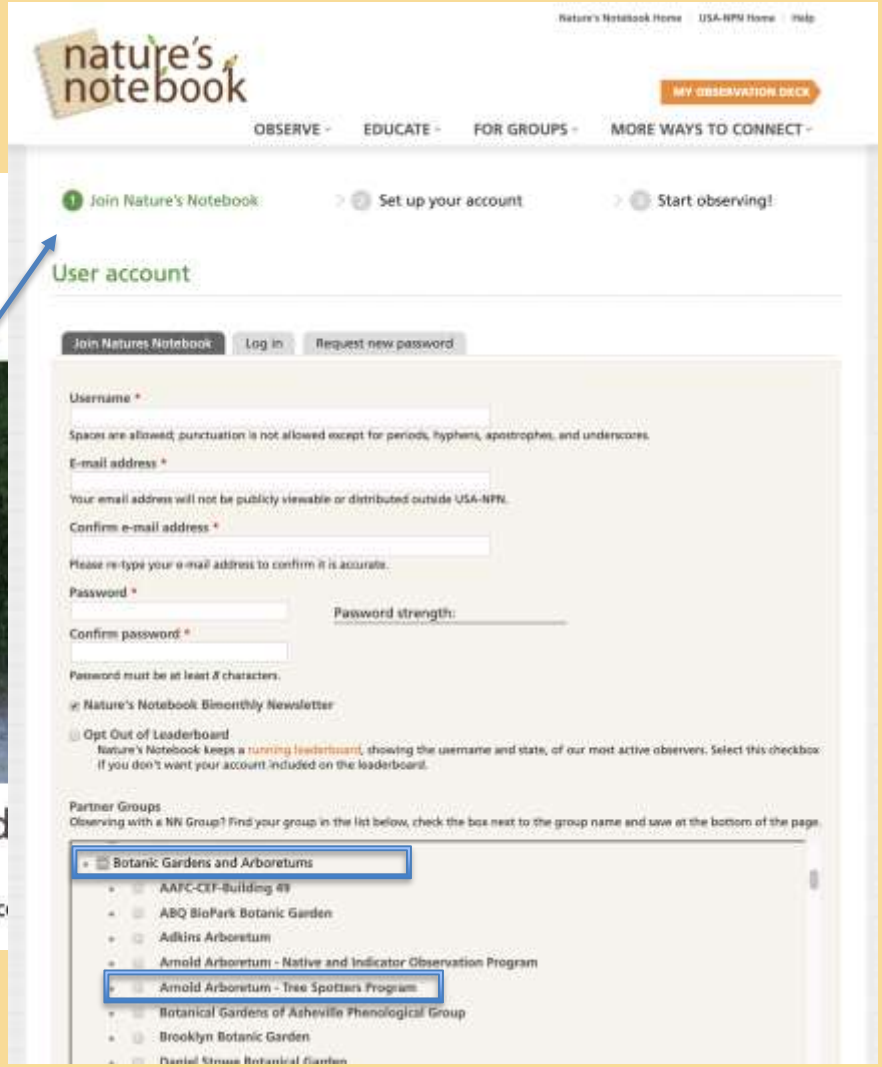
Flowers

Fruits

Acer saccharum (Sugar Maple)

Creating your account i





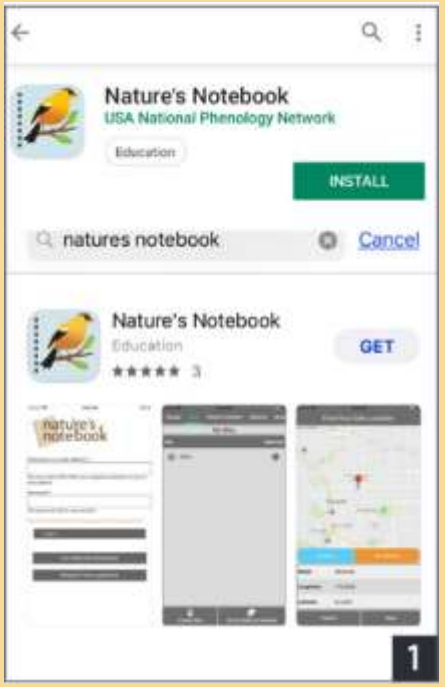
https://www.usanpn.org/natures_notebook

https://www.youtube.com/watch?v=Xi6npMr2poY&feature=youtu.be

Free mobile app

- Works with Android and Apple products.
- Help sheets to get started: https://www.usanpn.org/files/education/USA-NPN_MobileApp2019.pdf
- When in doubt, use a paper data sheet.

NOTE: You must set up your account online first before you can use the mobile app!



Tree Spotter resources

- Nature's Notebook/NPN website.
- Tree Spotters website.
- Communications.
- Educational events.
- Social events.
- How to contact the Tree Spotter team.
- Nature's Notebook kiosk.

Navigating your digital resources

Nature's Notebook/NPN Website

- Create your Nature's Notebook account
- Access your Observation Deck and record observations
- Access and visualize recorded data

Tree Spotters website

- Access Tree Spotter-specific training resources, handouts, maps, and data sheets
- View Tree Spotter event calendar
- Tree Spotter Social media links: Facebook, Twitter, Flickr

Tree Spotters website

- Program overview
- FAQ
  - Have questions about the Tree Spotters program? Find answers here!
- Resources
  - Guides, Links and Handouts
  - Route Maps and Data Sheets
  - Social Media links
  - Events Calendar
  - Resources Archive

Communications

- Spot On! monthly eNewsletter
- Emailed to all Tree Spotters via Constant Contact; back issues posted in Tree Spotters Resources Archive.
- Typically includes
  - Previews of upcoming Tree Spotter events
  - Recaps of most recent Tree Spotter events
  - Brief articles of general interest to Tree Spotters
  - Selection of recent Tree Spotter Tweets
  - Tree Spotter Spotlight (where Tree Spotters can share info about events of interest to the Tree Spotter community)

Communications

- Facebook
  - Info about Tree Spotter activities and items of general interest to Tree Spotters
  - Everyone is welcome to post items that benefit the Tree Spotter Community
- Flickr
  - Limited to photos of Tree Spotter trees, shrubs, and events
  - Must tag with accession # and date
- Twitter
  - Items of interest to Tree Spotters

Educational events

- Focus Tree Gatherings
- Spotting Together
- Botany Blasts

Focus Tree Gatherings

- Meet monthly at one of our trees or shrubs. (Approximately 30 - 45 minutes.)
- Tree Spotter team members talk about the plant's life cycle and share some fun facts.
- Record observations.
- March through November.

Photos by D. Schissler and S. Mrozak

Spotting Together

- Walks led by one or more of the Tree Spotters Team members. (Approximately 1 hr.)
- Visit specific trees/shrubs that are of particular interest at the time.
- Record observations.
- March through November.

Photos: S. Mrozak

Botany Blasts

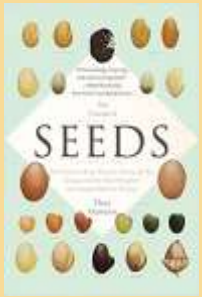
- Talks on topics of interest to Tree Spotters.
- Scheduled during the Tree Spotters off-season.
- Dates and speakers announced in the Spot On! newsletter and posted on the Tree Spotters Event Calendar as well as the Arboretum Calendar of Events.
- Tree Spotters and the general public are welcome.

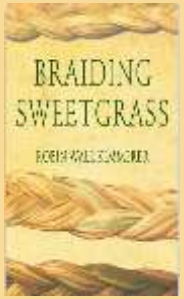
Social events

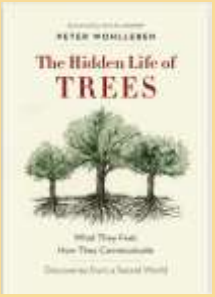
- Tree Spotters Book Club
- Summer BBQ
- Holiday party

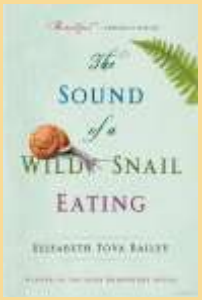
Tree Spotters Book Club

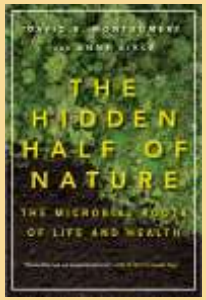
- Meet at the Weld Hill Research Building from 7:00 – 8:30 PM.
- Non-fiction books about nature, trees, climate change, botany, citizen science.
- Dates and books posted on the Tree Spotters Event Calendar.
- All Tree Spotters welcome.
- Book Club selections to date

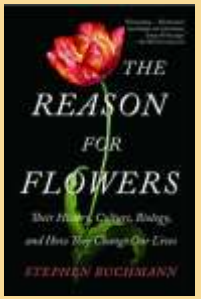












Summer BBQ

- Mid-summer potluck party at Weld Hill.
- All Tree Spotters and a guest are welcome.

Holiday Party

- Late November potluck party at Weld Hill.
- Review of the year's accomplishments.
- All Tree Spotters and a guest are welcome.

Photos: S. Mrozak

What happens next: A preview of Beyond the Basics

- Instructor-lead on-the-grounds observations of two or three different species of trees and/or shrubs per session
- Group de-brief exercise
- Being a Tree Spotter – Part 2
- Q & A

Photo: S. Mrozak

Q & A

Feedback

- Please fill out the “Tree Spotters Training Evaluation Form” and return it to Suz before you leave.

How to contact us

- TreeSpotters@fas.harvard.edu
- For outdoor event info, text Suz at 857-321-2825
- Take a Stay Connected card

Nature's Notebook Kiosk

- Available if you want help creating your Nature's Notebook account.

TreeSpotters@fas.harvard.edu