



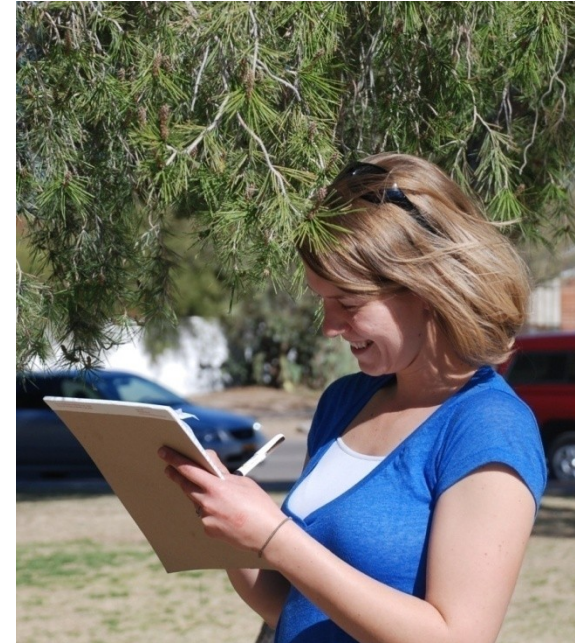
Training Materials

Selecting Plant and Animal
Species

usanpn.org



1. Select a site
- 2. Select plant and animal species**
3. Select individual plants
4. Mark your site and plants
5. Record your observations of animals
6. Record your observations of plants
7. Report your data online



The logo for 'nature's notebook' features the text 'nature's notebook' in a brown, serif font. The word 'nature's' is on the top line and 'notebook' is on the bottom line. A small yellow bird is perched on the letter 'k' in 'notebook'. To the left of the text is a brown, spiral-bound notebook with a few green leaves and a small yellow bird on its cover.

nature's
notebook



- **Plants:** repeat observations of the same individual plants
- **Animals:** create a checklist for your site, look and listen for all species each time you visit

Search Plants & Animals to Observe

Choose any combination of boxes, then click on 'Find Species.' For example, to see a list of grasses in Tennessee, choose Tennessee from the "Filter by State" menu and Grass from the "Filter by plant type" menu.

Species kingdom Both Plants Animals

Sort by

Name contains:

- Show me only USA-NPN plant calibration species
- Show me only Cloned Plants Project species

Filter by...

State:

Partner:

Plant type:

Animal group:

Find species

Clear filters

www.usanpn.org/species_search

Search Plants & Animals to Observe

Choose any combination of boxes, then click on 'Find Species.' For example, to see a list of grasses in Tennessee, choose Tennessee from the "Filter by State" menu and Grass from the "Filter by plant type" menu.

Species kingdom Both Plants Animals

Sort by ▼

Name contains:

Show me only USA-NPN plant calibration species

Show me only Cloned Plants Project species

Filter by...

State: ▼

Partner: ▼

Plant type: ▼

Animal group: ▼

Find species

Clear filters

Search Plants & Animals to Observe

Choose any combination of boxes, then click on 'Find Species.' For example, to see a list of grasses in Tennessee, choose Tennessee from the "Filter by State" menu and Grass from the "Filter by plant type" menu.

Species kingdom Both Plants Animals

Sort by

Name contains:

Species

Filter by...

State:

Partner:

Plant type:

Animal group:

Find species

Clear filters

Search Plants & Animals to Observe

Choose any combination of boxes, then click on 'Find Species.' For example, to see a list of grasses in Tennessee, choose Tennessee from the "Filter by State" menu and Grass from the "Filter by plant type" menu.

Species kingdom Both Plants Animals

Sort by

Filter by...

State:

Show me only USA-NPN plant calibration species

Partner:

Show me only Cloned Plants Project species

Plant type:

Animal group:

Find species

Clear filters

Search Plants & Animals to Observe

Choose any combination of boxes, then click on 'Find Species.' For example, to see a list of grasses in Tennessee, choose Tennessee from the "Filter by State" menu and Grass from the "Filter by plant type" menu.

Species kingdom Both Plants Animals

Sort by Common Name 

Name contains:

Show me only USA-NPN plant calibration

Show me only Cloned Plants Project species

Filter by...

State: All States 

Partner: All Species 

Animal group: All Species 

Search Plants & Animals to Observe

Choose any combination of boxes, then click on 'Find Species.' For example, to see a list of grasses in Tennessee, choose Tennessee from the "Filter by State" menu and Grass from the "Filter by plant type" menu.

Species kingdom Both Plants Animals

Sort by ▼

Name contains:

Show me only USA-NPN

Show me only Cloned Pla

Filter by...

State: ▼

Partner: ▼

Plant type: ▼

Animal group: ▼

Search Plants & Animals to Observe

Choose any combination of boxes, then click on 'Find Species.' For example, to see a list of grasses in Tennessee, choose Tennessee from the "Filter by State" menu and Grass from the "Filter by plant type" menu.

Species kingdom Both Plants Animals

Sort by ▼

Name contains:

Show me only USA-NPN

Show me only Cloned Plants

Filter by...

State: ▼

Partner: ▼

Plant type: ▼

Animal group: ▼

Search Plants & Animals to Observe

Choose any combination of boxes, then click on 'Find Species.' For example, to see a list of grasses in Tennessee, choose Tennessee from the "Filter by State" menu and Grass from the "Filter by plant type" menu.

Species kingdom Both Plants Animals

Sort by ▼

Name contains:

Show me only USA-NPN

Show me only Cloned Plants

Filter by...

State: ▼

Partner: ▼

Plant type: ▼

Animal group: ▼

Search Plants & Animals to Observe

Choose any combination of boxes, then click on 'Find Species.' For example, to see a list of grasses in Tennessee, choose Tennessee from the "Filter by State" menu and Grass from the "Filter by plant type" menu.

Species kingdom Both Plants Animals

Sort by ▼

Name contains:

Show me only USA-NPN

Show me only Cloned Plants

Filter by...

State: ▼

Partner: ▼

Plant type: ▼

Animal group: ▼

Calibration species

- alfalfa (*Medicago sativa*)
- annual ragweed (*Ambrosia artemisiifolia*)
- big bluestem (*Andropogon gerardii*)
- blue grama (*Bouteloua gracilis*)
- Canada thistle (*Cirsium arvense*)
- chokecherry (*Prunus virginiana*)
- common dandelion (*Taraxacum officinale*)
- ✖ common lilac (*Syringa vulgaris*)
- cuman ragweed (*Ambrosia psilostachya*)
- eastern redcedar (*Juniperus virginiana*)
- forsythia (*Forsythia spp.*)
- paradise apple (*Malus pumila*)
- ponderosa pine (*Pinus ponderosa*)
- quaking aspen (*Populus tremuloides*)
- red maple (*Acer rubrum*)
- spotted knapweed (*Centaurea biebersteinii*)
- switchgrass (*Panicum virgatum*)
- twoneedle pinyon (*Pinus edulis*)
- Virginia strawberry (*Fragaria virginiana*)
- western wheatgrass (*Pascopyrum smithii*)

Search Plants & Animals to Observe

Choose any combination of boxes, then click on 'Find Species.' For example, to see a list of grasses in Tennessee, choose Tennessee from the "Filter by State" menu and Grass from the "Filter by plant type" menu.

Species kingdom Both Plants Animals

Sort by

Filter by...

Name contains:

State:

Show me only USA-NPN plant calibration species

Animal group:

Find species

Clear filters

Search Plants & Animals to Observe

Choose any combination of boxes, then click on 'Find Species.' For example, to see a list of grasses in Tennessee, choose Tennessee from the "Filter by State" menu and Grass from the "Filter by plant type" menu.

Species kingdom Both Plants Animals

Sort by

Filter by...

Name contains:

State:

Show me only USA-NPN plant calibration species

Partner:

Show me only **Cloned Plants Project** species

Find species

Clear filters

Search Plants & Animals to Observe

Choose any combination of boxes, then click on 'Find Species.' For example, to see a list of grasses in Tennessee, choose Tennessee from the "Filter by State" menu and Grass from the "Filter by plant type" menu.

Species kingdom Both Plants Animals

Sort by

Name contains:

Show me only USA-NPN plant calibration species

Show me only Cloned Plants Project species

Filter by...


State:

Partner:

Plant type:

Find species

Clear filters

Click on a species in the list below to see its profile, including phenophases to observe. In this list, a  indicates the species is a USA-NPN plant calibration species. Where possible, please consider observing one of these species in addition to any other species you may choose to observe. A  indicates the species is a Cloned Plants Project species.

bur oak (*Quercus macrocarpa*)

laurel oak (*Quercus laurifolia*)

live oak (*Quercus virginiana*)

 northern red oak (*Quercus rubra*)

sand live oak (*Quercus geminata*)

- Did you know?
- Why observe this species
- Distribution
- Datasheet

Quercus rubra

northern red oak



Paul Wray, Iowa State University, Bugwood.org.

Did you know?:

Quercus rubra is an important source of hardwood lumber; also it is an important ornamental. It is used for furnishings, furniture, and railroad ties. Native Americans used the plant medicinally for many symptoms and its acorns for food. Many birds and animals feed on this plant; its acorns are an important food source.

What does this species look like?

Northern red oak is a deciduous tree growing 50 to 165 feet tall. Male and female flowers are separate on the same tree. Many tiny male flowers are grouped into green caterpillar-like clusters (catkins) that hang down. The tiny female flowers occur on a tiny spike, and are surrounded by a cupule (what will become the acorn cap). Flowering begins when the tree becomes mature at 20-25 years old. Flowers are wind-pollinated.

Northern red oak grows on a variety of drier to moderately moist sites, favoring full sun and well-drained, slightly acidic, sandy loam soils. It is common on well-drained uplands and moderately moist slopes, lower and middle slopes, north and east facing slopes, and can occur in rich, mesic woods, sandy plains, rock outcrops, stable interdunes, and outer edges of floodplains. Its seedlings are more successful on sunny sites but the plants can tolerate some shade as it ages.

Why observe this species?

Northern red oak is a USA-NPN regional plant species. Regional species are ecologically or economically important but are distributed more locally than calibration species. The NPN integrates these observations to understand better plant responses within the different geographic regions of the nation. In addition, this species is an allergen. Observations on its phenology will provide valuable information to benefit people with allergies and the public health community.

Where is this species found?

US States:

AL, AR, CT, DC, DE, GA, IA, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, NC, NE, NH, NJ, NY, OH, OK, PA, RI, SC, TN, VA, VT, WI, WV



click to enlarge

Which phenophases should I observe?



Leaves

Do you see...?

Emerging leaves

In at least 3 locations on the plant, an emerging leaf is visible. A leaf is considered "emerging" once the green tip is visible at the end of the leaf bud, but before it has fully unfolded to expose the petiole (leaf stalk) or leaf base. For *Quercus rubra*, the young leaf may appear pinkish. [More...](#)

Unfolded leaves

In at least 3 locations on the plant, an unfold "unfolded" when the petiole (leaf stalk) or leaf backwards to see whether the petiole or leaf

≥75% of full leaf size

For the whole plant, the majority of leaves at three-quarters (75%) of their mature size. Leaf canopy as a whole. At 75% of full leaf size, 1 quarters (75%) full. [More...](#)

≥50% of leaves colored

For the whole plant, at least half (50%) of the ground) have changed to their late-season co

All leaves colored

For the whole plant, virtually all (95-100%) of the ground) have changed to their late-seaso the leaves.

≥50% of leaves fallen

For the whole plant, at least half (50%) of the

All leaves fallen

For the whole plant, virtually all (95-100%) of the leaves have fallen.

Flowers

Do you see...?

Pollen release

In at least 3 locations on the plant, pollen is released from an inflorescence when gently shaken or blown. For *Quercus rubra*, the male flowers from which pollen is released are arranged on catkins. Where catkins are out of reach, pollen release may be estimated by observing the degree of catkin elongation and looseness. Once the initially compact catkins have unfolded and are hanging loosely, pollen will be released.

Full pollen release

For the whole plant, at least half (50%) of the inflorescences release pollen when gently shaken or blown.

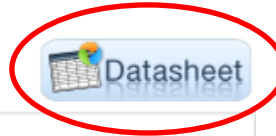
Fruits

Do you see...?

Ripe fruits

In at least 3 locations on the plant, a ripe fruit is visible. *Check back later in the season for specific information to identify ripe fruits for this species.*

Which phenophases should I observe?



Leaves

Do you see...?

Emerging leaves

In at least 3 locations on the plant, an emerging leaf is visible. A leaf is considered "emerging" once the green tip is visible at the end of the leaf bud, but before it has fully unfolded to expose the petiole (leaf stalk) or leaf base. For *Quercus rubra*, the young leaf may appear pinkish. [More...](#)

Unfolded leaves

In at least 3 locations on the plant, an unfold "unfolded" when the petiole (leaf stalk) or leaf backwards to see whether the petiole or leaf

≥75% of full leaf size

For the whole plant, the majority of leaves at three-quarters (75%) of their mature size. Leaf canopy as a whole. At 75% of full leaf size, 1 quarters (75%) full. [More...](#)

≥50% of leaves colored

For the whole plant, at least half (50%) of the ground) have changed to their late-season co

All leaves colored

For the whole plant, virtually all (95-100%) of the ground) have changed to their late-seaso the leaves.

≥50% of leaves fallen

For the whole plant, at least half (50%) of the

All leaves fallen

For the whole plant, virtually all (95-100%) of the leaves have fallen.

Flowers

Do you see...?

Pollen release

In at least 3 locations on the plant, pollen is released from an inflorescence when gently shaken or blown. For *Quercus rubra*, the male flowers from which pollen is released are arranged on catkins. Where catkins are out of reach, pollen release may be estimated by observing the degree of catkin elongation and looseness. Once the initially compact catkins have unfolded and are hanging loosely, pollen will be released.

Full pollen release

For the whole plant, at least half (50%) of the inflorescences release pollen when gently shaken or blown.

Fruits

Do you see...?

Ripe fruits

In at least 3 locations on the plant, a ripe fruit is visible. *Check back later in the season for specific information to identify ripe fruits for this species.*

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*)



bumblebee (*Bombus* spp.)

cliff swallow (*Petrochelidon pyrrhonota*)

common green darner (*Anax junius*)

common loon (*Gavia immer*)

common whitetail (*Plathemis lydia*)



eastern chipmunk (*Tamias striatus*)

eastern tent caterpillar (*Malacosoma americanum*)

ebony jewelwing (*Calopteryx maculata*)

killdeer (*Charadrius vociferus*)

northern water snake (*Nerodia sipedon*)

northern water snake (*Nerodia sipedon*)

olive-sided flycatcher (*Contopus cooperi*)

osprey (*Pandion haliaetus*)



painted turtle (*Chrysemys picta*)

punctured tiger beetle (*Cicindela punctulata*)

racer (*Coluber constrictor*)



scarlet tanager (*Piranga olivacea*)

sea lamprey (*Petromyzon marinus*)

seaside dragonlet (*Erythrodiplax berenice*)

six-spotted tiger beetle (*Cicindela sexguttata*)

snapping turtle (*Chelydra serpentina*)

spotted turtle (*Clemmys guttata*)

spring azure (*Celastrina ladon* complex)

Identifying plants and animals

- Local gardening, birding, or naturalist group
- Cooperative extension office
- Local college or herbarium
- State or national parks
- Wildlife refuges



Identifying plants and animals: field guides



Identifying plants: Internet field guides

- eNature: www.enature.com
- Discover Life: www.discoverlife.org
- WildObs: wildobs.com
- Arbor Day Foundation:
www.arborday.org/trees/whattree
- Wild Flower Center: www.wildflower.org
- USDA PLANTS: plants.usda.gov

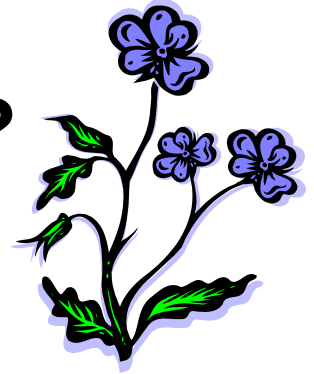
Identifying animals: Internet field guides

- eNature: www.enature.com
- Discover Life: www.discoverlife.org
- All About Birds: www.allaboutbirds.org
- Birds of North America Online:
bna.birds.cornell.edu/bna/

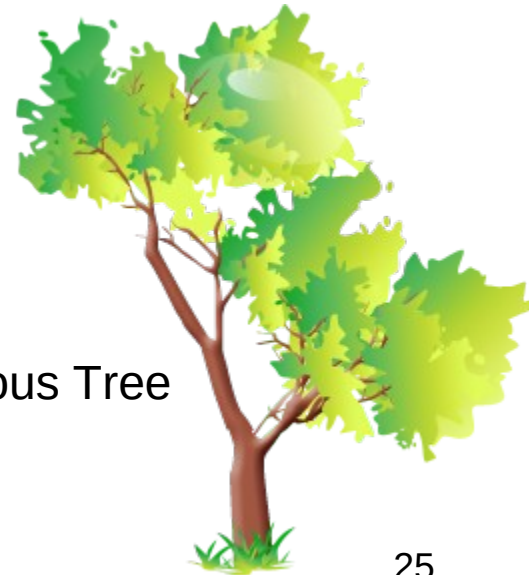
What if I still can't identify my plant?



Grass



Herb



Deciduous Tree



Example datasheets

Datasheet for:

Deciduous tree/shrub with flowers

Deciduous tree/shrub with catkins

Broadleaf evergreen tree/shrub

Broadleaf evergreen ground cover

Conifer

Deciduous conifer

Forb

Grass

Cactus

Example species (check these for phenophases)

sugar maple

sweet birch

big sagebrush

kinnikinnick

balsam fir or Ponderosa pine or Ashe's juniper

larch

common ragweed

cheatgrass

saguaro

www.usanpn.org/participate/faq

Once you have identified your plant...

Make sure you have been recording the correct phenophases.

Which phenophases should I observe?



Leaves

Do you see...?

Emerging leaves

In at least 3 locations on the plant, an emerging leaf is visible. A leaf is considered "emerging" once unfolded to extent that the leaf may appear pink

Unfolded leaves

In at least 3 locations on the plant, a leaf is considered "unfolded" when the leaf is unfolded backwards to see

Flowers

Do you see...?

Pollen release

In at least 3 locations on the plant, pollen is released from an inflorescence when shaken or blown. For *Quercus rubra*, the male flowers from which pollen is released are arranged on catkins. Where catkins are out of reach, pollen release may be observed by observing the degree of catkin elongation and looseness. Once the inflorescence is

**What if the plant or animal I
want to monitor is not on the list?**



observe@usanpn.org

What if the plant or animal I want to monitor is not on the list?



What if the plant or animal I want to monitor is not on the list?

The screenshot shows the website's navigation bar with the following options: ABOUT, PARTICIPATE, RESOURCES, EDUCATION, and RESULTS. A dropdown menu is open under 'PARTICIPATE', listing the following options: Observe Plants & Animals, Rescue Historical Data, Share Existing Data, Join Email List, Partner Your Organization, and Learn About Other Efforts. The main content area features the heading 'USA National Phenology Network' and a paragraph: 'The USA National Phenology Network brings together citizens, educators and students of all ages to monitor the impact of climate change on plants and animals across the United States. The network harnesses the power of people and researchers with far more data than they could collect alone.' Below this is the heading 'What is phenology?' and a paragraph: 'Phenology is the study of recurring plant and animal life cycle events. Flowering of plants, maturation of agricultural crops, emergence of insects, and migration of birds are sensitive to climatic variation and change, and by observing and recording these events, you can help scientists identify and understand patterns in nature.' A search bar is visible at the bottom with the text 'Find the observation program that best suits you.'

Join Us!

What if the plant or animal I want to monitor is not on the list?

The screenshot shows the USA National Phenology Network website. At the top, there is a navigation bar with the following links: ABOUT, PARTICIPATE, RESOURCES, EDUCATION, and RESULTS. Below the navigation bar, there is a large image of white flowers. To the right of the image, there is a vertical menu with the following options: Observe Plants & Animals, Rescue Historical Data, Share Existing Data, Join Email List, Partner Your Organization, and **Learn About Other Efforts** (highlighted with a red circle). Below the menu, there is a section titled "USA National Phenology Network" with a description: "The USA National Phenology Network brings together citizens, educators and students of all ages to monitor the impact of climate change on plants and animals across the United States. The network harnesses the power of people and researchers with far more data than they could collect alone." Below this, there is a section titled "What is phenology?" with a description: "Phenology is the study of recurring plant and animal life cycle events. Flowering of plants, maturation of agricultural crops, emergence of insects, and migration of birds are sensitive to climatic variation and change, and by observing and recording these events, you can help scientists identify and understand the impact of climate change on our planet." At the bottom left, there is a "Join Us!" button. At the bottom right, there is a search bar with the text "Find the observation program that best suits you."



nature's
notebook

usanphn.org