Nature Nurture
A get outside and explore journal
This book belongs to:
Citizen science happens when ordinary people study the world around them and send in the data they collect to scientists. Anyone can do citizen science!

Citizen science projects cover all kinds of topics like dragonflies, birds and ants. You can learn a lot about your neighborhood or even your own backyard by joining a citizen science project.

Go to the SciGirls website at pbskids.org/scigirls to play games and watch episodes.

Credits: Sarah Carter, Joan Freese, content | Ann Pavlish, design
Richard Hudson, Executive Producer | Special thanks: Susan Buechler

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Phenology is the study of the life cycle of plants and animals. Phenophases are the observable stages in these cycles, like flowers blooming, leaves falling and butterflies emerging from a cocoon.

**You’ll need:**
- pencil
- markers/crayons/colored pencils
- optional: magnifying glass, binoculars, plants and animal field guides

Here’s how:
1. Go out and observe the plants and animals in your schoolyard, park, field, or nature center.
2. Make these observations every time you go to your location (add more if you’d like):
   - Date
   - Time spent observing
   - Weather conditions (temperature, precipitation, wind)
   - Drawings/photos
   - Location of the plant(s) and/or animal(s)
   - Name of the plant(s) and/or animals(s)
3. Visit the location multiple times so that you can see as many phenophases as possible.

Watch **SciGirls** learn about phenophases on pbskids.org/scigirls. Select the **Flower Power** episode.
• Are buds breaking open with the leaves visible?
• Are leaves fully open or unfolded?
• Have the leaves changed color?
SKETCH SOME FLOWERS!

- Are the flowers all open?
- Are there flowers and flower buds?
- Can you see pollen grains when you gently shake the flower?
Find Fruits!

- Are the fruits ripe?
- Has any fruit recently fallen on the ground and dropped its seeds?
SPOT SOME BIRDS!

• Are they feeding?
• What are they eating?

• Are they calling or singing?
• Are they building nests?
SKETCH SOME MAMMALS!

- Are they feeding?
- What are they eating?
- Are their young present?
INVESTIGATE SOME INSECTS!

- Are there active larvae? What are the larvae doing?
- Are there active adults? What are the adults doing?
Birds are fascinating animals to watch and it’s easy to learn how to spot and name them. Casual watchers can use the same tricks to identify birds that scientists use!

**You’ll need:**
- pencil
- crayons, markers, or colored pencils
- optional: field guides, binoculars

Here’s how:

1. Choose a bird found in your area to study.
2. Use photos, videos, websites and your own observations to learn how to identify your bird. Remember to watch birds without disturbing them.
3. Draw your bird and label the field marks.

**Field Mark Checklist**
- Overall size and shape
- Breast color
- Rump color
- Tail color
- Wing color
- Eye stripe color
- Eye ring color
- Head color
- Behaviors (tail movements, where it eats, flight pattern, sounds it makes)

Watch SciGirls learn how to identify birds on pbskids.org/scigirls. Select the Feathered Friends episode.
Draw the birds you see on your adventures. Can you identify some of them?

Go to the SciGirls website at pbskids.org/scigirls to play games and watch episodes.
Wetland Band

Frogs and toads make lots of noise when they’re warning others, defending territory or looking for mates. Take the frog-call challenge: Can you learn to recognize the frogs and toads that live near you?

Here’s how:
1. Research the frogs and toads that live in your area (aza.org/states-and-territories) and find recordings/videos of their calls.
2. List the names of the frogs and toads in your area and describe the calls they make.

<table>
<thead>
<tr>
<th>Frog or Toad Name</th>
<th>Description of Call</th>
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Watch SciGirls learn the calls of their local frogs and toads on pbskids.org/scigirls. Select the Frog Whisperers episode.
WETLAND BAND

Now that you know the frogs and toads in your area, create your own set of instruments and make some frog and toad music!

You’ll need:
- empty glass or plastic bottle
- small rocks
- marbles
- small bells
- small plastic comb
- rubber bands
- small plastic cup
- balloon
- zipper
- whistle

Here’s how:
1. Mimic the sounds of the frogs and toads in your area using some of the materials listed to make musical instruments.
2. Draw your instruments and label the materials you used in the space below.
3. Create a song using your frog and toad instruments.
4. Now that you are familiar with some frog and toad calls, go outside 30 minutes after sunset and see how many frogs and toads you can identify. Don’t forget to bring an adult with you!
Materials have lots of different properties; one is called visual opacity, which means how much light passes through the material. There are three different ways to describe visual opacity:

- **Transparent** – light passes through the material/object; things on the other side can be seen clearly. (Example: plastic wrap)
- **Translucent** – light passes through the materials/object; things on the other side can’t be seen clearly. (Example: wax paper)
- **Opaque** – little or no light passes through the materials/object. (Example: paper bag)

Here’s how:
1. Come up with a way to test the visual opacity of different everyday items.
2. Describe your test. You can draw your setup if needed.

<table>
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<tr>
<th>Describe:</th>
<th>Draw:</th>
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3. Test your materials and sort them. List the results below:

<table>
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<tr>
<th>Transparent</th>
<th>Translucent</th>
<th>Opaque</th>
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Cloud Clues

Clouds are often described by their opacity. Knowing whether they are transparent, translucent, or opaque tells scientists how much sunlight (energy) they allow in.

The clouds today were (circle one):
- transparent
- translucent
- opaque

Go outside and look at the clouds!

Remember not to look directly at the sun.

OUT AND ABOUT

When studying a specific animal, like a butterfly, scientists also study the plants and other animals that live in the species’ habitat. Field guides are great tools for helping identify plants and animals you don’t know.

**You’ll need:**
- pencil
- colored pencil, markers, or crayons
- optional: binoculars, magnifying glass, camera, plant and animal field guides

Here’s how:
1. Spend some time observing in a local butterfly garden, park, or other natural area.
2. Take notes on and draw (or photograph) the interesting plants and animals you see, hear, or smell.

<table>
<thead>
<tr>
<th>Date:</th>
<th>Drawing (or photo) of the location:</th>
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<tbody>
<tr>
<td><strong>Name of Location:</strong></td>
<td>(interesting plants, animals)</td>
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<tr>
<td>Notes about the location:</td>
<td>(interesting plants, animals, weather conditions)</td>
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OUT AND ABOUT

Create your own field guide page!

Choose one plant you observed and make a field guide page for it, include the following:

☐ plant name
☐ plant illustration
☐ flower color (if the plant has flowers)
☐ blooming season
☐ height of plant
☐ organisms observed on this plant
☐ optional: butterflies that use the plant

Try it!

Watch SciGirls learn about monarchs on pbskids.org/scigirls. Select the Butterfly Diaries episode.
What is an environmental challenge facing your community? (Examples can include not enough recycling, polluted waterways, light pollution, etc.)

Here’s how:
Research the problem and possible solutions and create a short presentation (less than 2 minutes) that:
• describes the problem,
• shares why people should care, and
• gives examples of ways people can help.

Use this space to brainstorm about your presentation.

Hints for brainstorming:
Make a list of ideas.
Draw pictures.
Create a flow chart.
Create an idea web.

Watch SciGirls create and edit a video encouraging people to care for the ocean on pbskids.org/scigirls. Select the Terrific Pacific episode.
DIY NATURE JOURNAL!

A nature journal is a good way to keep track of what’s happening around you. You can use it when you go on adventures with friends or just when you’re hanging out at a neighborhood park.

**You’ll need:**
- blank and lined paper
- pencil or pen
- optional: decorations for the outside of the journal, colored pencils, graph paper

Here’s how:
1. Create your journal using an existing notebook, or make your own by combining blank and lined paper together in a small book.
2. Personalize the outside of your journal. Make sure to include your name and contact information on the inside front cover in case you lose it.
3. Number your pages and create a table of contents that you can fill in as you go.
4. Each time you start a new journal entry record some of the following items: date, time, location, type of habitat, temperature, weather.
5. Record your observations: what you see, smell and hear. Use both drawings and written descriptions.
6. Include explanations or interpretations of what you recorded as well as any questions you have.
7. Add leaves, pressed flowers, and photos of your observations.

HAVE FUN!

Make a mini: Create a small journal on a string to wear around your neck.
Want to Know More?

Here’s a collection of projects you can try:

Celebrate Urban Birds (celebrateurbanbirds.org)
FrogWatch USA (aza.org/frogwatch)
Journey North (learner.org/jnorth)
Migratory Dragonfly Partnership (migratorydragonflypartnership.org)
Monarch Larva Monitoring Project (mlmp.org)
Nature’s Notebook (nn.usanpn.org)
Students’ Cloud Observations On-Line (scool.larc.nasa.gov)
School of Ants (schoolofants.org)
The Great Sunflower Project (greatsunflower.org)
The Lost Ladybug Project (lostladybug.org)
Zooniverse (zooniverse.org)

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