

FAMILY ACTIVITY GUIDE



BACKYARD WILDERNESS

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FAMILY ACTIVITY GUIDE

Have fun outside! Encourage kids to directly engage with nature through investigation and observation, in a safe and supportive environment. Research shows that giving families opportunities to engage in hands-on nature-based activities can increase children's excitement toward environmental behaviors. Conserving nature begins with connecting to nature. Through Nature Play, caregivers can promote that connection to nature.

The best part of science and Nature Play is that you can learn and play together. Just like professional scientists, caregivers do not need to know the 'right answer.' Build on a child's and your own curiosity. Ask questions and look for answers together. Scientists spend their lives looking for answers and investigating questions. Encourage your child to be a scientist in training.

These activities were designed to be done simply and easily with the tools you have at home. If your child is interested in using science tools a list of additional materials is included with each activity. The most important tool to bring with you is your sense of fun.

These activities can be done just about anywhere and anytime. You do not need to make a special trip to a National Park. Nature is all around us, in backyards, school yards, and even growing in sidewalks. These activities can be done as you walk to school, while looking at a flower pot, or on a special outing to your favorite nature spot.



The Family Activity Guide is divided into two activities, both focusing on observing and playing in nature. The first is an insect investigation and the second a nature walk. Information on a kid-friendly digital observation tool, *Seek*, is included as well.

This guide is designed for children 3 to 10 years old and their caregivers, but can be adapted for ages younger or older.

INSECT INVESTIGATION

Insects are a fun way to learn about and experience the natural world. They come in all shapes and sizes and are adapted to every region of the world. While specific insects vary across habitats, all healthy ecosystems have insects. They are some of the most important and the largest group of animals in the world. They are also fascinating.

This activity encourages children and their caregivers to gently collect and observe insects in their outdoor habitats. By closely observing and documenting their observations, kids can gain the important scientific skills of watching carefully, looking at details, and much more.



WHAT TO BRING

This activity can be done simply and easily with the tools you have at home. All you need is weather-appropriate clothing, your own five senses, and curiosity. Insect collecting tools and guides can be fun to use, but are not required. They can be acquired at your local bookstore, hardware store, or online.

- Field journal or paper and pencil or markers
- Insect viewing jar
- Aspirator (“bug vacuum”)
- Soft and clean paint brushes
- Insect net
- Field guide of local bugs



Insect Viewer



Aspirator



Insect Net



SET YOURSELF UP FOR SUCCESS

Together with your child, set up guidelines for how you will go about your Insect Investigation. Review Good Insect Collecting Etiquette (below), and any instructions or rules for your activity. This might include to be gentle, only look, stay on the path, how much time you'll spend, etc. Most importantly, have fun.

CHOOSING THE RIGHT SPOT

Find a safe area that is away from traffic, and free of trash and hazardous materials. Parks, front porches, gardens, and backyards are a great place to start. You may find more success looking for bugs in areas with plants, near water, or within leaf litter.



GOOD INSECT COLLECTING ETIQUETTE

- Be gentle with the animals, because they are an important part of their outdoor habitat.
- Only touch animals that you know are safe to handle.
- Hold animals in a flat hand - avoid pinching.
- Return the animal back to its home in nature.
- Share what you've discovered through photos, drawings, and stories.

INVITE KIDS TO PLAY

Young children learn science and observation skills through play. Exploration and thinking like a scientist is at its best, playful. Sometimes all it takes to encourage children to explore is an open ended invitation:

- *Would you like to look for bugs with me?*
- *Will you play Insect Investigators with me?*
- *I wonder what kinds of bugs we would find if we look there? Will you help me?*
- *I've always wondered about [insert your question about insects]. What do you wonder? Shall we go find out together?*

COLLECTING INSECTS AND TOOL USE

- A. Show the children any tools you've assembled for the quest (tools are not required). Explain and demonstrate how to use the tools, and then let them try the tools out for themselves. They still may need assistance throughout the activity. Give encouragement when they struggle, before offering help. Only intervene if there is a safety concern. Children will learn more and gain confidence in their abilities if they are given freedom to 'figure it out' on their own.
- B. Search for insects and other bugs in bushes, on tree trunks, under rocks, in mulch, on leaves, and under ground cover. Look around damp areas or near water.



- C. Collect insects in the bushes using the insect net. Put the net inside a bush, shake up and down and side to side, then dump the net out onto a flat surface, like a tarp or picnic table, to see what you caught.
- D. Catch big bugs in the insect viewing jar. Uncap the top of the box, gently brush the bug into the box, and then replace the top.
- E. Use a soft, clean paint brush to gently brush insects into a flat palm. Only handle insects and other arthropods that you know are safe, such as earthworms, roly-polies, and ladybugs.
- F. Catch small bugs with the bug vacuum. Hold the hard tube up to a small insect and suck air through the soft tube. The bug should be sucked up into the vial. Look inside to see if you caught it. Be careful to not squish the bug with the hard tube.
- G. Encourage everyone to participate. Even if someone doesn't want to touch or collect an insect, they will often look at it once it has been put into a viewing jar.

MAKE CLOSE OBSERVATIONS

After collecting insects, encourage close observation. Drawing what they see can help children notice how many legs the insect has or if it has a definitive head or antennae. If verbal description works best, have them describe what they see to each other and to you. Take a picture that they can use later as reference. Consider having them draw in a “field journal” (can be any kind of notebook or piece of paper), or paste their picture in the journal, documenting their experience. Ask them about what they see.

FACILITATE MEANINGFUL CONVERSATIONS

Talk with the child about what they are experiencing. Asking open ended questions are a great way to encourage scientific thinking. Don't be worried about knowing every answer. Work with your child to find the answer. Start with 'I don't know' then look it up together.

Ask about the child's prior knowledge and experiences with bugs.

- *What kind of bugs have you found outside before?*
- *Where do you think we might be able to find some bugs?*

Recognize and celebrate discoveries as well as good bug collecting etiquette.

- *Wow! What an interesting insect you found!*
- *Thank you for being so gentle with that spider.*

Talk about scientists and the process of scientific inquiry.

- *Scientists that study insects are called entomologists. They look for bugs all over the world.*
- *You can be a scientist-in-training everyday by being curious, asking questions, trying out ideas, and sharing what you learn with others.*



- *You have five scientific tools that you carry with you all day, everyday: your eyes, ears, fingers, nose, and tongue.*

Use “I notice...”, “I wonder...” and “It reminds me of...” statements to model inquiry and encourage further exploration.

- *I notice that the spider has little hairs on its body. What do you notice?*
- *I wonder if this kind of spider makes a web. What do you wonder?*
- *It reminds me of the spider in the book we read. What does it remind you of?*

Discuss the important role that insects and other bugs play in their habitats.

- *Do you think that insects are important animals?*
- *What kinds of jobs do you think they might do?*
- *What other animals do you think might like to eat those bugs?*

REFLECTION AND CLEAN UP

Give a 5-minute warning before you intend to clean-up to avoid disappointing a young investigator in the middle of their mission.

Ask everyone to help gather and clean-up the materials. Shake or brush off plants and dirt from the tools. Return all insects to where they were found. Look around to make sure no litter or personal belongings are left behind.

After the activity, talk together about the experience: what you found, what was surprising, their favorite things. Share stories, photos, or drawings with family and friends. Celebrate your young scientists’ discoveries by putting their science tools, journal and drawings in a special “science nook” in your home. Encourage the child to add to the nook with each new discovery or observation they make.

LIKE THIS ACTIVITY? TRY SOMETHING SIMILAR

Insects are often some of the easiest animals to find in nature, but they are not the only living things with whom we share our backyards. While looking for insects, take notice of where they're found. Are they in the mulch, on a leaf, on a tree trunk? What do you hear when looking for insects? Do you hear birds or other animals? Close observation and documentation are important skills used by every scientist. They are also fun and exciting ways to learn about the world we all share. The following activities are similar to the Insect Investigation activity and use some of the same skills. Instead of insects take a closer look at plants and birds.

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A. **Animals Need Plants.** Observe and document the plants you see near the insects you discovered. What shape are the leaves, flowers, seeds or fruit? What color are they? Are they tall, short, round, spiky? What does it smell like? Does it have bark? What does the shape of the leaf or plant tell you about it? What does it make you think about or wonder? What name would you give it based on what you saw?

B. **Birds on the Wing.** Observing flying animals can be difficult. The toughest part can be slowing down enough to really pay attention to small, moving animals. Lie on the ground or sit quietly on the grass or bench. Breathe slowly. Listen for bird calls or insects. Can you tell where they are coming from? Look into a tree or bush. Plants serve as shelter for birds and other animals. Try and describe what you see and help your friends and family find it too.





NATURE WALK

Walks in nature have inspired art, poetry and some of the most important scientific ideas. A walk is also a great way to connect to your loved ones, feel a sense of calm and focus, and gain comfort and confidence in the natural world.

This activity encourages children and their caregivers to walk slowly through nature and observe life around them. Children will notice how habitats change as they observe different environments. They will also notice that trees and plants are the foundation of a healthy ecosystem. Because they can take the same walk again and again—and by carefully documenting or describing their observations—children can also explore how nature changes over time. A simple nature walk is an opportunity to find beauty in nature, and to spark curiosity about how ecosystems work and what species live in them.



WHAT TO BRING

All you need is weather-appropriate clothing, sunscreen, your five senses, and your own curiosity. Field guides can be fun to use but are not required. You could try the *Seek* or [iNaturalist apps](#) to document your observations and learn the common and scientific names of your discoveries. You may also want to bring a field journal or paper and pencil.

SET YOURSELF UP FOR SUCCESS

Together with your child, set up guidelines for how you will go about your Nature Walk. Review Good Nature Observing Etiquette (below), and any instructions or rules for your activity. This might include being gentle with animals and plants, staying on a path, where to be quiet and listen and where it is ok to be boisterous, whether or not it's OK to pick flowers and collect objects or if it's better to keep hands to ourselves and only observe. Most importantly, to have fun.

CHOOSING THE RIGHT WALK

A nature walk can be done in any safe natural spot including beaches, parks, forests, or your school yard. Make sure that you have permission to be walking in that area, if the property is privately owned. Look for a walk that includes a variety of habitats. This might include shade and sun, tree-covered and grassy, sandy and covered in leaf litter. A path that includes puddles or travels along water can add other interesting discoveries.



GOOD NATURE OBSERVING ETIQUETTE

- Be gentle with the plants and animals because they are an important part of their habitat.
- Only touch plants and animals that you know are safe to handle. Some plants have thorns or may cause an allergic reaction.
- Hold animals in a flat hand - avoid pinching.
- Avoid picking or breaking live plants unless you have permission to do so.
- Return objects back to their home in nature after you're done examining or collecting them.
- Share what you've discovered through photos, drawings, and stories.

GETTING STARTED

On your walk, work together to find objects, either observing or collecting (if appropriate). Notice where you found them. Try to find objects in a variety of sizes and shapes. Avoid picking or breaking live plants unless you have permission to do so. Use the Activity Sheet at the end of this Activity to guide your investigation if you like. Here are a few examples of what you may find:

- Pinecones and Needles
- Sticks and Branches
- Dry Leaves
- Sand and Rocks
- Wood Chips
- Seeds and Flowers
- Seashells
- Animals like squirrels or worms



INVITE KIDS TO PLAY

Exploring the outdoors is free, promotes physical activity, and is something that can be done in any location and weather, regardless of where you live. Model with the child that walking outdoors is playful. Sometimes all it takes is an open ended invitation to spark their curiosity:

- *Let's go for a walk.*
- *I wonder what we will see?*
- *Would you like to explore with me? Let's see what we can find!*

FACILITATE MEANINGFUL CONVERSATIONS

Building upon a child's natural curiosity is a great way to strengthen their powers of observation and perception--the basis of scientific thinking. Don't be worried about knowing every answer. Work with your child to find the answer. Start with 'I don't know' then have fun looking it up together.

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Ask about the child's prior knowledge and experiences in nature.

- *Where have you taken nature walks before?*
- *What are your favorite objects to look for outside?*
- *Where do you think we might be able to find some moss?*

Recognize and celebrate discoveries as well as good observing etiquette.

- *Wow! What an interesting leaf you found!*
- *Thank you for being so gentle with that worm.*

Talk about scientists and the process of scientific inquiry.

- *Scientists that study nature are called naturalists. They explore outdoor places all over the world and try and understand how all living things are connected.*
- *You can be a scientist-in-training everyday by being curious, asking questions, trying out ideas, and sharing what you learn with others.*
- *You have five scientific tools that you carry with you all day, everyday: your eyes, ears, fingers, nose, and tongue.*



Use "I notice...", "I wonder..." and "It reminds me of..." statements to model inquiry and encourage further exploration.

- *I notice that this tree has thin needles and that one has wide leaves. What do you notice?*
- *I wonder if this soil ever dries out. It is wet right now and seems to be in the shade all day. What do you wonder?*
- *That sound reminds me of a bird we heard earlier. What does it remind you of?*

MODEL SCIENTIFIC THINKING

To encourage development and practice with science skills use inquiry-based questions such as these during your walk:

- What do you see in the sun? What do you notice in the shade?
- What happens if you move a stick, leaf or flower from a shady spot to a sunny spot? Does it look different?
- What do you notice about the plants growing in a wet spot vs. a dry spot?
- What changes have you noticed as we've walked?
- What do you think the plants and animals do when it rains?

DOCUMENT YOUR WALK

Use the Activity Sheet to help guide your walk. Ask children to check off items they see. Have them jot down notes about the location of other objects nearby. If verbal description works best, have them describe what they see to each other or to you.



PLAY TOGETHER

Find something together or make it a game. Being interested and involved in the process turns the activity into a social - and often bonding - experience. When you are having fun, others will too. You are also modeling for the child what it means to explore, think like a naturalist, and enjoy the outdoors.

REFLECTION AND CLEAN UP

Give a 5-minute warning before you intend to finish to avoid disappointing your budding naturalist. Return any collected objects to their homes and gather your belongings.

Talk together about what you noticed. What are you wondering about? Look at the Activity Sheet or pictures together. Talk about where you saw different objects. What guesses do you have as to why they were there instead of somewhere else? Share photos or stories of the experience with family and friends. Celebrate your young scientists' discoveries by putting their science tools, journal, and drawings in a special "science nook" in your home. Encourage the child to add to the nook with each new discovery or observation they make.

LIKE THIS ACTIVITY? TRY SOMETHING SIMILAR

Nature walks are a great jumping off point for many other similar activities. Follow the lead of the children. What are they interested in? Are they artists? Are they engineers? Close observation and documentation are important skills that every engineer, or artist uses. They are also fun and exciting ways to learn about the world we all share.

- A. **Create with Nature:** If you are gathering natural materials during your walk, create something ephemeral with those materials. Make a pretend house for an animal, a favorite toy, or imaginary creature (e.g. fairy). Have a competition to see who can build the highest tower using the objects. Create a model of something you've seen before, such as an animal, a person, or landmark. Cultivate their creativity. After creating with nature return your objects to their nature homes.



- B. **Create a Nature Story:** During a nature walk, tell a story you've heard that takes place in a similar environment or make up your own. Are there natural objects that would help your story come to life? How can you use the rock pile or tree as your backdrop or a location in your story? What do you think happens in this very spot at night? Children have amazing imaginations. See what they can create.

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- C. **Nature Journaling:** Make your nature walk a regular occurrence. Document your observations through drawing, and reflect on how the natural world changes with the seasons. The color and shape of a leaf in spring can be very different than in the fall. Are different birds present in April versus October? What changes do you notice?





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NATURE WALK ACTIVITY SHEET

What can you find on your Nature Walk?

- Flower
- Worm
- Bird
- Tree
- Dry Leaf
- Butterfly
- Plant with Thorns
- Bird's Nest
- Seed or Seed Pod
- Leaf Litter
- Pretty Rock
- Puddle
- Animal Foot Print or Scat
- Long, Slender Leaf
- Wide, Fat leaf
- Spider or Insect
- Snail
- Clover or Dandelion
- Something You've Never Seen Before. What?



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What are three sounds you heard on our walk?

What are three smells you noticed while we were walking?

Draw three different leaves you found.

Name your favorite discovery and draw a picture of it here:



ADDITIONAL NATURAL WORLD INVESTIGATIONS

START A BIRD LIFE-LIST

Like birds? People who like birds and spend time looking for birds are affectionately called Birders. Birders often have a Life List of birds they'd like to see. Sometimes this takes them all over the world, searching out a rare bird that is only found in exotic places. Use a field guide to make a list of birds you'd like to see. Try starting locally. You'd be surprised by the number of species that are right outside your door.



A few Links to Field Guides or Apps:

[Sibley North America West](#)

[Sibley North America East](#)

[Young Birder's Guide](#)

[Merlin](#)

[eBird](#)

You can also use *Seek* or [iNaturalist app](#) to document your finds digitally and to learn the common and species names of the animals and plants you discover.

PLANT A SEED AND WATCH IT GROW

One small package contains everything needed to make a new plant. The seed! Seeds come in all shapes and sizes, ranging from tiny redwood tree seeds that are hard to see with your eye to the giant Coco-de-Mer palm seed, which can weigh over 40 pounds. Seeds can be found at hardware stores, nurseries, grocery stores, or online. Chose seeds that interest you and follow the direction on the package to get them started. Ask your local nursery for the best options. Many can be started in a paper cup on a window sill. Observe your seeds and document how they grow. How long do they take to poke out of the soil? How much do they grow in one day? You may even want to transplant the plants to a large pot or your backyard when they get big enough. Remember not to plant them somewhere without getting permission first. Some plants are better kept at home instead of your neighborhood park or school yard.

Seeds that are easy to grow:

- Sun flowers
- Grass seeds
- Phlox
- Zucchini

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BE AN ANT DETECTIVE

Close to 1000 different species of ants can be found in North America alone. Many places have more than one type of ant living there. Be an ant detective and explore your backyard. Collect a few specimens of different types and take pictures of them. See if you can find three ways in which they are different from each other - color, type of habitat it was found in? Draw pictures and document what you notice. If you want to go a step further, use a field guide to determine exactly what species you've found. An ant biologist is called a myrmecologist.



Links to a few field guides:

[North American Ants](#)

[Urban Ants](#)

[Ants of New England](#)

You can also use the *Seek* or [iNaturalist app](#) to document your finds digitally and to learn the common and species names of the animals and plants you discover.



iNATURALIST

[iNaturalist](#) is a free digital platform and a great way to use the observation and documentation skills highlighted in other activities in this guide. Instead of using a field journal or paper and markers, iNat uses a smartphone or camera.

GETTING STARTED

The first step on your citizen science journey is to visit the [iNaturalist website](#) to set up your account. It's free and easy. Once you have your account set up, download iNaturalist to any of the mobile devices that you may be using out in nature.



INTRODUCING SEEK

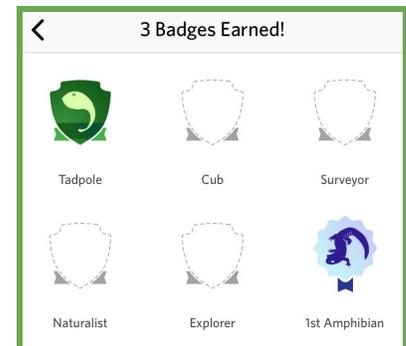
Seek by iNaturalist is a new child-friendly portal into iNaturalist. The app uses iNaturalist data to create treasure hunts customized to your location. The app uses artificial intelligence to identify what you saw and award badges.



- A. **Check out the species near you.** Interested in plants? Mammals? Birds? With *Seek*, you can select what you like the best, and then ask *Seek* to tell you what's likely to be growing or living near you.

- B. **Collect your favorite organisms--Virtually!** Once you discover your favorite creature or plant, collect it virtually using *Seek*. *Seek* will also guide you on the best time of year to find your favorite animal or plant.

- C. **Compete for Badges.** Find a scavenger hunt with a mission that interests you, or start your own. Compete with other youth and teams to see who can make the most identifications and complete the most challenging quests.



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REFERENCES & ACKNOWLEDGMENTS

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