



Afterschool Alliance

Exploring the Environment in Afterschool

March 29, 2018

Agenda

1. Housekeeping
2. Defining environmental education
3. Plum Landing
4. Cornell Lab of Ornithology
5. Science Action Club
6. Audience Q&A



Science Action Club

Housekeeping



Experiencing delays?
Close other programs.



Audio difficulties?
Message us.



Question or comment?
Interact in the chat box.

What is environmental science education?

And why is it important?

Environmental science education is...

the process of guiding students through asking, exploring, and answering questions about the world around them.

Why environmental science is great for afterschool

1. Nature is everywhere
2. Gets students outside and moving
3. Builds STEM skills and offers opportunities for hands-on science experiences
4. The possibilities are endless...

Speakers



Brianne Keith

*Outreach Project
Manager*
WGBH Education



Laura Herszenhorn

Senior Manager
Science Action Club



Kelly Schaeffer

Education Specialist
Cornell Lab of
Ornithology



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Afterschool Alliance

PLUM LANDING



The PLUM Crew



Introduction to PLUM LANDING



Overview of PLUM LANDING

“Just did a great lesson from your website with 40 kids in third and fourth grade... they asked if they could watch more episodes and loved building watersheds! Thanks Plum!”

– Afterschool Educator in Missouri



“The interactive games are fantastic because they encourage students to problem solve. I love the science vocabulary words that are an integral part of the game format.”

–Technology Teacher in Louisiana

Outdoors Rx



What We Learned

Effective programming will:

- (1) Increase access to science learning opportunities
- (2) Optimize time and space available for outdoor exploration
- (3) Prepare educators and parents to lead science activities
- (4) Support the priorities of families and education programs
- (5) Help ensure safety
- (6) Use technology in appropriate and meaningful ways

New Toolkit

Themes: Water, Weather, Plants, Animals

- Animations
- Hands-on science activities
- Family tip sheets
- New app
- Educator videos
- Parent videos
- Toolkit
- Promotional materials



Animated Webisodes



- 12 new animations exploring nature in a fictional mid-Atlantic city
- Address environmental concepts and feature wildlife and natural phenomena relating to the city

Hands-On Science Activities

Animal-lympics

What Is This Activity?



How do animals' movements help them survive?

Kids compete in a series of events to compare their movements to those of city animals and then play a game to model how traffic can impact animal lives.



pbskids.org/plumlanding/educators

Curriculum Topics

animals

Activity Type

outdoor (fair weather)

Group Size

whole group

Activity Time

60 minutes

Materials

- Whistle
- Notebooks and pencils (per kid)
- Measuring tape or yardstick
- Ribbons, string, yarn, or chalk (to mark start and finish lines)
- 80 feet of ribbons, string, or yarn
- Timer or watch
- "Animal Fact" Cards handout (provided)
- Optional: Piece of chalk for each kid
- Optional: Clear contact paper or shipping tape
- Optional: "Videos about Exploring Outdoors" handout
- Optional: "Explore Animals Around Your" handout

Learning Goals

Big Science Idea:

- Animals move in different ways from one place to another to find food, water, and shelter, and to avoid danger.

Skills kids will use to investigate the ideas:

- Model various ways that animals move
- Use math to estimate, measure, and compare distances and/or speeds
- Communicate the advantages of an animal's form of locomotion
- Model how traffic affects different animals on the move
- Make predictions and compare to actual time to travel a distance or number of flaps
- Communicate information about how locomotion helps city animals survive
- Design solutions to traffic accidents involving animals

How Do You Get Ready?

- Read the activity and gather the materials.
- You don't have to do all the activities if time is short. If there are two educators, split the group in half and run events simultaneously.
- Print the "Animal Fact Cards" on sturdy paper or cardstock, cut them out, and optionally laminate or secure them between pieces of clear contact paper or shipping tape.
- Scout out a suitable place such as a park, schoolyard, basketball court, or other open area. Mark off the boundaries of the playing area for the "Animal Crossing" game with chalk, string, or yarn.
- Troubleshoot any safety concerns (traffic, poison ivy, sharp objects, etc.).
- Mark out a starting line at the edge of the area with chalk, ribbon, or yarn. It should be long enough for all the kids to line up behind it. Measure out 1 yard and mark it off the full length of the starting line. Then, measure out 40 inches from the starting line and mark that distance with a 4-foot line.
- Cut an 80-foot piece of string, ribbon, or yarn.

SECRET WORD
Speed

Tell kids: *Anytime I hear today's secret word, I will blow the whistle and you must immediately stop what you are doing and do five frog hops (demonstrate). Don't tell kids the secret word! Challenge them to figure it out.*



- 8 afterschool
- 8 family-facilitated
- 10 self-guided
- 4 take-homes

In English & Spanish

Activity & Media

Thematic sequences that pair **activities** + **media** for turnkey programming

- **Afterschool:** 1 hour of programming (8 pathways)
- **Club:** 5 days x 1 hr of programming (2 pathways)
- **Camp:** 5 days x 3 hrs of programming (1 pathway)

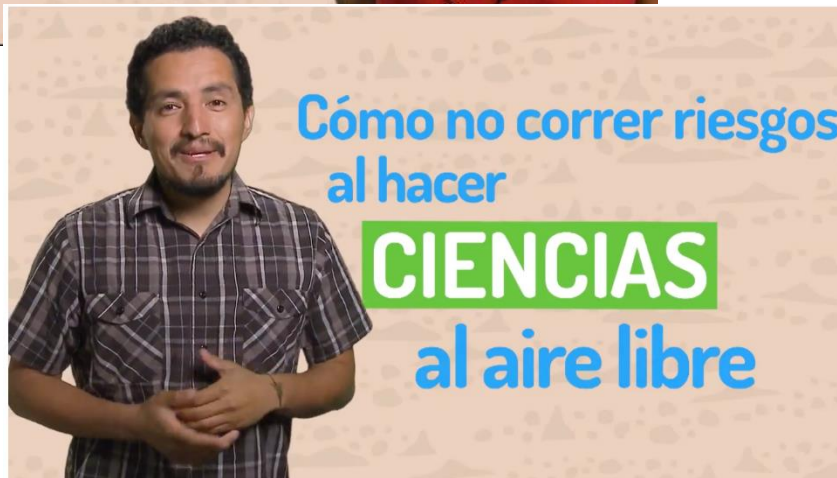


Parent Videos



- Hosted by Rue Mapp of Outdoor Afro and José González of Latino Outdoors
- Address common barriers urban families face

In English & Spanish



Family Tip Sheets

Get Outdoors with Your Family—and Sneak in Some Science, Too!



Exploring your world,
one mission at a time
pbskids.org/plumlanding

You don't need to be a hiker to get outdoors and explore with your family, and there's no need to make a special trip to find nature: you'll find it right out your front door, from the red-tailed hawks patrolling the city to the dandelions poking through cracks in the sidewalk. Step outdoors, look around, ask a few questions, and let your child take the lead!



Not knowing answers is also a great reason to visit your local library. Of course, you can quickly find answers online, but libraries introduce kids to the world of books and help them develop a love for reading.



Walk and talk

Take a stroll and talk about the plants and animals that call your neighborhood home. Where do the squirrels find food? Where do they sleep? How far do a tree's roots reach?

You don't need to have answers. Science is about asking questions, wondering, and exploring your ideas. Let your child see and hear you being curious. Ask questions starting with "I wonder..." or "Why do you think..." or "How..." These types of questions promote scientific thinking and reasoning.

Let your kids answer your questions. Kids love to share their knowledge with grownups, and it can give them a special thrill to think they know something you don't!



Why Explore Nature Outdoors?



Exploring your world,
one mission at a time
pbskids.org/plumlanding

Here's a quick list of the benefits for you and your child:

LEARN SCIENCE AND RESPECT NATURE

Kids who spend time exploring nature outdoors:

- do better in school, especially science.
- feel more connected to plants and animals.
- understand the need to take care of the planet.
- want to keep learning, exploring, and asking questions.



BOOST MENTAL AND PHYSICAL HEALTH

Research shows that regularly doing outdoor activities:

- improves motor skills—how well children move.
- increases fitness and reduces extra weight.
- releases stress, anxiety, and excess energy.
- strengthens the body's ability to fight disease.
- makes children feel positive about the future and themselves.
- stimulates creativity and the imagination.
- often carries into adulthood as a healthy habit.

ANY OBSTACLES?

We live in the city.

Perfect! **Every city, suburb, or town is part of a larger ecosystem**—a one-of-a-kind place where certain plants and animals (including humans) live together. You don't even need to go beyond your neighborhood! There's far more nature around you than first meets the eye.

I have little or no time.

It **pays to make time**, given all the benefits we've talked about. One way is to add easy outdoor mini-games to your daily routine. Try it: Can you and your child walk to the bus while counting all the animals you see? How about back home again—how many different types of flowers do you see?

Citizen Science



Exploring your world,
one mission at a time
pbskids.org/plumlanding

What Are These Activities?

Scientists rely on data from people all over the country who report on local animals, plants, weather, and water. They use the data to answer important scientific questions about the environment. Here are some easy projects for you and your child to do, though you'll need Internet access.

Do an online search for the organizations and/or key terms.

ANIMALS

SquirrelMapper (year-round)

Have you ever seen a rare black squirrel? If so, report it! Why? Scientists think most squirrels were black 150 years ago. So they wonder: Why are squirrels today mostly gray and black squirrels rare?

Celebrate Urban Birds and Other Bird Projects (year-round)

The Cornell Lab of Ornithology and the National Audubon Society have asked citizens to spot and count birds since 2002. Why? Populations might be in danger due to changes in the climate. Families in cities and towns (big or small) can join Celebrate Urban Birds, a program with a free activity and information kit to download. The menu in the upper-right corner of the website has links to other bird projects.

Backyard Bark Beetles (spring and summer)

Build a simple trap to lure these common beetles and then send the dead bugs to scientists. Why? Because some beetles destroy whole forests and fruit crops. Scientists want to know where they live.

Urban Buzz (summer)

Cicadas are insects that buzz loudly from the trees to attract mates, after which they die. This project asks people in cities and towns to collect a few dead bugs and mail them to scientists. Why? They want to know if cicadas in populated areas are suffering from a lack of trees, heat, or pollution.

PLANTS

Project BudBurst (year-round)

Do you live where there are four different seasons? Scientists want to know when your tree leaves bud in spring, when flowers bloom, when fruit or nuts appear, and when leaves change color in the fall. Why? They wonder if the timing of these things is changing because of the warming climate. Changes would affect the animals that rely on those plants for food.



Educator Training Videos



- Hosted by Jessie Scott, USFS Urban Connections Program
- Address common challenges outdoor educators face



Digital Badging System

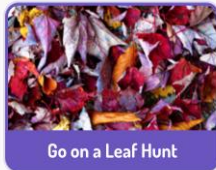
EASY



Shelters for Animals



Plants Above and Below



Go on a Leaf Hunt



Draw a Weather Report

MEDIUM



Unexpected Plant Places



Drinking Water

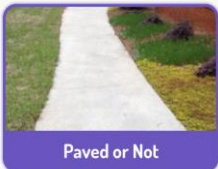


Find Animal Neighbors

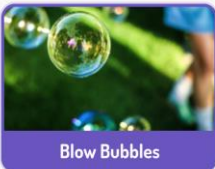


Walk in the Shady Spots

HARD



Paved or Not



Blow Bubbles



Follow the Wandering Water

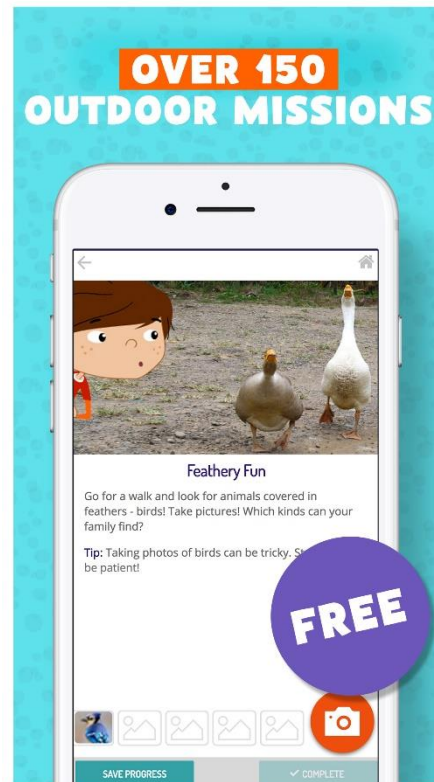
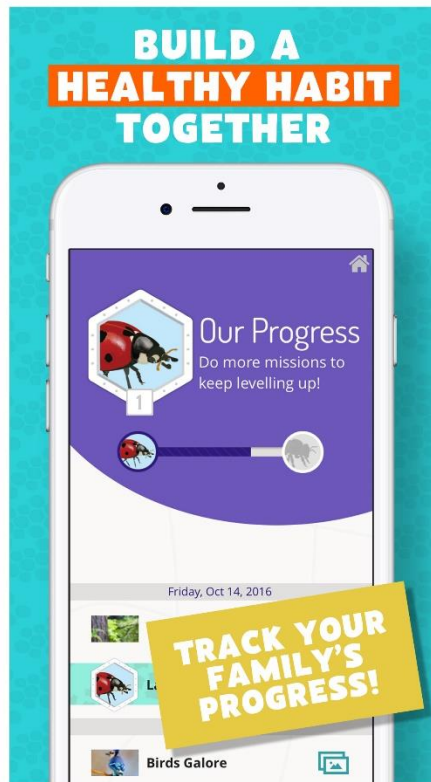


Be an Animal Tracker

Outdoor Adventures

- Virtual badging program
- 12 new online missions
- Design to be feasible in urban environments
- Explore animals, plants, water, and weather phenomena

Apps



Outdoor Family Fun with Plum App

- 5 new missions every day
- Missions use camera, counter, or checklist
- Tips and discussion prompts
- Rewards encourage families to persist

Guidance for Program Directors

PLUM LANDING

Explore Outdoors Toolkit



pbskids.org/plumlanding

Welcome!

Welcome to the **PLUM LANDING Explore Outdoors Toolkit**. This Toolkit provides everything you need to set up a program that helps kids ages 6 to 9 and their families get outdoors, get moving, and have fun learning science—*right in their own neighborhoods!* Whether it's in your program's yard; on the sidewalk; or in a local park, state forest, or their own backyards, **getting kids and families outside and excited about the environment will make important contributions to their health and well-being.** It will also **help them learn about the natural world around them and encourage them to become caretakers of the planet.**

Some families may not take full advantage of the natural spaces in their communities (parks and other green spaces) because they have safety concerns or lack knowledge about how to get their kids up, out, and moving. Using the resources in the **PLUM LANDING Explore Outdoors Toolkit can help remove the barriers families may experience.**

The **PLUM LANDING Explore Outdoors Toolkit** was inspired by "outdoor prescription" programs, in which medical professionals write prescriptions that encourage kids to get active outdoors. These programs have found that some families do not take full advantage of the natural spaces (parks and other green spaces) in their community because, among other reasons, they have safety concerns or lack knowledge about how to get their kids up and moving. The **PLUM LANDING Explore Outdoors Toolkit** provides the resources to help you turn this around, **supporting both kids and their families in getting physically active while having fun learning science.**

Toolkit resources include:

- Hands-on environmental science activities in English and Spanish
- Animated PLUM LANDING videos that highlight nature in urban spaces
- Training videos and a Viewing Guide with tips for educators who work with kids and families
- A digital badging system that rewards outdoor exploration
- Parent videos that support families' outdoor explorations
- An outdoor app for families, games, and more



- Guide with tips, planning advice, and more
- Suggestions for using materials in different types of programming



Bringing PLUM to afterschool



PLUM-themed field trips















TYPE 10

CAMP ROCKY CREEK
OUTDOOR PROGRAM



Stay in Touch!

Brianne Keith

Outreach Manager

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Main page:

<http://pbskids.org/plumlanding/>

Toolkit:

<http://pbskids.org/plumlanding/educators/toolkit.html>

The **Cornell** Lab of Ornithology



Our mission:

To interpret and conserve the earth's biological diversity through research, education, and citizen science focused on birds.

BirdSleuth K-12 Mission

To create innovative resources and training that build science skills while inspiring young people to connect to local habitats, explore biodiversity, and engage in citizen-science projects.

Twitter: @birdsleuth

Facebook: BirdSleuth

Email: birdsleuth@cornell.edu

Website: www.birdsleuth.org

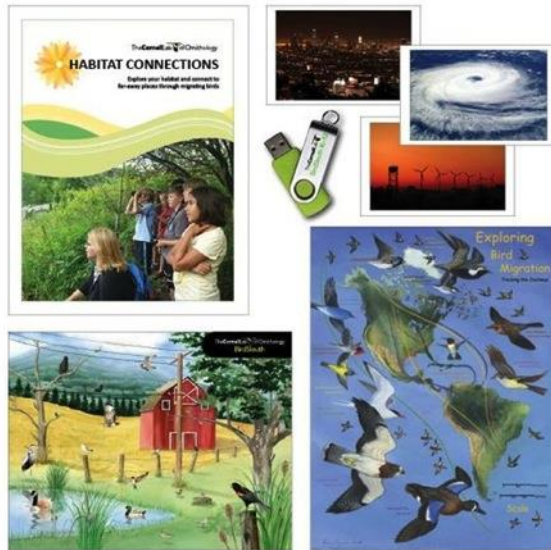




BirdSleuth K-12 helps educators bring the power and engagement of citizen science and inquiry to their students

BirdSleuth K-12 Outreach

Curriculum Resources

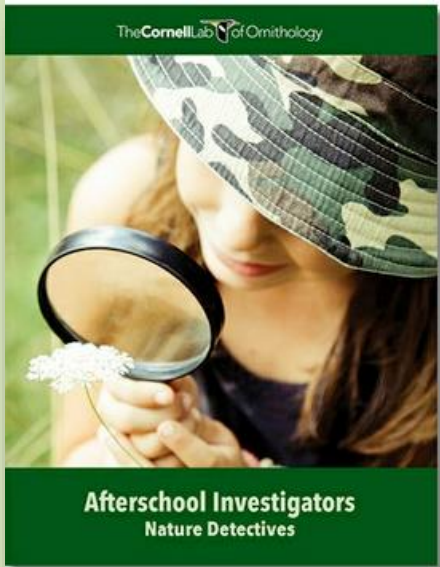


kits & free downloads

Educator Training



online & in person




Nature Connection



Citizen Science



Inquiry

A group of children are standing on a wooden deck, looking through binoculars. The scene is outdoors, with lush green trees in the background. The children are in profile, facing right. The text is overlaid on the right side of the image.

*Projects in which
volunteers partner
with scientists to
answer real-world
questions.*



In citizen science, people everywhere report observations of natural events using basic, scientific protocols.

295 million observations submitted

21.7 million checklists entered

279,000 participants

10,226 species

Every country in the world

Over 2 million locations

Your Counts Really Matter!

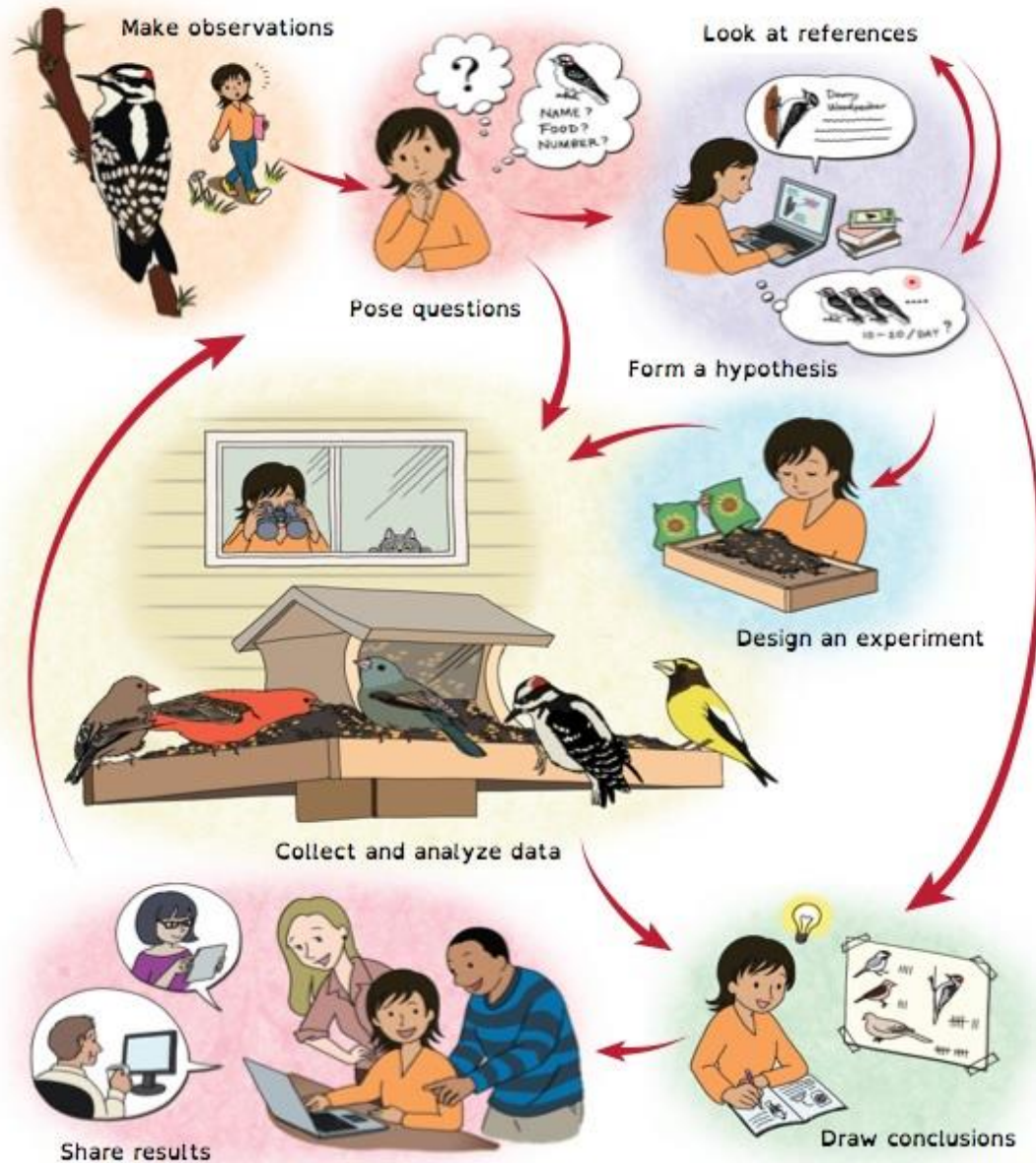


CLO Citizen Science Projects

1. Identify and observe birds
2. Collect data
3. Enter data online
4. Retrieve and view online data



The SCIENCE PROCESS: What will YOU Discover?



“I learned that taking them outside and letting them do bird observation was a great way to motivate them to ask questions in science.”



Inquiry...

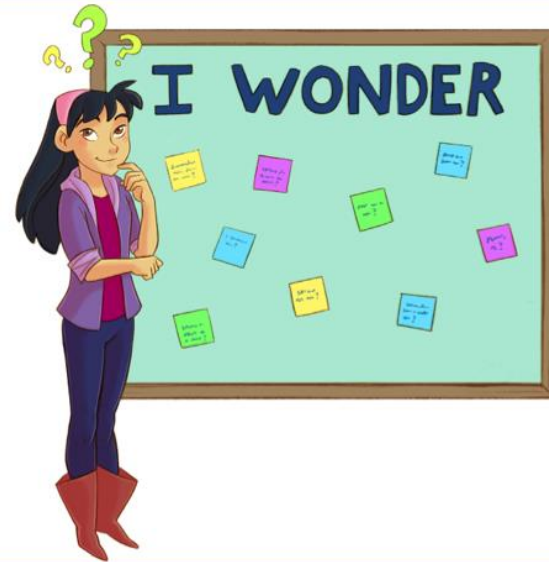
- Asking and answering own questions (authenticity)
- Includes “project-based learning”
- In NGSS, is inherent in “science practices”



Investigating Evidence

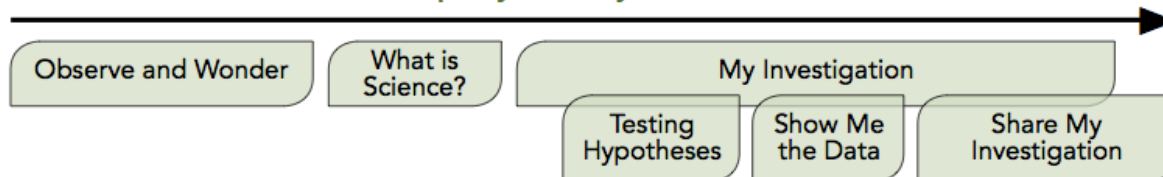


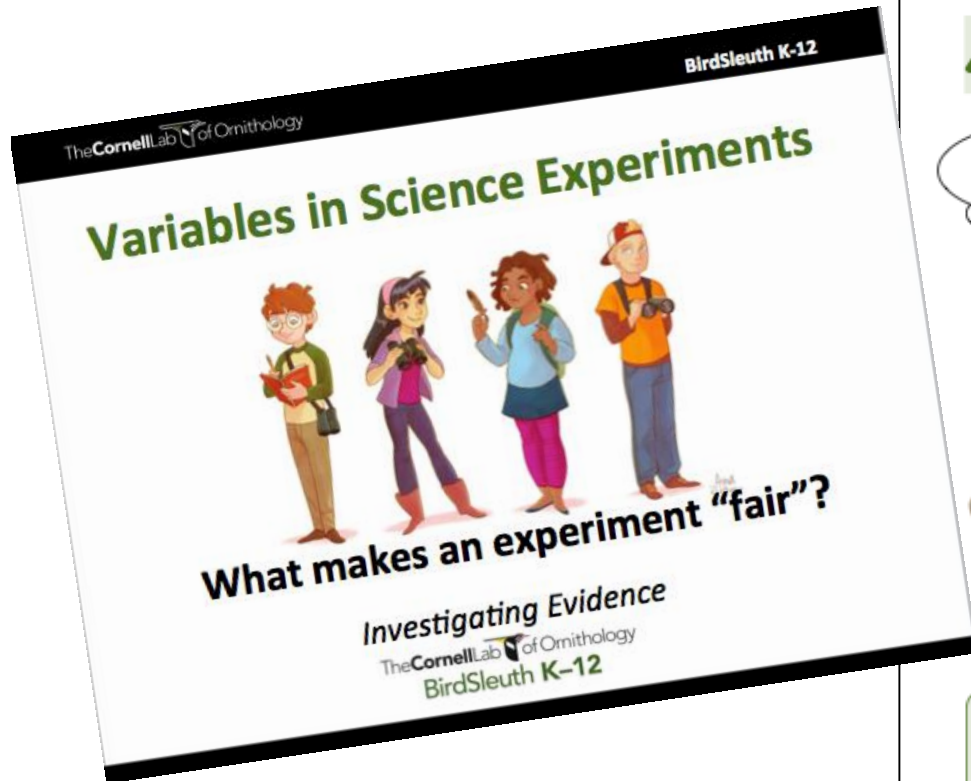
Investigating Evidence
Citizen Science and Schoolyard Observations Inspire Investigations!
TEACHER'S GUIDE



Investigating Evidence
RESOURCE PAGES

Unit Timeline: 1 week, a semester, or a year-long project...
it's up to you and your students!



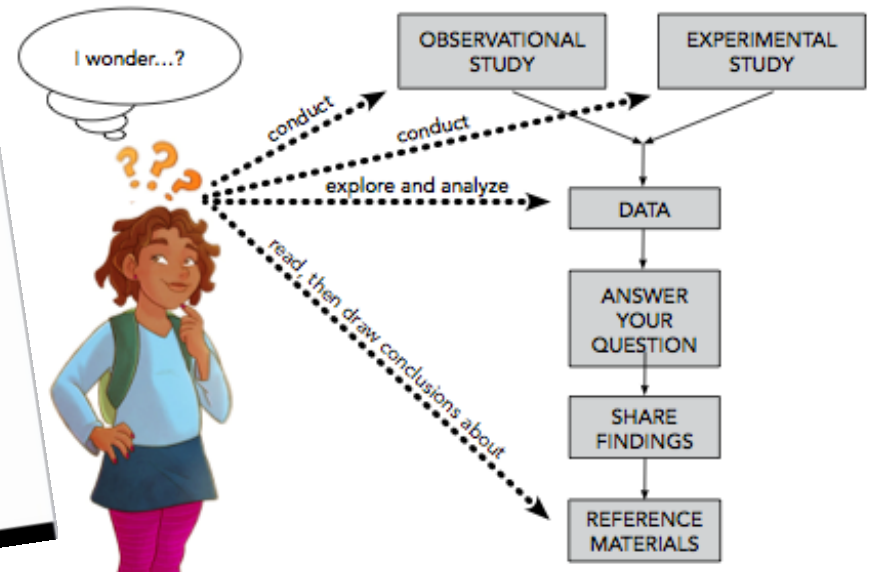


Kinds of Questions

You may have already come up with some questions about your observations. Different types of questions lead to different types of research projects. You can classify questions by how you can answer them. This graphic shows four ways to answer your scientific questions.

WHAT DO YOU THINK?

Look at the graphic and read the paragraph in the box below. What are the four ways to answer your scientific questions?



Where will you jump into the process?

Depending on your question, you can enter the process of science at different stages. Look at the dotted arrows to see where this student scientist could jump into the scientific process. Some conduct their investigations through **experimental** or **observational** studies, some start by **exploring and analyzing data** from a database (like eBird, for example), and still others find answers by pulling together information they find in **reference materials** such as books or web sites.

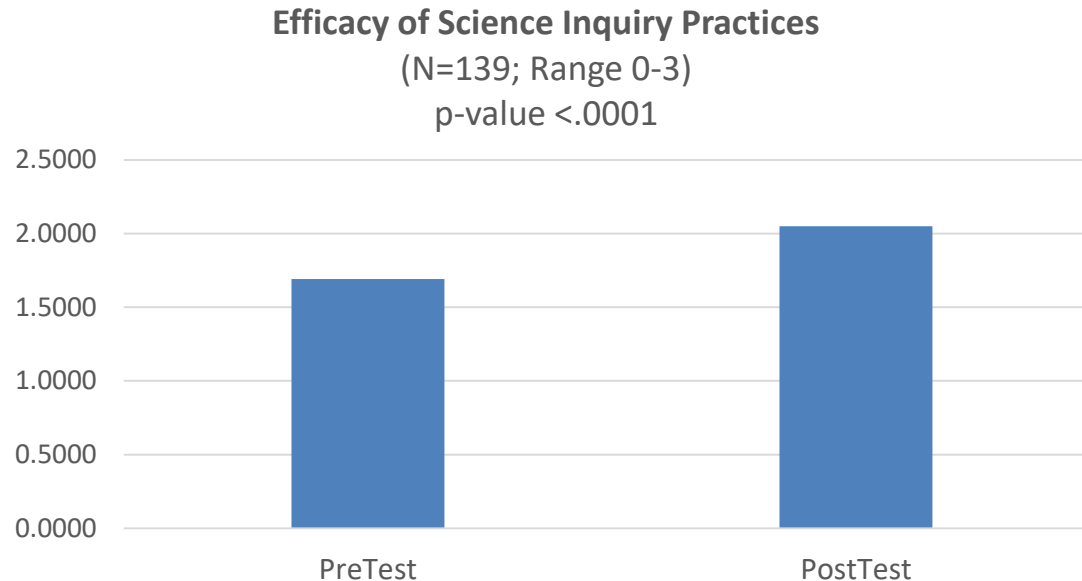
Online Professional Development



academy.allaboutbirds.org/integrating-inquiry/



Do Citizen Science and Inquiry Work?




Students also showed an overall more positive attitude toward science and nature.


- I like to identify things in nature. (p=.005)
- I like talking about science with others. (p=.001)
- Kids can collect data that scientists can use. (p=.0001)

The Cornell Lab of Ornithology
BirdSleuth K-12

BirdSleuth Explorer's Guidebook



BECOME AN EXPERT OBSERVER!
Follow this step-by-step guide and use your senses to discover the birds in this national wildlife refuge.



<http://www.birdsleuth.org/guidebook/>

Bird Search

Now that you've explored this habitat, let's see if you can find any birds.

You can find out if birds are here by using your eyes and ears. How many items can you check off the list below?



Bird evidence

- feather
- droppings
- nest

Birds using habitat—Look for them!

- on a branch

Variety of birds

- group of three or more birds
- two birds together
- colorful bird
- bird that is mostly black
- bird with white on its body
- bird with a long tail
- bird with a short tail



Wildlife refuge home with you, but explorer can see it, too. Remember what they see.

Identification Clues


Now that you can use shape to determine a bird's group, let's add more details to help identify a bird by species.

Bird watchers use many clues to identify birds. Knowing the shape, size, and color pattern of a bird, and where and when you saw it, can help you identify the birds you see. Focus on one bird and gather information about it!


Your Habitat: _____ **Date:** _____

Where was it? (circle one): At a feeder In the water On the ground
In trees or bushes On a fence or wire Soaring or flying

What size was the bird? Put a star on the line closest to the size of the bird you saw.



Circle up to three main colors you saw.



The bird size graphic shows the size of a bird. Circle the size closest to the size of the bird you saw.

8

Keep in touch!

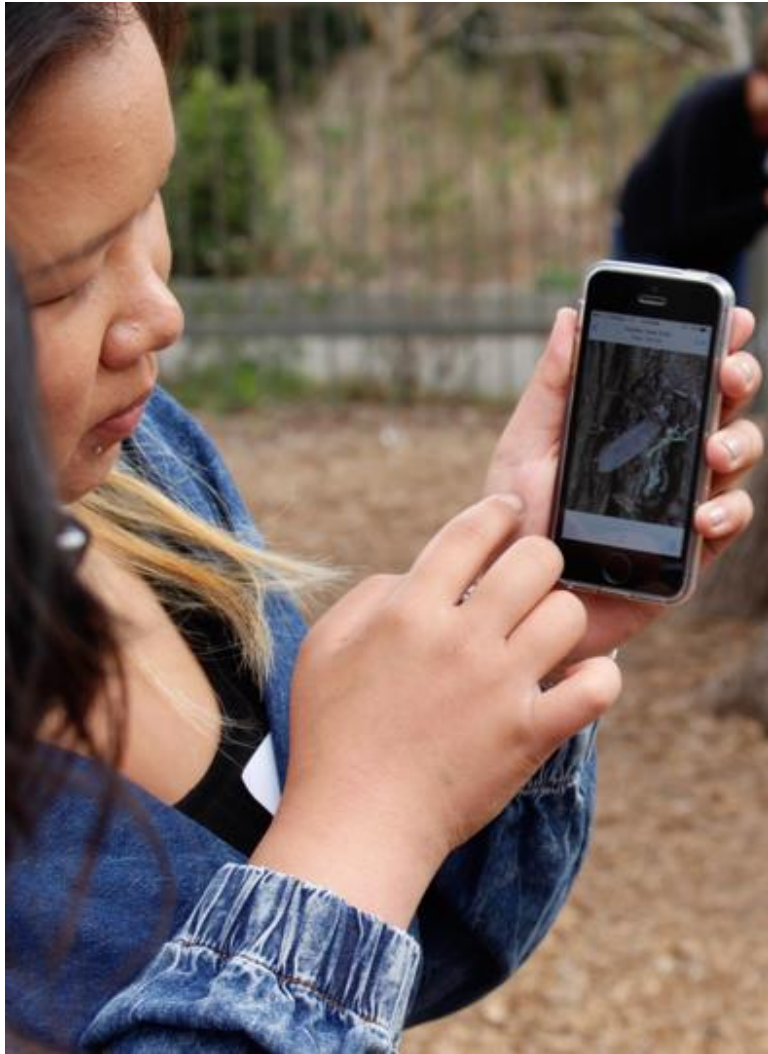
Twitter: @birdsleuth

Facebook: BirdSleuth

Email: birdsleuth@cornell.edu

Website: www.birdsleuth.org



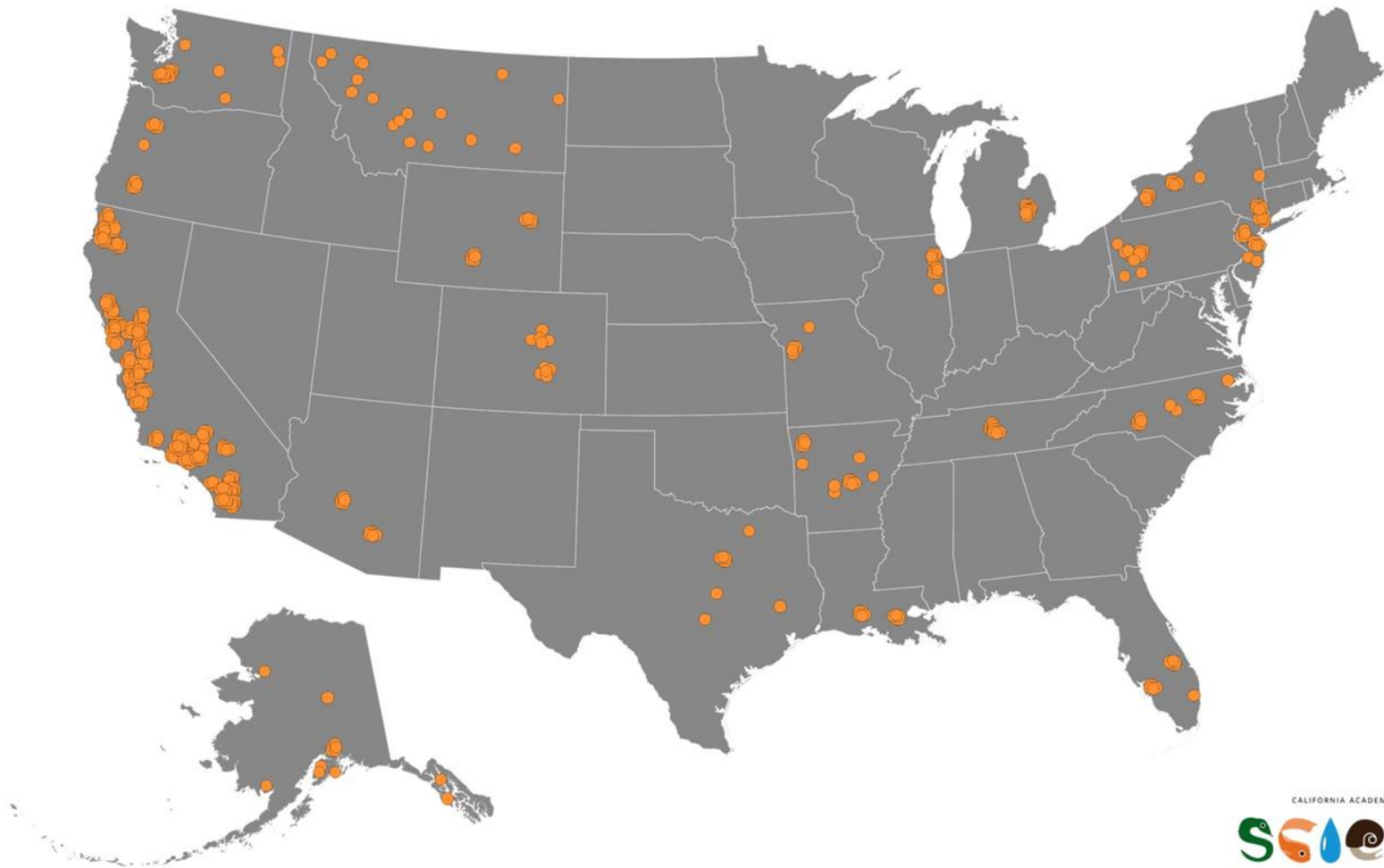


Science Action Club

Laura Herszenhorn
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Explore, explain, sustain

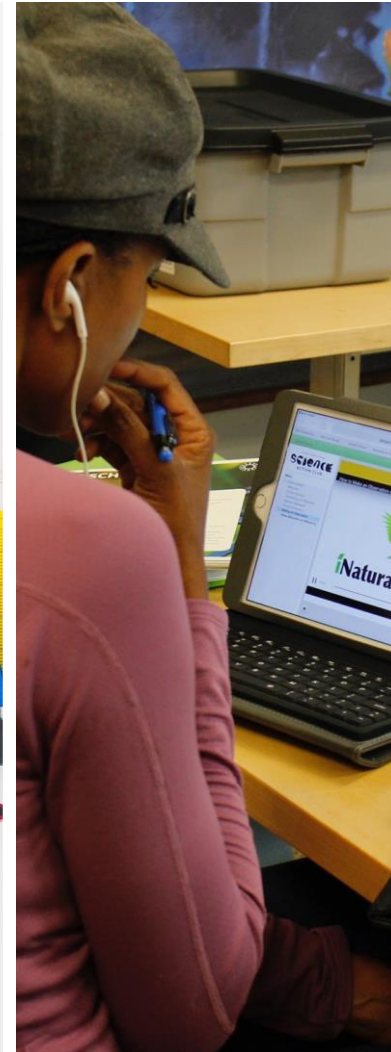


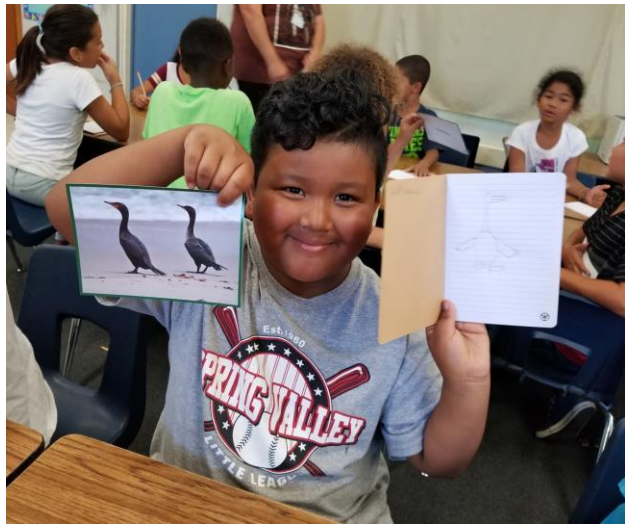
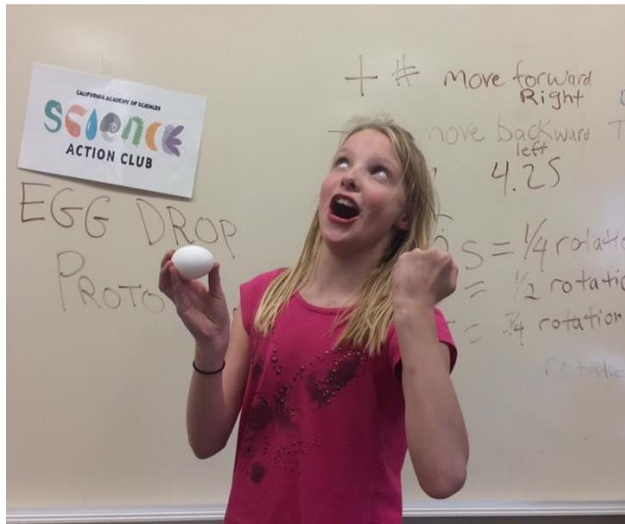
Professional development, curricula, kits

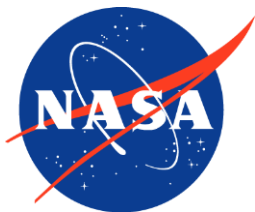
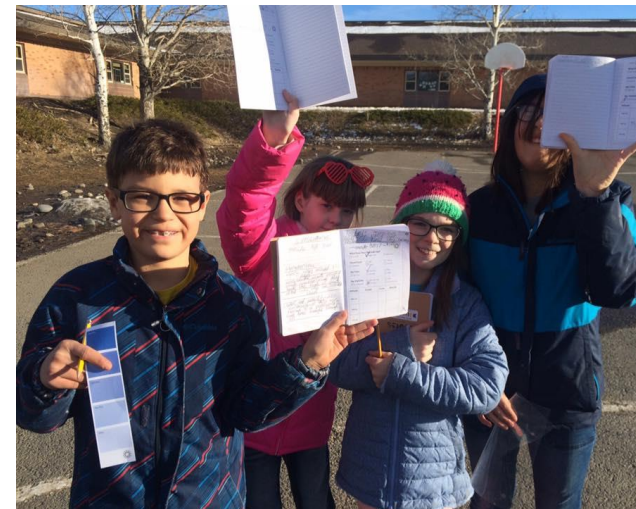
Birds Scouts

Bug Safari

Cloud Quest







The Cornell Lab of Ornithology

eBird

Long term projects, global access,
ease-of-use

Impacts and Outcomes

15,000 youth

1,600 educators

750 clubs in 21 states

200 eBird checklists

1,395 iNat observations



Impacts and Outcomes

Increased youth interest, engagement, value of STEM

89% I understand the activities we do in SAC

84% Being in SAC makes me want to learn more about science

85% Learning about science can help me to better understand the natural world

82% SAC makes science more fun



Impacts and Outcomes

Educators feel confident, prepared, inspired

100% I feel able to help youth connect with the natural world

97% I learned new science skills and concepts during trainings

97% I learned useful teaching strategies

99% I want to learn more about science and nature





In their own words...

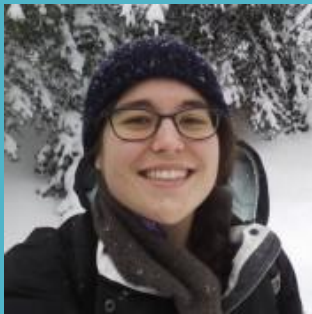
Citizen science develops STEM identity and promotes critical thinking

Citizen science is a great way for students to see themselves in a different role within their community. When students are able to conduct research, collect specimens or data, learn to use scientific tools, and share their findings with others, they develop a sense of ownership and responsibility for their environment. As they start to ask critical thinking questions and connect their findings to real world experiences, they realize that they are part of a bigger picture and that one person really can make a difference and influence others. What an amazing and powerful gift we can give our youth! - YMCA Program Director, Anaheim, CA



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WGBH Education



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Laura Herszenhorn

Science Action Club

Audience Q&A

Thank you!

Questions: Email lsilverberg@afterschoolalliance.org