

Let's Get Squirrely!

ACTIVITY OVERVIEW

STEM Focus Area: Citizen Science

Facilitator Learning Goal: Youth will understand what data and research are and how they help scientists understand the subject they are studying.

Youth Learning Targets:

- "I can understand what data and research are."
- "I can participate in wildlife conservation to help scientists better understand squirrel populations."

LEARNING ENVIRONMENT

Activity Duration: 45 minutes

Class Size: This activity can be used with groups of any size really works best in groups with higher adult/child ratios.

Minimum Group Size: none

Type of Space: Indoor and outdoor

Age of Youth: Grades K-2

Guiding Question: What is the question to explore OR the problem or challenge to solve?

How can taking photos and collecting information about where squirrels are found help scientists learn more about them?

Through this activity, youth will:

- Observe and record real scientific data of squirrels.
- Analyze data through photographs.
- Share and communicate data with fellow squirrel researchers.

Facilitator Prep

Facilitators will need to create a free account at www.scistarter.com and familiarize themselves with Project Squirrel by practicing a few entries themselves.

Literacy Connection: Great books to get youth support learning about (available on Amazon).

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- Citizen Scientists: Be a Part of Scientific Discovery in Your Own Backyard by Loree Griffin Burns
- Finding Wild by Megan Wagner Lloyd
- Are You a Scientist? by Tad Carpenter
- What is Science? by Rebecca Kai Dotlich

DoS:

Predict and hypothesize

Develop and use models

Measure materials

✓ **Observe**

Investigate

✓ **Record observations**

Analyze and infer

Share and communicate data

Interpret data

Test and revise

Draw conclusions and relationships

✓ **Have voice and agency, make decisions and guide their own learning**

PREPARATION

Materials

Whiteboard or chart paper, electronic devices such as tablets or smartphones (or a camera and computer) with internet access. Smartphones do not need to be active phones - old phones with decent cameras and WiFi capabilities are perfect for this project. Facilities may be able to gather old phones by asking families to donate them after they have upgraded.

Room

The introduction to this activity will take place indoors in a setting with a white board or chart paper. Part of the activity will need to take place outside where mature trees are present. If your area does not have mature trees, look for a trail, or park, within walking distance.

Content

Research is work that increases knowledge and uses this new knowledge to devise new applications. Wildlife research takes many forms. Wildlife research is done both in the native ranges of animals and in human care settings.

Data is facts and statistics collected together for reference or analysis. A person could say that most Kindergarten students know the order of the colors of the rainbow but, unless they have data to provide evidence of that statement, it's just an assumption.

Many wildlife biologists collect data of wild animal populations through tools such as field cameras. Once they take these photos, or data, they need to analyze them to sort out the useful information. Many conservation organizations look for volunteers or citizen scientists (amateur or non-professional scientists) to help collect data or analyze data.

By aiding the conservation and research organizations, regular citizens can help researchers better understand the populations they are trying to conserve.

Common misconceptions:

- Research is only done in a laboratory.
- Research involves testing subjects.
- Research is difficult to do and requires advanced degrees.

Inquiry

Your primary goal as facilitator is to encourage youth to understand data and research and how wildlife researchers study animals. You can prompt those discussions with questions like the following:

- What are you noticing about the squirrels we're finding?
- What kind of tree is this squirrel using?
- Do you think collecting data is easy? Why or why not?
- Do you think it's easier to study animals in the wild or in human care?

- Why do you think it's important to study wild animals in their native habitats?

DoS:

- ✓ Organization: I practiced the activity/technology, prepared materials/extras/place to record youth ideas, completed an activity (including timings).
- ✓ Materials: Materials are appropriate for teaching the learning goals; youth will be able to use them and will think they are appealing.
- ✓ Space Utilization: The space is set up appropriately for the activity and there will be no safety issues or distractions.
- ✓ Relevance: I have researched why the content matters to youth's everyday lives.
- ✓ Content Learning: I have become familiar with the content.
- ✓ Inquiry: I have become familiar with how authentic, age-appropriate inquiry practices look in this activity.

INTRODUCTION TO ACTIVITY (10 MINUTES)

Lead a discussion with the group - What do you think of when you hear the words research and data? Write the words on the board or chart paper so youth can see them. Either have them write down what they think of or facilitators can write down their responses.

Research - work to increase knowledge and use this new knowledge to devise new applications. So research is when you study something to learn more about it.

Data - facts and statistics collected together for reference or analysis. So data is information.

What is some data we can collect about our group?

- How many youth are in our group?
- How many youth are 6? 7? 8?
- How many youths like pizza?
- How many youth prefer vanilla ice cream? Chocolate?

Make a bar chart with the information collected for the group to see.

Now that we have all this data about our group, what have we learned? If we were to have an ice cream party, do more of us like vanilla or chocolate ice cream?

Wildlife biologists are scientists who study animals and their behavior. By studying animals in the wild, we can learn more about those animals. If there are any animals that are endangered, wildlife biologists can learn about why those animals are endangered and maybe learn how people can help those animals.

Today, we're going to help wildlife biologists with a project. We are helping them collect data about squirrels so they can learn more about them.

DoS:

- ✓ Space Utilization: I will use the space informally avoiding the lecture hall format.
- ✓ Purposeful Activities: This intro section gets youth on track for the learning goal.
- ✓ Content Learning: If age appropriate, I will accurately present content.
- ✓ Inquiry: In this or another section of the activity, youth carry out one or more inquiry practices.
- ✓ Relationships: I will make each youth feel welcome.
- ✓ Relevance: In this or another section, I will guide the youth in a sustained discussion of how the activity relates to their everyday lives.
- ✓ Youth Voice: In this or another section, I will allow youth the opportunity to make decisions about their learning experiences.

ACTIVITY ENGAGEMENT (30 MINUTES)

Today we're going to help the scientists with Project Squirrel. These scientists are trying to better understand tree squirrel ecology, or how tree squirrels interact with their environment.

What do we currently know about tree squirrels?

There are three types of squirrels we might find: gray squirrels, red squirrels or fox squirrels.

Show the youth multiple pictures of the different kinds of squirrels so they can see different examples. Provide them with the squirrel identification sheet included with this lesson.

We are going to look for squirrels and take their photos. After we take their pictures, we will come back to the classroom and fill out the information forms that the scientists need.

Give groups mobile devices or cameras to take photos of squirrels. Facilitators and adult helpers may need to assist the groups to make sure they are capturing photos that can be used - squirrels are able to be seen well. It may be helpful to take multiple photos of each squirrel they see.

Give youth 10-15 minutes to look for squirrels and then return to the classroom so the group can analyze photos. Tell youth that while they are looking for squirrels, they should observe the kinds of trees the squirrels are using, what squirrels are doing (looking for food? playing?), and if there are predators around.

Photos can be analyzed as a large group or in small groups. Pull up the form on the SciStarter page (<https://scistarter.org/form/project-squirrel>) and as a group look at each photo and answer the questions:

- Number of gray squirrels/fox/red
- Trees present: nut-bearing/seed-bearing/fruit-bearing/tiny-seeded/coniferous
 - o Nut-bearing – walnut, oak, etc.
 - o Seed-bearing – maple, locust, etc.
 - o Fruit-bearing – crabapple, ginkgo, etc.
 - o Tiny-seed – cottonwood, ash, etc.
 - o Coniferous – pine, spruce, fir, etc. – evergreen trees
- How often squirrels are seen getting food from bird feeders/human handouts/garbage/trees or plants/other
- Frequency of predators present
- Other comments

DoS:

- ✓ Space Utilization: I will use the space informally avoiding the lecture hall format.
- ✓ Participation: All youth will have access to the activity.
- ✓ Purposeful Activities: This core section helps youth to move toward the learning goal.
- ✓ Engagement: This activity has youth physically engaged with their hands and their minds.
- ✓ Inquiry: In this or another section of the activity, youth carry out one or more inquiry practices.
- ✓ Reflection: If appropriate, I will ask youth questions during the core activity that will help them make sense of what they are learning.
- ✓ Relationships: I will take steps to share my enthusiasm and create a nurturing, safe learning environment.
- ✓ Relevance: In this or another section, I will guide the youth in a sustained discussion of how the activity relates to their everyday lives.
- ✓ Youth Voice: In this or another section, I will allow youth the opportunity to make decisions about their learning experiences.

FINAL REFLECTION AND RELEVANCE (5 MINUTES)

As a group, discuss the following:

- What did we notice about squirrels?
 - Why are squirrels important? They are good tree seed dispersers. Squirrels bury nuts and seeds to eat over the winter but often bury more than they can remember! Those leftover seeds grow into new trees.
 - Do we feel we have a lot of squirrels around our facility? If so, why do we think we have a lot of squirrels?
 - How might we encourage more squirrels to live here?
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DoS:

- ✓ Space Utilization: Again, I will use the space informally.
- ✓ Participation: I will prompt youth who do not have access to the activity to participate.
- ✓ Purposeful Activities: The closing section helps youth to reach the learning goal.
- ✓ Content Learning: I will help youth make connections between different ideas. I will create opportunities for youth to ask questions/provide ideas that show a deeper level of understanding.
- ✓ Inquiry: In this or another section of the activity, youth carry out one or more inquiry practices.
- ✓ Reflection. I will provide youth with a sustained opportunity to make sense of their learning.
- ✓ Relevance: In this or another section, I will guide the youth in a sustained discussion of how the activity relates to their everyday lives.
- ✓ Youth Voice: In this or another section, I will allow youth the opportunity to make decisions about their learning experiences.

Squirrel Identification Guide

GRAY SQUIRREL



- Gray backs and sides
- White or gray bellies
- White-fringed tails

Gray squirrels may have a hint of rust (or brown/red) on their backs and sides. Any black squirrels you might see are probably a variety of gray squirrels.

RED SQUIRREL



- Reddish to reddish-gray backs and sides
- White around the eyes
- White or cream bellies

FOX SQUIRREL



- Orange or rust backs and sides
- Orange bellies
- Black-fringed tails