

Penguin Watch

ACTIVITY OVERVIEW

STEM Focus Area: Citizen Science

Facilitator Learning Goal: Youth will understand what research is and examples of research in wildlife conservation.

Youth Learning Targets:

- "I can learn about wildlife research."
- "I can participate in wildlife conservation to help scientists better understand penguin populations."

LEARNING ENVIRONMENT

Activity Duration: 30 minutes

Class Size: Any size

Minimum Group Size: none

Type of Space: Indoor

Age of Youth: Grades 5-7

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

What is research and what are some examples of research done by wildlife biologists?

Through this activity, youth will:

- Observe and record real scientific data of penguins
- Analyze data through photographs, counting the number of penguins, nests and eggs
- Share and communicate data with fellow penguin researchers

Facilitator Prep

Facilitators will need to familiarize themselves with the project by practicing looking at photos on the Penguin Watch website (<https://www.penguinwatch.org/>) including the FAQ section which has a LOT of information on what youth should be looking for (<https://www.zooniverse.org/projects/penguintom79/penguin-watch/about/faq>).

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 Loyd
- What is Science? by Rebecca Kai Dotlich
- Among Penguins: A Bird Man in Antarctica by Noah Strycker

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

Computers with internet access

Room

This activity will need to take place in a location with computers. Youth can work in pairs or can work independently.

Content

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

Zoos that are accredited by the Association of Zoos and Aquariums are required to be involved in some way with wildlife conservation and research. Many wildlife biologists collect data of wild animal populations through tools such as field cameras. These cameras take thousands of photos a day – more photos than any person or team of persons can possibly sort through. Many conservation organizations look for volunteers or citizen 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 can be done anywhere!
- Research involves testing subjects. – Research is collecting information to increase knowledge. This can be done by testing subjects or things, making observations, recording information such as temperature, speed, etc., or by gathering information by looking things up in a book or on a computer.
- Research is difficult to do and requires advanced degrees. – Research can be done by anyone!

Inquiry

Your primary goal as facilitator is to encourage youth to think like scientists. You can prompt those discussions with questions like the following:

- What are you noticing about the photos you are looking at?
- What do you think are some of the challenges that researchers face in the field?
- 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 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 (5 MINUTES)

Lead a discussion with the group - What is research? What do you think of when you hear the word "research"? List their ideas on a white board or chart paper.

Discuss the definition of research. Research - work to increase knowledge and use this new knowledge to devise new applications. Can anyone think of an example of research based on that definition?

Think about rhinos. What do we know about rhinos? Ask youth the following questions and how they might find the answers if they do not know them.

- How many species of rhinos are there? (5 different species)
- Are they grazers – eating grasses on the ground, or browsers – eating leaves off trees? (Some are browsers, some are grazers)
- Do they live in family groups? (No they live alone)
- Can they see well? (No they have bad eyesight)
- Are there are lot of rhinos in the wild? (No they are endangered)

How do we know all of this information? Someone did the research! Scientists such as wildlife biologists, conservationists, college professors, etc. research animals to learn new things about those animals and their habitat.

How could wildlife research be helpful?

- Monitor populations
- Discover causation of population declines
- Understand how to care for populations in human care

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 (20 MINUTES)

Wildlife researchers have a question that they hope to answer through their learnings which acts as a guide for what they should be looking for or collecting data about. These questions should be fairly specific.

Examples of research questions might be:

- Do chimpanzees use tools? How? What kind? In what way?
- What are the reason(s) for giraffe population decline in Namibia?
- What materials do Iowa waterfowl use to build nests?

- How much activity do the giraffes at BPZ get in the winter vs summer?

Some research can take years of collecting data! Sometimes wildlife researchers ask for help from “regular people” in collecting or analyzing data for their research. Examples of local citizen science projects are: Monarch Watch, North American Amphibian Monitoring Project, Bird Nest Monitoring Project (Bald Eagles, Osprey & Peregrine Falcon), and Acoustic Monitors for Bats.

Today we are going to help the scientists at [Penguin Watch](#) with their research.

Set groups up with computers to log on to Penguin Watch to mark photos of penguins with Penguin Watch.

Have youth first read over the FAQ section (<https://www.zooniverse.org/projects/penguintom79/penguin-watch/about/faq>) to learn about what they should and should not mark on photos and what photos should be disregarded.

Help youth if they start to feel overwhelmed. Let them know it's better to not mark something if they are unsure.

Once they feel ready, have them start looking at photos. Encourage them to take their time and not rush. Some photos they may sort through faster than others.

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:

- How is wildlife research different in the wild vs at the zoo? What are the benefits of doing research at the zoo? (less cost, close proximity to animals, animals are easier to find, we have a history of the care of these animals, health records, birth data, etc.)
- What are the benefits of doing research in the wild? (wider range, observe interactions with other species, natural habitat)
- What other kinds of research is being done or should be done?
- What kinds of research can we participate in with wildlife in our area?

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.