



TEACHER GUIDE

OHIO ANIMAL ADAPTATIONS

DESCRIPTION

All living things require the same basic needs in order to survive, but each species has unique adaptations to help them. Students will use animal beaks, skulls, and furs to figure out how local Ohio animals get their food in the wild. By comparing many Museum specimens, students will be able to identify the characteristics that help each species eat without being eaten themselves.

OBJECTIVES

- Identify the basic needs of all living organisms.
- Observe animal beaks, skulls and furs.
- Infer where in the environment each animal gets its food based on its physical characteristics.
- Identify key adaptations that help each animal survive.

OHIO'S LEARNING STANDARDS

Kindergarten

Science: Life Science – Physical and Behavioral Traits of Living Things

- Living things have specific characteristics and traits.
- Living things have physical traits and behaviors, which influence their survival.

Grade 1

Science: Life Science – Basic Needs of Living Things

- Living things have basic needs, which are met by obtaining materials from the physical environment.
- Living things survive only in environments that meet their needs.

Grade 3

Science: Life Science – Behavior, Growth and Change

- Offspring resemble their parents and each other.
- Individuals of the same kind of organism differ in their inherited traits. These differences give some individuals an advantage in surviving and/or reproducing.
- Plants and animals have life cycles that are part of their adaptations for survival in their natural environments.



BEFORE YOUR PROGRAM & HOW TO SET UP YOUR ROOM

- Please have student desks clear before the program begins.
- Please provide an empty desk or small table for the museum educator to set up display items.
- If booking multiple programs, transitions will be easier if museum staff sets up in only one location.
- Introduce the vocabulary and additional resources provided below.

VOCABULARY

habitat – the place where an organism lives

adaptation – a body part, body covering, or behavior that helps an animal survive in its environment

shelter – something that an animal uses for its home which protects it from the elements

rostrum – the beak---like projection of an animal

wetland – lowland area, such as a marsh or swamp, that is saturated with moisture

food – material which provides animals with energy to survive

forest – a habitat containing a large growth of trees, plants, and underbrush

EXTENSION ACTIVITIES

Check out museum science:

- The attached article, “The Science of Watching Birds,” is based on a research report by CMNH ornithologist, Tom Bartlett. Follow along on Tom’s bird banding project to learn how the birds reveal the biodiversity of a habitat and how scientists work together to track migration routes. Students will encounter standards-based content (see key words below) and practice navigating common informational text features such as sub-headings, glossaries, maps, charts and images. Did Tom’s work inspire more questions? The article also includes suggested ways to keep your class involved in current science.

Schoolyard Habitat Exploration

- Take the students outside and have them explore their schoolyard habitat.
- Ask them to list the animals and plants they see.
- Do any of the animals have adaptations that help them live in their habitat?

Schoolyard Habitat Book Report

- After our visit, have the students pick one of the animals we discussed or one they observed in your schoolyard and have them give a short report on it.
- The report should include the animal/plant name (common and scientific), a drawing of the animal/plant, its special adaptations, food preferences (animals), habitat, and other specific information of interest to the student.
- Once the reports are completed, an “Ohio Animals” habitat book can be put together and displayed.

EDUCATOR RESOURCE CENTER (ERC)



Educator Resource Center
CLEVELAND MUSEUM OF NATURAL HISTORY

Celebrating 30 years of supporting science education

The Educator Resource Center is dedicated to providing teachers with the classroom resources and professional development they need to create dynamic, enriching, and inquiry-based experiences for their students.

Contact the ERC at 216-231-2075 for information on individual or school membership.

Visit the Museum's ERC website for more information

<https://www.cmnh.org/ERC>

MATERIALS FOR LOAN

With close to 100 dioramas and over 130 thematic teaching kits, our lending library has the materials you need to make science come alive for your students.

If you're interested in additional resources be sure to check out the following ERC materials or browse ERC materials online at <https://cmnherc.myturn.com/library/>

EDUCATOR PROFESSIONAL DEVELOPMENT

Get connected to trending teaching methods, best practices in science education, and hot topics in current scientific research.

To learn more visit

<https://www.cmnh.org/learn/educator-resource-center/educator-workshops>

Email inquiries to erc@cmnh.org.



THE CLEVELAND MUSEUM OF NATURAL HISTORY

Produced and published by the Education Division
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The Science of Watching Birds

Adapted from Tom Bartlett's 2015 research report: Kelleys Island, Ohio, Bird Banding – Avian Research Project

Do you ever wonder where birds are going? If so, you are thinking like a scientist!

Meet the Scientist

Tom Bartlett is an **ornithologist**. He studies birds for the Cleveland Museum of Natural History. Every year, Tom goes to Kelleys Island, Ohio with a team of scientists from the museum and the local Audubon club. They have been watching birds at Kelleys Island for 20 years!

Tom asks a lot of questions. He wants to know:

- How many types of birds visit Kelleys Island?
- Where do the birds go?
- Do the same birds ever come back?



Image provided by Tom Bartlett.

Tom and a Northern Saw-whet owl

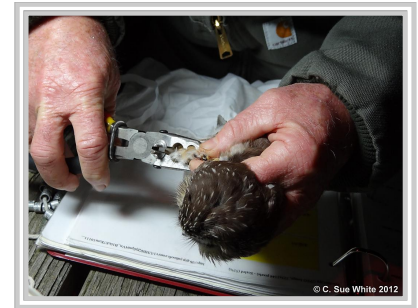
How do you think Tom finds the answers to his questions?

Experiment Steps

Tom's tool for studying birds is called **bird banding**. Each captured bird gets a band with a special number. Tom records the number and notes about the bird so the next ornithologist who finds it can learn where it came from.



A Northern Saw-whet owl caught in a net



Putting a metal band on the owl's leg

How it's done:

- 1) Hang a big net between the poles.
- 2) Wait for a bird to get stuck in the net.
- 3) Carefully get the bird out of the net.
- 4) Put a metal band around the bird's leg.
- 5) Release the bird so another scientist can find it.

Ornithologist: (or-ni-thol-o-gist)

A scientist who studies birds

Bird Banding: One way scientists track birds.



Coopers Hawk
Image from allaboutbirds.org

How many types of birds visit Kelleys Island?

A bird needs a healthy **habitat** to find food, water, and shelter. The more types of birds Tom and his team find means the healthier the habitat is.

In 2015, Tom found 67 different **species** of birds. That means 67 different types of birds were banded on Kelleys Island. Ornithologists call the number of different species living in one area **biodiversity**. Even though 67 sounds like a lot, this is less biodiversity than last year. Tom thinks one species, the Coopers Hawk, might have scared some of the others away.

The Coopers Hawk is a **carnivore**. Coopers Hawks like to eat small rodents and other birds. This is the first year in a long time Tom has seen a Coopers Hawk near his project.

Do you agree that other birds might hide from the Coopers Hawk? Why or why not?

You Try!

Use Tom's data to answer the questions below.

| Year | 2011 | 2012 | 2013 | 2014 | 2015 |
|-------------------|------|------|------|------|------|
| Number of Species | 68 | 73 | 71 | 78 | 67 |

1. How many types of birds did Tom find on Kelleys Island in 2015? _____

2. Which year did Tom find the most biodiversity on Kelleys Island? _____



Habitat: (*hab-i-tat*) A place with food, water and shelter for a plant or animal to live

Biodiversity: (*bio-di-ver-si-ty*) The number of different species living in one area

Species: (*spe-cies*) A certain type of plant or animal

Carnivore: (*car-ni-vore*) An animal that only eats meat



Scientists observing a Northern Saw-whet owl's eye color

Where do the birds go?

Bird banding helps scientists learn about **migration**, but only if they work together. At the end of October, Tom caught a Northern Saw-whet Owl who already had a band on its leg. The band was not from Tom's team. A different ornithologist in Northern Michigan had already caught this bird in September, just one month before. Tom found the bird in Ohio. Recapturing birds teach scientists where they go.

You Try!

1. Draw a line from Northern Michigan to Ohio on the map.
2. What direction did the Northern Saw-whet owl fly? _____
3. Does Tom's data support what scientists say (below)? _____

Scientists Say: Northern Saw-whet Owls like cold weather. They can live in northern areas year round, but wait until winter to fly south.



How do ornithologists work together to track bird migration?



Baltimore Oriole

Do the same birds ever come back?

Tom learned that some of the birds he caught this year have been to Kelleys Island before. One Baltimore Oriole already had a band from Tom's team around his leg. First, Tom read the number on the band. Then, he checked his notes. Tom learned that he caught the same Baltimore Oriole on Kelleys Island four years ago! Some birds like the Baltimore Oriole return to the same place every year to make their nest and lay eggs.

Migration: (*mi-gra-tion*) The path an animal moves when the seasons change.



Kids carefully touch a bird before Tom releases it.

Over the past 20 years, Tom and his team banded a total of 9,241 birds on Kelleys Island. The team works hard to identify the birds and track where they go. Studying birds teaches them about biodiversity and migration, but there is still more to learn. If you have questions like Tom does, check out how you can get involved.

Learn More:

Learn more about birds with the Cleveland Museum of Natural History. You can visit our gallery of Ohio Birds, ask your teacher to check out bird teaching tools from our Educator Resource Center, or check in on our Ornithology department to see what else is being discovered.

Visit www.cmnh.org to learn more.

See the Experts in Action:

Visit Kelleys Island to see bird banding in action.

Visit www.kelleysislandnature.com to see what events are coming up next.

Don't forget about your local nature center or Audubon Club – they may offer events too!

Try it Out:

Observe the birds in your neighborhood! Citizen Science programs like Celebrate Urban Birds need your help. Work as part of a team to record which birds visit your neighborhood. You can even download free guides to help you identify your new feathered friends.

Visit www.celebrateurbanbirds.org to learn more.

References Cited

Bartlett, T. (2015). Kelleys Island, Ohio Bird Banding- Avian Research Project 2015 Summary of Data

Cornell University (2015). All About Birds Bird Guide. Retrieved from www.allaboutbirds.org

Kelleys Island Audubon (2015). Island Birding. Retrieved from www.kelleysislandsaudubon.com