

Behavioral Ecology: Bird Behavior

Lesson guide: Click [here](#) for instructions on how to use this lesson.

Introductory video: Begin this lesson by watching [this video](#).

Overview: Behavioral Ecology studies how animals develop, control and evolve their behavior. Through behavioral ecology we can ask questions like: How does their behavior contribute to their survival and reproductive success? How do abiotic and biotic factors affect their behavior? Does human activity affect their behavior? Do animals compete or cooperate? These studies include how animals learn, communicate, forage, reproduce, and socialize.

Scientists study animals by observing, experimenting, and comparing. Behavior is the link between organisms and the environment. The beauty of an animal includes its behavioral attributes. Who is not moved by a synchronized flock of birds, or a



single file line of migrating lobsters? By studying animal behavior, humans can learn more about their own behavior as well. Animal behavior research is particularly relevant to the study of human behavior when it comes to the preservation of a species, or how an animal's behavior helps it survive. The behavior of animals can often provide the first clues or early warning signs of environmental degradation by humans.

Bird behavior: To begin looking at behavioral ecology, it's useful to select one type of animal and consider its traits. This lesson will focus on birds as an example of behavioral ecology. Until recently, many researchers believed there were between 9,000-10,000 different species of birds. A new study by the American Museum of Natural History instead suggested that there are almost 18,000 species of birds. Bird behavior varies greatly between species, as some birds are mostly water dwelling animals, and others live in trees, in brush, on land, or even prefer high elevation areas like cliffs or mountains. There are five traits that define a bird, including feathers, wings, beaks or bills, laying eggs, and having an adapted skeleton suitable for flight. Because these traits vary widely between species, so does a bird's behavior. Examples of bird behavior include nesting habits, mating, hunting, and feeding chicks. Birds have also adapted over time for species preservation and changing climate.

Reading resources:

Bird and human interactions: Animals tend to be thought of as wild and humans often consider themselves lucky when they get to experience wildlife. Birds are a type of animal that are often found to be interacting with humans and have been seen feeding from food humans hold in their hands. This study aims to identify the [associations between a bird's willingness to eat out of human hands as a behavioral trait and whether human interactions can be attributed to a bird's behavior](#). Scientists reviewed bird species that have been shown to feed out of human hands and associated this behavior with other ecological traits. This behavior of birds indicates that humans can have an affect on animal behavior along with the ecological factors that influence animal behavior.

Human impacts on wild

birds: During the winter on Chickadee Ridge in the Mount Rose Wilderness, visitors have the opportunity to hold food out in their hand and chickadees come and eat right out of their hands. However, many consider feeding wildlife to be immoral. There are no laws in the region indicating that you cannot feed the birds, but experts say that you should think twice before feeding them and that there are



impacts to the birds that go beyond what a visitor might think about. These birds are being taught to associate food with humans and have subsequently changed their behavior around humans. This [article from the Tahoe Daily Tribune](#) talks more about the debate over interacting with wild birds.

Bird behavioral traits: There are several behaviors of birds that one can observe to better understand why a bird does what it does. Some of these behaviors include feeding, territorial protection, courtship, nest building, mating, predator evasion, fledgling behaviors, flocking, and migration. All of these behaviors vary within different types of birds. One particularly interesting bird behavior is the protection by a bird of its territory. Birds tend to be more assertive when they are in their home territory and their level of dominance changes with location. Birds also compete for resources in the same area, and some even exhibit interesting behaviors that may ultimately lead to cooperation between the different birds. This **colonialism** can be very **advantageous** to birds and the foraging and protection of the birds may increase. Read more

about bird behavior in the [easy guide to understanding bird behavior](#) or this article on why birds behave the way they do from [Ornithology by Frank B. Gill](#).



The hoatzin has a distinctive smell and is called the “skunk bird”. This smell is due to the plants it consumes, but also helps it repel predators.

Bird Behavioral Adaptations: (can group these two in the same section)

Birds, like most species on the planet, are greatly affected by our changing climate. Birds have adapted to almost every environment, and their adaptations have been integral to their survival. You can read more in [this guide to climate effect on birds](#). Temperature, wind, and length of days all have effects on birds. When days are shorter in the northern hemisphere birds who breed here may not be able to spend the winter in the same location because they cannot eat enough during the daylight hours to sustain themselves. Temperature also has a large impact on birds because it impacts how vegetation grows, and therefore affects food resource availability. Birds have adapted both physically and behaviorally over time, including adaptations in their feet and legs, how they find food, and how they fly. In [How Do Birds Survive?](#) you can read more about birds' adaptations for survival.

Video resources:

[What causes behavior in animals](#) - an explanation of behavioral ecology and why animals have differing behaviors.

[Study on nesting boxes](#) - Scientist Dr. Mark Stanback gives a talk on his research on nesting boxes to reduce competition between bird species

[Lunch With A Scientist on Hawaiian birds](#) - Avian ecologist Seth Judge describes threats to endangered Hawaiian Honeycreepers and discusses current efforts for preventing their extinction.

Sample Research Project:

Project: Headwaters' bird feeder observation project

Methods: Make or buy a bird feeder and use it to track bird behavior over time. See how to do it in [this video](#).

Supplies: a milk carton or plastic jug, bird seed, scissors, string.

Sample research questions:

- When are the birds the most active?
- Do birds prefer one type of food over another?
- What types of behaviors can be observed between species that visit the feeder?
- Do different species feed more often?

Additional options: [Bird Behavior Research project](#) - this comprehensive unit for grades 6-12 offers several activities for students to explore bird behavior.

Real world examples: This [Citizen Science Bird opportunity](#) is a great way to see the overall behavior of birds in an area on a larger scale.

Bird Behavior Worksheet

Complete these discussion questions after reading about bird behavior and behavioral ecology.

1. In your words what does behavioral ecology mean and why is it important?

2. Name 2 benefits to the bird species from hand feeding by humans? Name 2 problems for the bird species from hand feeding by humans?

Benefits: _____

Problems: _____

3. Have you noticed any changes in animal behavior from human activities near you? Explain.

4. Explain how humans have affected the behavior of the chickadees on Chickadee Ridge.

5. Come up with 3 research questions you could ask to study the behavior of birds.

1.

2.

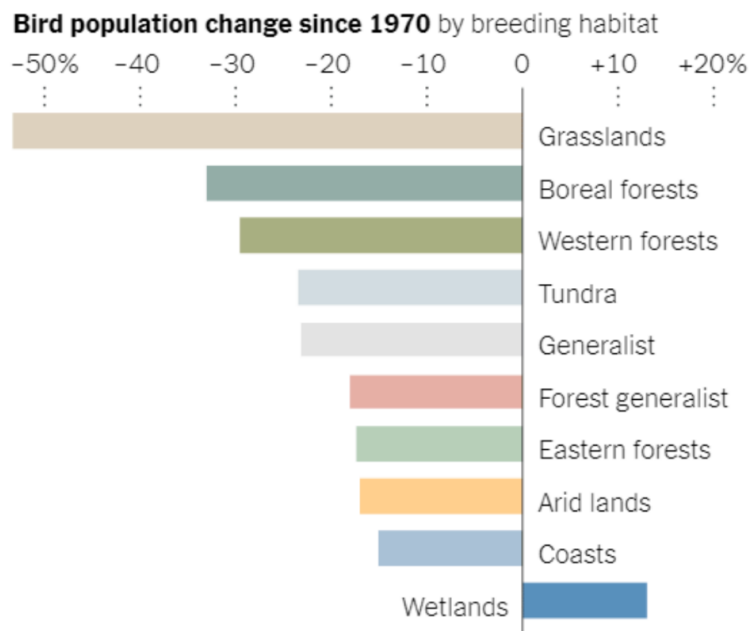
3.

6. List 3 possible behavioral adaptations of birds and how it would impact preservation of species.

A.

B.

C.



7. The graph above shows bird population change in the US by habitat. What information does the graph present? Explain the implications of the data presented here.

Bird Behavior teacher answer key

Standards in this activity:

MS-LS2-1; MS-LS2-2; MS-LS2-4 Ecosystems: Interactions, Energy, and Dynamics

HS-LS2-1; HS-LS2-2; HS-LS2-6; HS-LS2-8 Ecosystems: Interactions, Energy, and Dynamics

SEPs: Analyzing and interpreting data

Constructing Explanations and designing solutions

Scientific knowledge based on empirical evidence

Planning and carrying out investigations

CC: Cause and effect

Stability and change

Patterns

1. In your words what does Behavioral Ecology mean and why is it important?

Behavioral Ecology is studying how and why animals behave the way they do.

It answers questions like: How does an animal learn, communicate, forage, reproduce, and socialize? Do animals compete or cooperate or both? It is important to study animal behavior because it can help us make better decisions about lessening our impact on animal populations.

2. Name 2 benefits to the bird species from hand feeding by humans? Name 2 problems for the bird species from hand feeding by humans?

Birds who feed off of human hands have larger numbers of innovative behaviours, a higher rate of success in inhabiting new places, larger breeding range, larger population size.

Birds who feed off of human hands have a higher probability of being captured, can be malnourished from non-native food, may not cache food they need for the winter, and have changed their foraging behavior because of the feeding.

3. Have you noticed any changes in animal behavior from human activities near you?

Varied answers: bears have learned that houses and garbage cans have a lot of easy, accessible calories so their behavior in the Spring and Fall means more frequent human contact. Canada Geese have shortened their migrations because of available food in public parks from humans. Mice have inhabited houses because of food and shelter. Migrating Mule Deer have changed their migrating path because of impassable freeways.

4. Explain how humans have affected the behavior of the chickadees on Chickadee Ridge.

Feeding the chickadees has been advertised as a tourist activity so the chickadees expect the humans to have food for them. They associate humans with food and not as predators. Because the birds get lots of food there is a chance that they are not storing enough food for the winter. Some people may be feeding the birds processed food which is very unhealthy for the birds resulting in malnourishment which could weaken the bird and decrease its foraging behavior. It also may keep the chickadees from migrating if that is their normal behavior.

5. Come up with 3 research questions you could ask about birds:

1. *Do birds compete for habitats?*
2. *Is there a size limit of birds who will feed off of human hands?*
3. *How does a bird's color impact its likelihood for species preservation?*

6. List 3 possible behavioral adaptations of birds and how it would impact preservation of species.

Answers vary: choice of nest placement, feeding from human sources, sound and length of bird call, moving to a habitat closer to food, moving to a habitat based on temperatures. Most of these adaptations would increase species preservation: e.g. making a bird safer/more easily hidden in nature, less susceptible to predators, gain more sources of food, etc. Birds who have to move based on weather/temperature may be more susceptible to species decline due to eventual loss of habitat.

7. The graph shows bird population change in the US by habitat. What information does the graph present? Explain the implications of the data presented here.

Varied answers: the graph shows major loss of habitat. The last 50 years has likely presented species decline. Wetlands could be increasing due to specific preservation of those areas, or birds are forced to migrate there as grasslands are lost. Many behavioral adaptations will likely be seen in birds due to these changes, etc.

