Wildlife Science @ Home: Animal Behavior

STUDENT ACTIVITY

Time
30-60 minutes; Smaller 5 minute timeframes can be repeated over multiple days

Materials
- Notebook to use as a research journal
- Pen or pencil
- Access to animals to watch (e.g., backyard birds, pets, live streaming web cams)
- Clock, watch or timer

The study of animal behavior, or ethology, is important. It helps us better understand the world around us and how animals interact within that world. We can use that knowledge to better manage wildlife to prevent species from going extinct. But how do scientists actually study animal behavior?

Ethograms are one tool that scientists use to collect and display animal behavior data. At its most basic level, an ethogram is a complete inventory or list of all of the behaviors that a particular species is known to exhibit. But, it is also a data collection tool that can be used to organize behaviors to allow better analysis of what behaviors are most common.

You will now have the opportunity to become an ethologist by using an ethogram to collect and analyze the behavior of an animal that you observe.

To get started, you first need to decide which animal you will study. This should be something that you can easily observe for 15-30 minutes at a time. For our purposes, you should focus on a single animal rather than a group of animals. Some options include:

- A pet. A dog or cat would be the easiest compared to a fish, for example.
- A small animal in your yard, like a dove, rabbit or lizard.
- An animal broadcast over a live streaming web cam, such as the great horned owl found on the Arizona Game and Fish Department's web cam page: https://www.azgfd.com/wildlife/viewing/webcamlist/

Do the Science

1. Find a comfortable place to observe your chosen animal. You should be in a location where your presence isn't going to change the animal's behavior.
2. Observe the animal for 15-20 minutes noting all of the different things that the animal does. Write these down in your research journal.
3. Look at your list. Do you notice any similarities between some of the behaviors? Try grouping all similar items into a single category. Some behaviors may be by themselves in a category. Determine a name or label for each of your categories. For example, while you were observing your dog, you may have noted times when he was

laying on his back resting and other times when he was actually sleeping. You may decide these two actions are similar and can be grouped into a single category labeled "Resting." The table to the right lists some common behavior categories you might find useful. You can use these or create your own. Include your categories in your research journal.

Example Category Labels and Definitions

Feeding - eating food or feeding another animal
Moving - walking, flying, jumping or otherwise moving
Preening - cleaning, licking or scratching its feathers, fur or body
Resting - lying down or perching with no other actions; eyes may or may not be open.
Vocalizing - making a noise such as singing, howling or purring

4. Create a clear definition for each of your categories. You need to ask yourself: if someone else were using these categories for their own ethogram, would they be able to understand what I mean? See the table to the right for examples. Write these definitions in your research journal.
5. Now you can create your ethogram in your research journal. We are going to use a technique called "all occurrences sampling." In this research method, you watch your animal for five minutes and mark every time you see the animal perform a behavior. Your ethogram should be a table with 3 columns. The first column should list all of your behavior categories. (You may consider adding an "Other" option, as well, to capture potential behaviors you haven't seen yet.) Another column should be titled "Occurrences." This is where you will make hash marks each time you observe that behavior. And the final column should be titled "Total." This is where you will add up the hash marks from column 2 in order to get a numerical total for all of the occurrences of each behavior. Include this ethogram table in your research journal.
6. Once again, find a comfortable place to observe your animal. Set your timer for 5 minutes and begin observing. Each time you notice a behavior, add a hash mark in the appropriate box on your data table.
7. Once the 5 minutes is complete, add up all of the hash marks for each behavior and put the total in the appropriate box. Graph your results in your research journal..

Think about It

Look at the graph in your research journal. Which behavior was observed most frequently? Least frequently? What does this information tell you about your animal? Were these the results you expected? Why or why not?

Your data is a single snapshot into the life of your chosen animal. Does it tell the complete story? Do you think you would get similar results if you observed it at another time of day or for a longer period of time? Do you think these results would be consistent from day to day? Why or why not? What could you do to try to get a more accurate representation of this animal's behaviors? Did your data result in any new questions that popped into your mind? How would you go about trying to answer these new questions?

Don't forget to record all of your thoughts and responses to these questions in your research journal. A written record of your science is important!

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TEACHING GUIDE

In this activity, the student will create and use an ethogram to better understand animal behavior. An ethogram is a data collection tool that allows a scientist to record the frequency or times that an animal or a group of animals is doing certain actions.

Time

The actual time spent on this activity is minimal, 30-45 minutes minutes. However, the student may decide to expand his or her observation time over the course of a single day or multiple days. This should be encouraged as appropriate.

Teaching Tips, Modifications and Extensions

- If a pet is selected as the observation subject, it is recommended that they select an animal that has easily observed and characterized behaviors. Dogs and cats serve as good research subjects. Although not impossible, some pets may be harder for students to recognize familiar behaviors. This could include fish and reptiles.
- A wild animal from the yard may be the most difficult option. The presence of these animals is often unpredictable and they may not stay long enough to observe for meaningful data collection. Also, you should make sure that the student does not try to touch the animal or otherwise disturb it. You want the animal to behave as normal as possible. Observing from inside the house through a window is one strategy.
- Using a live streaming web cam (or even archived footage) is a good substitute when no other animals are available to observe. The Arizona Game and Fish Department has a collection of web cams that can be found at https://www.azgfd.com/wildlife/viewing/webcamlist/. However, there are numerous websites that have additional animal web cams from around the world. Make sure to check out the web cam before doing this project, however. Some web cams, especially ones focused on a nest, are seasonal. The animals may not be present.
- If time permits, students should be given the opportunity to carry out similar experiments to address some of the questions that arose at the end. They can also be given the opportunity to suggest (and even perform) modifications to this experiment to improve their results. This might include observing multiple animals or changing the time of observations. There are also other types of data collection techniques that can be used. We used “all occurrences sampling” in this specific project. Another common technique is called “scan sampling” or “interval sampling.” In this case, the student documents what behavior is observed at a specific time interval (e.g., every 30 seconds) for a predetermined amount of time, like 10 minutes. This would require a different data table.