Wildlife Science @ Home

Reptile Diversity

STUDENT ACTIVITY

Time

5-10 minutes for observations, 1 set of observations per week for a month; additional 30 minutes for preparation and analysis

Materials

- Notebook to use as a research journal
- Pen or pencil
- 2 pieces of wood of equal size (approximately 3 feet in each direction)
- Gloves to use when checking the boards
- Camera (optional)

Reptiles are known for having special skin made up of scales or bony plates. Unlike birds or mammals, reptiles are unable to regulate their body temperature. They must use the temperature of their environment to help them cool down or warm up. If they are cold, they will move to a warmer area, like a sun-exposed rock for more heat. If they are too hot, they will move into the shade or a burrow to cool down.

Reptiles can also be secretive and elusive. For a biologist who is studying reptiles, this can be a challenge. It is hard to understand how reptiles are doing if you are unable to get an accurate count of their populations. As a result, biologists have developed a number of techniques to survey, or count, these animals. One of these methods is a coverboard.

Many reptiles live in piles of leaves, sticks or rocks. This keeps them protected from potential predators and allows them plenty of options to warm up or cool down as necessary. It also keeps moisture in, which is important in the arid desert. A coverboard is designed to mimic this natural debris habitat. It is usually a large piece of wood that is placed on the ground. Biologists will place coverboards in areas that appear to have a lot of reptile activity in the hopes that some of these animals might use the coverboards as a refuge. If multiple coverboards are used, biologists can then compare different areas to better understand reptile habitat preferences.

While coverboards are often used to study reptiles, other animals often make use of coverboards. This includes small mammals, insects, spiders and scorpions. It is not uncommon for frogs and other amphibians to use them, as well, usually for the same reasons that the reptiles would use them. For this reason, coverboards can offer an interesting snapshot into the animal diversity of an area.

You will have the opportunity to be a wildlife biologist and use coverboards to study the reptile diversity near you. You will have access to two pieces of wood. The first thing you will need to do is select two areas to place the coverboards. These should be different, so that you can compare reptile diversity. It could be one area in shade and one in the sun. Or maybe it is an area near water and another close to your house. It is up to you what two areas you want to compare. The only consideration is that the boards will need to be out for an extended time (up to a month). So you want to make sure they can remain there without being disturbed. The longer you are able to leave them out, the better your results will be. You want to give the animals time to find the coverboards and be comfortable using them. If they are constantly being disturbed, then it is less likely that animals will choose them.

Do the Science

1. This activity is best carried out with the assistance of an adult.
2. Select two areas to study. They should be different. Potential locations include shady, sunny, grassy, rocky, under a tree, out in the open, etc. Make sure you choose locations that are easily accessible and won't be disturbed. Describe these locations in your research journal.
3. Place a piece of wood flat on the ground at each location.
4. Wait a week and then return to the research site.
5. Carefully, grab one edge of the wood and pull up to expose the area underneath the board. Make a note of all of the animals, if any, that you see. You will likely need to be quick since the animals will likely move away from the sudden light change. If possible, you can take a picture as soon as you pull up the board to help with identification later. Be sure to look on the underside of the board to make sure there are not any animals clinging to the wood. Also, be cautious because you do not know which animals you might find. Record your observations in your research journal.
6. Replace the wood back to the ground where it was located and repeat for the other board.
7. Repeat steps 3-5 for the next three weeks for a total of four observations.

Think about It

Look at the data in your research journal. Are you able to draw any conclusions about reptile and amphibian diversity in this area? Does there appear to be a difference in the number of animals observed at your two locations? Did you observe the same type of animals at each one? What might explain the differences you saw?

Science never stops. Our observations and data answer some questions, but in the process they create new questions. We take the knowledge we gained from an experiment and apply it to new research. This is how we continue to improve our understanding of the natural world. Based on the results of this experiment, what new questions do you have? Can you design an experiment to answer those 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 use a common technique to survey for reptiles and amphibians at two different outdoor locations. Then, the student will analyze data to compare the diversity at the two locations.

Time

The actual time spent on this activity is minimal. It should take about 15-30 minutes to set up and clean up. Each observation should only take about 5-10 minutes and should take place once per week for about a month. The boards should remain throughout that time.

Teaching Tips, Modifications and Extensions

- You will need two pieces of wood for this project. The wood can be any type of cheap scrap wood. The exact size of the wood is not important, however, they should be a decent size. Approximately 3 feet in both length and width is a good size that will provide adequate cover. If you get much smaller, then you risk not making a suitable habitat for the animals. Both pieces of wood should be about the same size.
- Make sure the boards are placed in an area where they can remain undisturbed throughout the length of the project. We recommend a full month with a single observation each week. This gives time for animals to return after each disturbance. However, you could shorten the time between observations if necessary.
- Care should be taken when lifting the board to check for animals. It is possible that snakes, spiders and scorpions could have sought refuge. Ideally, you should lift the board up toward you so that it serves as a barrier and any animal could move away from you if startled. Be sure, however, to check the underside of the board itself to make sure that nothing is hiding on it. You may consider using gloves. An adult should be present whenever the boards are checked.
- Animals may move quickly once the board is picked up. You might consider having two people involved in this project. One person can pick up the board and the other can make the observations. It is even better if the second person can take a picture. This will document any animals that might have been missed.
- 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 testing different coverboard materials (like metal and cardboard) or additional locations.
- Check out the Bird and Insect Diversity Wildlife Science @ Home activities for other sampling techniques. In addition, you could look at the Ectotherms Wildlife Science @ Home activity for a simulation on how reptiles control their body temperature.