Focus Wild Arizona

Key Words:

Inference: a conclusion based on observation

Observation: a fact that was collected using one of the five senses

Population: a group of animals or plants of the same type living in the same area

The Arizona Game and Fish Department has the very important job of managing Arizona's wildlife. It is our responsibility to ensure that the wildlife Arizonans see and enjoy today will be around in the future.

To manage wildlife successfully, we rely on science. We use scientific methods to study the animals. Some questions we try to answer: Where do the animals prefer to live? What foods do they eat? We also use science to study wildlife **populations**. We want to know: How many of the animals are there? What are some threats to their survival?

The department's biologists are highly trained scientists who developed their science skills with years of education and training. However, anyone can be a scientist. In fact, you have some of these skills already. You just may need to develop them a little more.

Observation may be the most important skill for scientists. The ability to observe and describe the natural world is the basis for science. We make observations by seeing, listening to, touching, tasting and smelling the world around us (at least, when it is appropriate and safe to use those senses!). Everyone can observe. Even better, with practice you can improve your observation skills.

Do the science:

Take a look at these two pictures. Write down your observations for each one. Remember: Because these are only pictures, your observations should be limited to what you can see on the page (don't make up sounds, smells, etc.).

Photos by George Andrejko

Picture A Observations:

Picture B Observations:

By Eric Proctor

If you make careful observations, you start to notice differences between two things that at first looked alike. You also notice when something doesn't seem "normal." Once you have made observations, you can make **inferences**. These are like educated guesses in which you try to explain your observations by moving beyond what you can see, hear, smell, touch or taste. For example, looking at the two pictures, you might have observed that the lizards have very different color patterns. As a result, you might have guessed they are two different species. Although this inference would be reasonable, it would not be correct. In fact, these are both chuckwallas, a common lizard found throughout Arizona's deserts.

That is the main difference between observations and inferences. Observations are facts. Inferences are interpretations or explanations of those facts. They might be wrong. Scientists develop experiments to determine if their inferences are correct.

Let's make some inferences. Why do you think chuckwallas might have different colors?

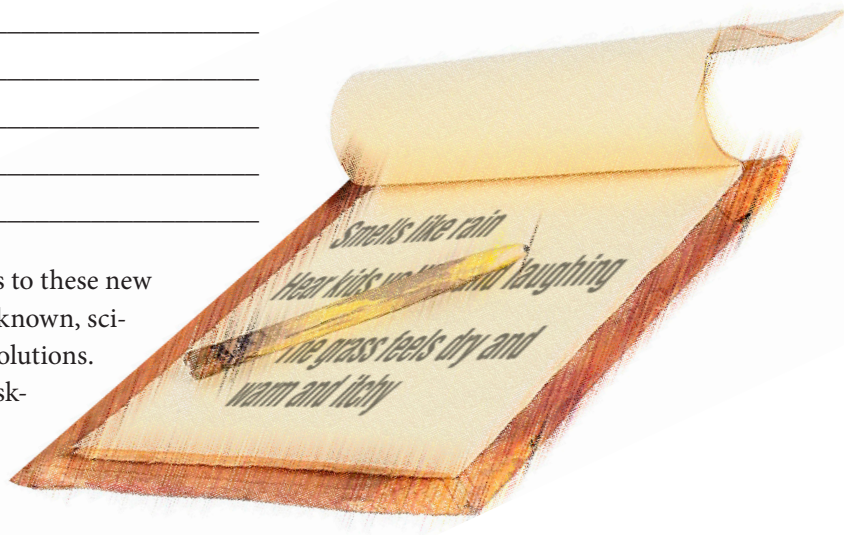
Perhaps you thought that boy chuckwallas and girl chuckwallas might look different. Or maybe babies look different from adults. These are reasonable inferences based on experiences looking at other animals. In the case of chuckwallas, males often have unique orange coloration on their backs, while females tend to be brown or gray.

The great thing about inferences is, they often lead to more observations, more inferences and more questions. For example, why do you think males (boys) and females (girls) have different colors?

If the answers to these new questions aren't known, scientists look for solutions. This process of asking a question, then finding an answer that leads to new questions to be answered, is how science is done.

Just for fun:

Now, put your science skills to the test. Grab a pencil and some paper, and find a nice place outside to sit down. Perhaps it is your backyard or a neighborhood park. Sit quietly for a few minutes and write down everything you observe. Don't forget to include what you smell, hear and feel. Once you have written down some observations, try to make some inferences. For example, if you hear a bird singing from a tree, try to explain why it is singing. With a little practice, you can be a great scientist! Are you up for the challenge?



▪ This feature is part of the Arizona Game and Fish Department's Focus Wild Arizona program, a free educational program for teachers, parents, students or anyone interested in learning about wildlife and habitat. Visit our Web site, www.azgfd.gov/focuswild, to find exciting lessons and resources.