



AS DAWN BREAKS ACROSS THE UMATILLA NATIONAL FOREST,

branches and foot trails are a-flutter with action as diurnal animals (those that are awake during the day) search for food and build homes. But did you know that when dusk settles in and those animals crawl into bed, nocturnal creatures (those awake at night) become active in the forest with their own hunts and home-building activities? In order to operate in a world without sun, many animals have adaptations different from humans. None is more obvious than the large eyes of nighttime animals, like owls.

How are the eyes of an owl different than those of a human? Both have eyes with two special types of cells - rods and cones. The rods help to see light and the cones help to see color. But one creature has more rods, and the other has more cones. Can you guess which is which? Think about it this way- would rods or cones be better for day vision? What about night vision?

For diurnal animals, it is less important to have help seeing extra bits of light because the sun shines brightly throughout the day. But seeing color is very helpful for them to tell the difference between all of the plants, animals, houses, and humans that inhabit the landscape. So diurnal animals, like humans, have more cones. Nocturnal animals don't have the sun to light their way, so even the smallest amount of light is important. So they have more rods in their eyes.

Now, which is which? Owls have more rods in their eyes, which helps them see better in the dark, and humans have more cones, which help them see in the light. Did you guess correctly?

But wait a second...humans aren't completely blind in the darkness, so what's going on? Well, the balance of rods and cones in our eyes gives us a little bit of night vision, but not as much as an owl. Want to test this out? Find a friend or relative and prepare for the darkness in order to learn more about how night vision works.

For more information about the Umatilla National Forest, visit <https://www.fs.usda.gov/umatilla>, or on Facebook at <https://www.facebook.com/UmatillaNF>

Raccoon graphic available from <https://www.vecteezy.com/free-vector/nature>

Tent graphic available from <https://www.vecteezy.com/free-vector/camping>





NIGHT VISION ACTIVITY

Preparation: You will need an adult to hold a candle or flashlight and to read a story about nighttime creatures. Each child will need a piece of paper and a colored crayon or marker, but don't look at the color ahead of time!

1. Ask an adult to hold a candle or flashlight while they read a story about nighttime creatures. While the kids are listening, they can also look at the candle and imagine the night life of the creatures of the story.
2. When the story ends, blow out the candle or shut off the flashlight. What do you see at that moment? How is your vision?
3. Right after the light goes out, draw or write something on the paper with your colored crayon or marker, and try to guess which color you have. Remember this guess for later.
4. Wait a few minutes in the dark, and notice if your vision is changing. If it is, how so? What is different? How do you feel after 10 minutes? 20 minutes? 30 minutes? Tell your family what has changed over time, if you can see better in the dark over time, and how that makes you feel.
5. Once you have finished your discussion, use the candle or flashlight to look at the drawing that you made on the paper. Did you guess the color of the crayon or marker correctly? Then think about an owl and their eyes. Would it be useful for them to have more cones in their eyes (to see color)? Why or why not?
6. Even though people can see a little bit in the dark, after we let our eyes adjust, can we operate in the darkness like nighttime animals? Why or why not? Share your thoughts.

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Owl graphic can be found at <https://www.vecteezy.com/free-vector/owl>

