

NATURE DETECTIVES

Fall 2004



Nocturnal Animals and Night Vision

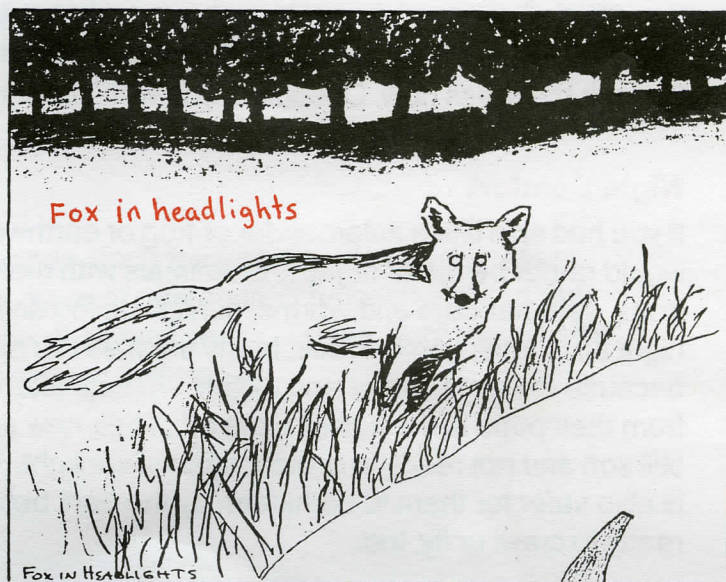
Nocturnal animals are animals that are awake and active during the night. Many nocturnal animals have keen senses of hearing, touch, and smell to get around in the dark. Most also have eyes designed to see when there is very little light.

Night Sight with Mirrored Light

Animals in scary stories often have eyes that glow in the dark. When car headlights reflect off the eyes of real critters beside the road, their shiny eyes do look a little spooky. Yet, eye shine simply doubles the amount of light inside the eyes of some nocturnal animals. Their eyes have a layer of mirror-like cells called tapetum, which reflects light back through the eye. The more light bouncing around inside the animals' eyes, the better they see in dim light.

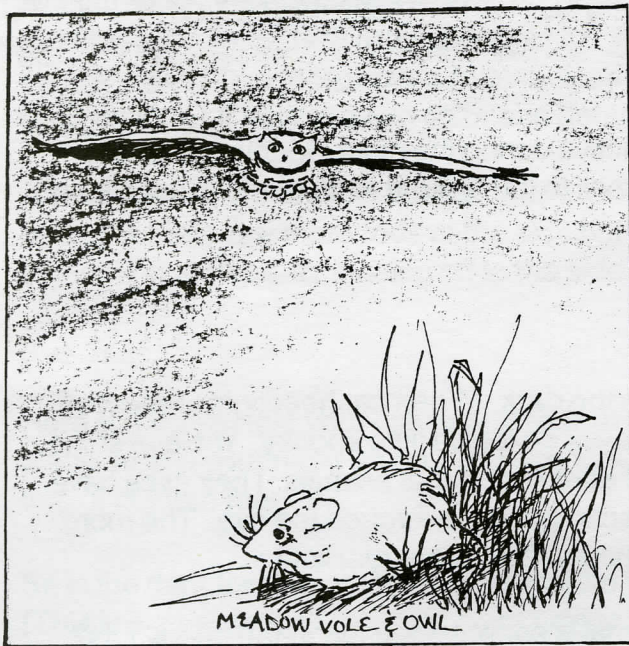
On dark nights, do you sometimes wonder what animal is caught fleetingly in the headlights? Different animals have different eye shine colors. Next time you go for a car ride at night, especially one along a less busy road, see if you can detect different colors of eye shine. You could keep a written list of animals you identify by their eye shine color. The chart below lists some common animals and the color of their reflected eye shine.

Animal	Eye Shine	Color
Dog & Cat		Green
Mountain Lion & Coyote		Green-Gold
Deer		Yellow
Opossum		Dull Orange
Raccoon		Yellow
Black-tailed Jackrabbit		Red
Skunk		Amber
Fox		White



Nocturnal Animals – Nighttime is the Right Time

At night, we humans sometimes feel nervous because our good imaginations fill in for our lack of vision in the dark. Every thump or rustling in the bushes starts our hearts racing as we imagine unseen dangers all around us. For many animals, night is just the opposite. Nighttime is when they enjoy working and playing. With keen senses of hearing, touch, smell, and nighttime vision, nocturnal animals feel most comfortable between sundown and sunup.



Night Crew

Bats, with their ultra-keen hearing, are an important part of the nighttime crew of insect eaters in Colorado. Some nocturnal animals use the same space and eat the same food as daytime (diurnal) animals. They just switch work hours. For example, think of moths sipping nectar at night and butterflies sipping nectar during the day. By searching for food at night, night hunters avoid competing with day hunters. Swallows are birds that hunt insects, including butterflies, during the day. Nightjars are birds that hunt insects, including moths, at night. Hawks search for rodent prey such as chipmunks during daylight. Owls become the rodent hunters at sundown, hunting mice and voles.

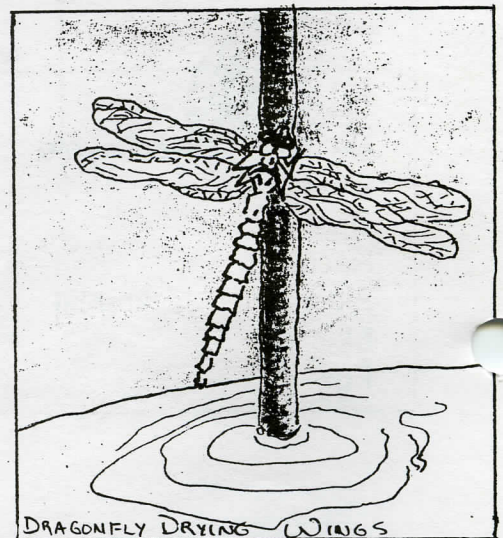
Night Safety

Animals like mice and meadow voles are nocturnal because they feel safer and more hidden from their enemies in the dark. Of course, foxes and owls hunt at night because the mice and voles are out then. With their super hearing, owls can pinpoint a vole rustling in the grass and snatch it without much need to use their keen night vision.

Meadow voles are very active in the fall so you have a good chance of hearing them running through the grass now. Of course, you won't hear them from as far away as an owl.

Night Comfort

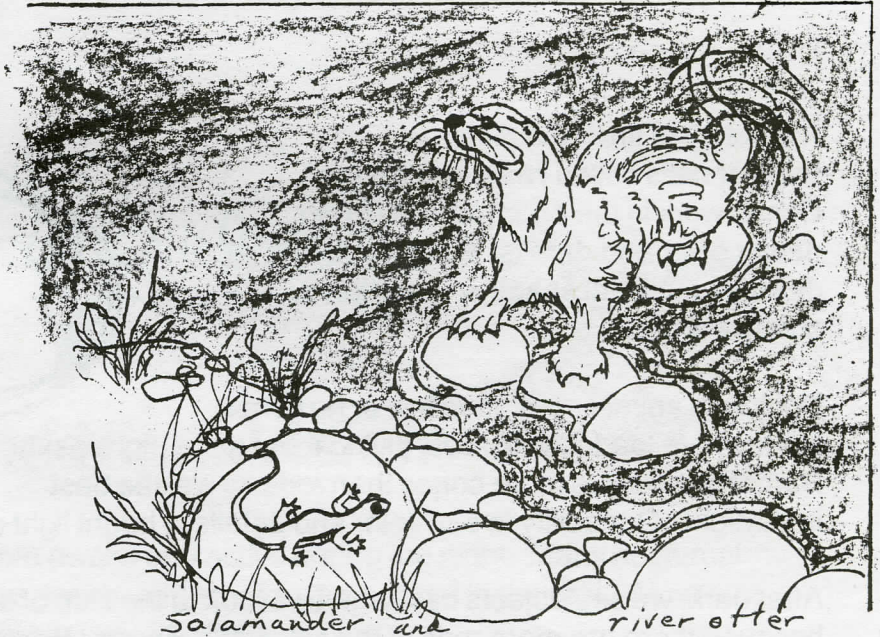
If you had skin like a salamander or frog or earthworm, you would rather be out at night. For animals with moist skin like frogs, salamanders and worms, sunlight is too drying and night air is most comfortable. Many animals like night because the air is cooler and wetter. Insects often emerge from their pupa in the humid night air. Their new adult skin is still soft and not ready to protect against sunlight. Perhaps it is also safer for them to be hidden by the dark before they are ready to crawl or fly, too.



Avoiding People at Night

Some animals seem to be active at night only if they live near people. Black bears, rabbits, and otters switch their eating and busy times from day to night when they want to avoid humans.

This time of year, black bears need to put on enough fat to last through the winter so they eat around the clock even when people are around.



One of the things that draw bears in the fall is ripening fruit, but bears aren't the only animals that like fruit. Fall ripening fruit and seeds are nightly treats for raccoons, squirrels, coyotes and red foxes. Even porcupines become bold and venture down from their tall trees during autumn evenings for a feast of seeds and berries.

Night Courting

Porcupines also find their mates during the fall, which involves a lot of noisemaking. Squealing sounds you hear in the forest at night might come from porcupines this time of year.

Other animals are also actively wooing mates in the fall and their activities add to the sounds of the night. Male elk and deer start shedding the soft velvety skin covering their antlers in early fall. They thrash at bushes and trees to scrape off the shedding skin and polish their antlers. Soon they are testing their strength against other males. Along with clashing antler sounds, you can listen for the male elk's strange high-pitched bugling noise. Early October is usually the peak of elk bugling behavior. Clashing antler sounds in November are likely to be two mule or two white tail deer testing each other's strength. Only the strongest deer get to become deer fathers.

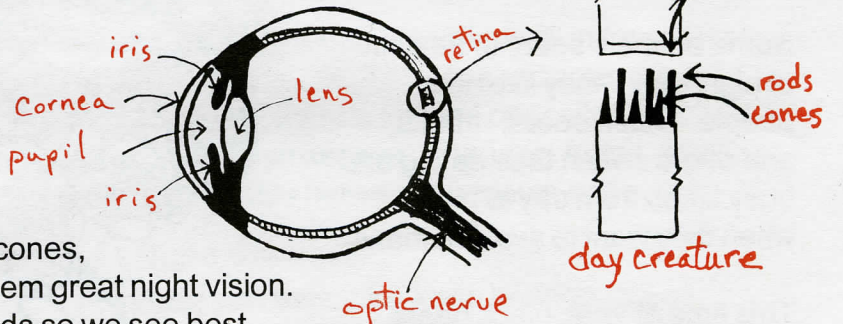
Night Flight

When you are out in the fall listening for night sounds, don't forget to look to the sky. Many birds heading south for the winter migrate under cover of darkness. The coolness of night makes for pleasant travel, and stars guide birds on their way south. These night-flying birds rest during the day and load up on food to fuel their long flight south.

Night Sight

Animal eyes are lined inside with tiny parts or cells called **rods** and **cones**. Cones work in the bright light of day to detect color and details. Rods work in dim light to signal shape and motion in shades of gray.

Nocturnal animal eyes have few or no cones, but they are loaded with rods, giving them great night vision. Human eyes have more cones than rods so we see best in daylight. Our ability to see color and details in bright light doesn't help at night.



After dark, we see objects best when we look to the side of them rather than straight at things because there are more rods at the sides of our eyes. So next time you want to see something at night, try looking off to the side for the best vision.

Eye Test

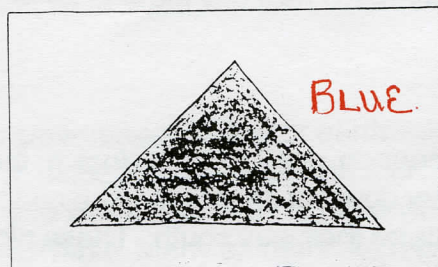
Here is a way to test your cones and rods in the dark. Choose a completely dark, but safe place, to test your night vision. You need: a buddy, index cards or other pieces of paper, a bag of colored markers.

Sit in the dark for at least 30 minutes before you do the test.

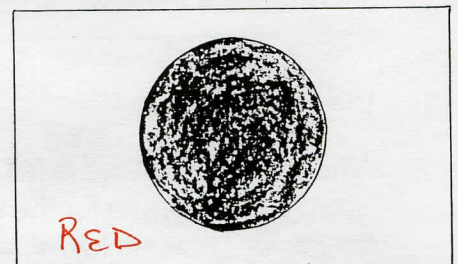
(This is a good time to listen for night noises and try to guess what you are hearing. Crickets are active in fall. See if you can hear any. Can you control the noise? Clap loudly; do any of the noises stop?)

After your half-hour wait, sit 8-10 feet across from your buddy and take one of the markers out of the bag. Write the color you think it is on the back of one of the cards. On the front side draw a shape such as a circle or triangle or square, and color it in with the marker. Hold up the card so your buddy can guess the shape and color that you drew. Write down your buddy's guesses on the front of the card.

Use a separate index card for each different marker.



And, vary the shapes you draw.



Take turns being the drawer and the guesser with your buddy until you have each used several markers. Then go inside and see how you did. Were you and your buddy's eyes better at seeing colors or shapes in the dark? Which parts of your eyes were working best, your rods or your cones?