



The Night Sky



Every clear evening as our local piece of planet Earth turns away from the sun, and daytime fades into night, the stars come out, and we look out into an infinite universe. The simplest way to discover the stars is to begin as astronomy itself began, using just your own two eyes. Ancient skywatchers had a big advantage over us. Their skies were dark. Today the skies over our towns and cities are brightened by countless lights from streets, parking lots, and buildings. Rocky Mountain National Park offers a unique experience for most with some of the darkest, clearest skies many will ever experience. The distance from city lights and high altitude combine to make the park a great place to enjoy the nighttime natural wonders.

Be Prepared

Star watching is easy, but a few basic preparations make it a lot more comfortable. While the daytime temperatures may be balmy, the thin dry air cools rapidly after sunset. Warm clothes in layers and a hat are welcome when the thermometer dips. Buy or make a dim, red-lensed astronomer's flashlight for reading charts, books, and moving around at night. Bring a lawn chair and fill a thermos with your favorite hot beverage. It will taste great when you have been outside for a while.

Other helpful nighttime aids are bug spray, comfortable shoes, and some high-energy snacks.

Since enjoying the night sky is quiet and red lights are employed, some nocturnal animals may feel comfortable and move close. Do not approach wildlife or shine flashlights to disturb them. Enjoy the bats, nighthawks, deer, elk, fox, and coyote in their natural nighttime environment.

Sky Tour

The Moon

Far outshining any planet is the moon. Its face dark and mottled with lava flows, the moon circles the Earth, keeping one side turned toward us. When the moon is on the same side of the earth as the sun it is not visible in the nighttime sky, this is new moon. Night by night the lit portion grows until it is half illuminated, this is the first quarter moon.

At full moon, it is completely lit and floods Earth with reflected sunlight. The full moon is opposite the sun in the nighttime sky and rises fully illuminated when the sun sets. After full

moon, the lit portion shrinks. By the time the last quarter moon arrives, it is half illuminated and rises after midnight and is visible during morning hours.

After passing last quarter, the moon's illumination shrinks to a crescent and finally back to new moon, starting the cycle anew. Early evening during first quarter and mornings during last quarter are great times to include the moon in photographs or view with binoculars or the unaided eye.

The Planets

Planets do not reappear regularly each season the way stars do because they are constantly moving as they orbit the sun, just as we are. Yet planets are always found somewhere along a band of constellations that straddles an imaginary line called the ecliptic. This is Earth's orbit projected on the stars. Because all planets have orbital planes close to the Earth's, the ecliptic is a good place to look for them. Mercury and Venus orbit closer to the sun than Earth. You can spot them briefly before sunrise or shortly after sunset. The planets further from the sun than the Earth can be seen for several months at a time. Mars is bright and red/orange in color. Jupiter is the second brightest planet behind Venus

and is white in color. Saturn, dimmer than Jupiter, is ivory-white. Mars, Jupiter, and Saturn are the most popular planets to explore with a telescope, since they are large enough and close enough to show some detail. The outermost planets, Uranus, Neptune, and Pluto are only seen in a telescope. They are so far away they only show a tiny disc, green in Uranus's case and blue in Neptune's case. Pluto is so far away that it takes light from the sun over 36 hours to reach it and even in large telescopes still only looks like one of many stars in the field.

Stars and Constellations

Stars differ in brightness and astronomers have ranked them one on a scale of magnitudes that originated with ancient Greek skywatchers. Every star has been assigned a magnitude, but only the brighter stars have names. Many star names are Arabic, since antiquity's astronomy came to Europe in the Middle Ages through Arabic translations. Constellations are groups of stars that are named for animals, ancient heroes, and mythical beasts. There are 88 constellations in the sky. The writings of Homer in the Iliad and Odyssey, which appeared around 900-800 BCE contain descriptions and meanings

of many of the constellations. These descriptions were based on legends from the Minoan civilization that were already ancient in Homer's time. The constellation names were translated from the Greek of Homer to Latin when the Roman Empire rose to dominance, and most of the names with which we are familiar today are the Latin ones. Many constellations, especially those seen only from the Southern Hemisphere, have modern names.

Satellites

Many satellites can be seen after dusk, most moving from West to East. At times even the Space Shuttle and International Space Station are visible.

Meteors

The clear skies provide excellent views of meteors, allowing even the faintest to be seen. Meteors or “shooting stars” are the incandescent trails left when fast-moving space debris collides with Earth’s upper atmosphere. The typical number of meteors on any given night is about 12 an hour, but this increases greatly to 60-100 an hour or more when the Earth passes through the debris trails left by comets.

Resources

All park visitor centers and Moraine Park Museum have books and planispheres to help explore the nighttime sky.