



Solar Eclipse? What is That?

By Chris Kemerer, Chief, Education and Interpretation Section, Bureau of State Parks

On Monday, April 8, around 2:30 in the afternoon the sky will begin to darken, eventually the Sun will disappear, and the darkness of twilight will exist; if only for a few brief minutes. Then the sun will slowly reemerge and by 4:30 it will be as if nothing happened. But something did happen. A celestial phenomenon that has brought fear and awe for thousands of years. Something worth experiencing and seeing for yourself – a Total Solar Eclipse.

All solar eclipses are caused when the Moon's path crosses between the Sun and the Earth, which casts the Moon's shadow on Earth's surface. The area of the Earth within the Moon's shadow experiences a solar eclipse.

This alignment of the Earth, Moon, and Sun that causes solar eclipses occurs every six months. However, due to the Earth's rotation and the Moon's orbit around the Earth, the location or path of these eclipses varies and are spread around the world, making them infrequent in our local communities.

There are different types of solar eclipses; annular, partial, and total. The type of eclipse is determined by the Moon's distance from the Earth along its orbit. An Annular Solar Eclipse occurs when the Moon is at or near its farthest distance from Earth. Therefore, the Moon appears smaller than the Sun and does not completely obscure it resulting in an eclipse where a ring of sunlight remains visible around the dark disc that is the Moon.

A partial eclipse occurs when the Moon, Sun, and Earth do not perfectly align, resulting in only a part of the Sun being covered. The portion that is visible appears as a bright crescent.

A total solar eclipse, like we will experience on April 8, occurs when the Moon is relatively close to Earth, fully blocking the Sun's light and revealing the Sun's outer atmosphere called the corona. Locations where this occurs are said to be in the path of totality. Pennsylvanians viewing the April 8 eclipse outside the path of totality will experience a partial eclipse.

What to Expect

Beginning around 2:00 PM on April 8, the Moon's orbit will have it to travel in between the Sun and Earth, marking the beginning of the eclipse. The Moon will appear as a dark shadow biting into the bright sphere of the Sun. Over the next hour, the Moon will continue its forward march, continuing to block more and more of the Sun. Within the path of totality, the total eclipse phase will last from approximately 3:15 PM to 3:20 PM as the Moon completely covers the Sun's surface. The total eclipse phase is the only time during the entirety of the event when it will be safe to view the eclipse with the naked eye. For those outside of the path of totality, it will not be safe for you to view the eclipse with the naked eye.

After just a 3-4 minutes, totality will end and the Sun will begin to reappear. The eclipse will conclude around 4:30 PM.

So, what will it be like during the eclipse within the path of totality? The sky will darken much like dawn or dusk for the short duration of the total eclipse and temperatures will drop. Based on anecdotal evidence, animals active during daylight hours will become quiet, and bed down as if night was approaching. Birds will stop singing, insects will stop foraging. In contrast, nocturnal animals will become more active. You may see or hear owls, bats, crickets, or others.



Safety

Throughout most of the eclipse, it is not safe to look directly at the sun with the naked eye nor any kind of standard sunglasses. **ONLY** within the path of totality and **ONLY DURING** the brief minutes of the total eclipse, may a person view the eclipse with the naked eye.

At all other times and in all other locations, specialized viewing protection is required to safely view the eclipse. Eclipse viewers can be divided into two categories **DIRECT** Viewers or **INDIRECT** Viewers.

Direct viewers allow the wearer to face the sun while viewing the eclipse. Examples of direct viewers are solar glasses that have ISO 12312-2 certification plus the manufacturer's name and address on them or solar filters, carrying the ISO 12312-2 certification properly fitted to binoculars or telescopes. Sunglasses are not dark enough to protect your eyes during direct viewing.

Indirect viewers create a projection of the Sun that you can view without having to look directly at it. Putting your back to the Sun and laticing your hands together can create an indirect viewer. Colanders can act as an indirect viewer or you can create your own by punching a hole into an index card. During the eclipse, put your back toward the sun and place the index card so that it's 1-2 feet from a light-colored surface. Then simply view the projection.

The main thing to remember is that **ONLY DURING** the brief 3-4 minutes of totality is it safe to view the eclipse with the naked eye.

To learn more about safe solar viewing options, visit [Safety | Eclipses – NASA Solar System Exploration](#)

Where to View

The April 8 Total Solar Eclipse will cross North America from Texas through Arkansas moving northeast through Ohio, New York, and into Canada. The path of totality will cross through a portion of northwest Pennsylvania, including Erie, Crawford, Warren, and Mercer counties. However, most of Pennsylvania lies within the 90% coverage range, meaning most Pennsylvanians will get to experience an awe-inspiring celestial phenomenon regardless of where they are. Therefore, any location with a view of the sky has the potential to be a good viewing location for the eclipse. Local parks, backyards, and - of course - state parks and forests are all potentially good locations to see the eclipse.

Four state parks lie within the path of totality.

- Presque Isle State Park
- Erie Bluffs State Park
- Pymatuning State Park
- Maurice K. Goddard State Park

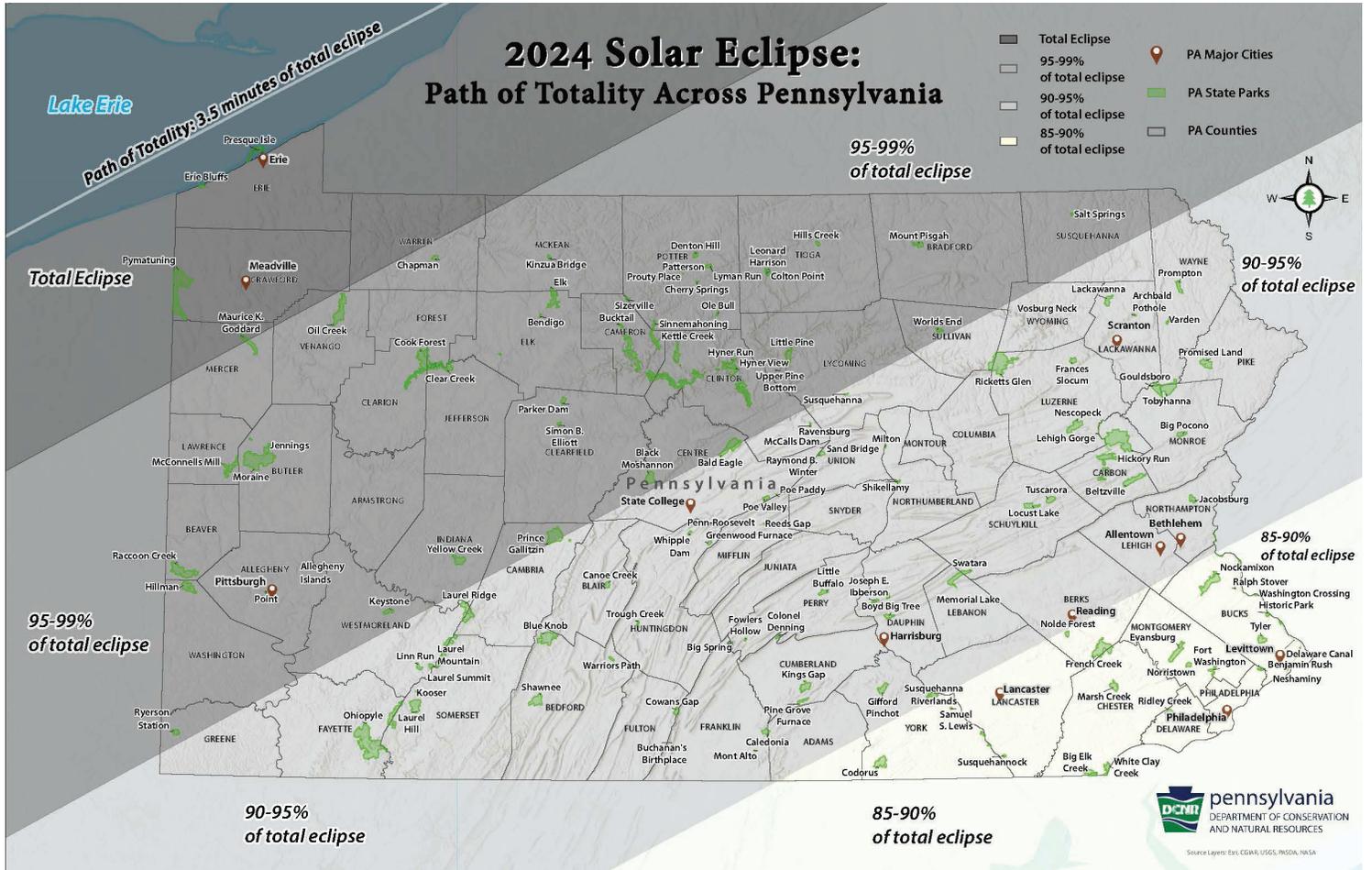
If you're unable to venture outside to view the eclipse you can also view it via one of these livestreaming events.

[Watch Live Solar Eclipse Broadcasts | Exploratorium | Exploratorium LIVE Stream: Total Solar Eclipse April 2024 \(timeanddate.com\)](#)

Plan Ahead

Like all outdoor pursuits, properly planning ahead is crucial to having a safe and enjoyable solar eclipse viewing experience. First, you need to decide if you are traveling to the path of totality or if you're planning to view the eclipse closer to home.

If you plan to travel, make overnight reservations early. Many overnight lodging and campground sites are already booked. If you're thinking of driving in the day of the eclipse, plan for additional time to get to your location as well as to return home. Think of the eclipse like a sporting event or festival with thousands of people attending and trying to park. During the total eclipse of 2017, travel times to locations within totality were twice as long or longer than average.



The second decision you'll want to make is where, exactly, do you want to view the eclipse. Will you venture to a state park? Perhaps a local park? Check the site's webpage ahead of time to see if there will be special restrictions in place.

If you do plan to visit a Pennsylvania state park on April 8, stay informed by regularly checking the alerts at the top of the webpage for the park you plan to visit. On the day of the eclipse, crowds are expected, especially in the northwest, and parks may have to close if they reach capacity.

A few tips if you're planning to visit a state park.

- Come early and stay late – large crowds are anticipated! You should plan around many other visitors sharing viewing spaces and traffic delays during arrival and departure
- Have a plan B location in mind – if a park reaches the maximum capacity identified for parking and safety, it may close entirely for the remainder of the event
- Park only in designated locations – specific parking and viewing areas may be defined
- You may not be able to connect – many parks and forests have little to no cell reception. Cell phone networks and internet service may not work properly in areas that typically do have service during the eclipse

Regardless of where you plan to view the eclipse; a backyard, local park, or a state park; you should plan to be outdoors for a minimum 2 ½ hours during the eclipse. Be prepared by doing or bringing the following things to ensure a safe and enjoyable experience.

- **Check the weather.** You will be outside for an extended time period so prepare for varied conditions. Weather will also greatly determine the quality of the viewing experience.
- **CRITICAL!** Your own viewing materials such as solar-safe glasses, pinhole projector, solar-safe viewing lenses for binoculars, cameras, or telescopes
- Water
- Snacks or a meal
- Appropriate layers for sunny, cold, or rainy conditions and comfortable walking shoes
- Sunscreen
- Bug repellent
- Camp chairs, a blanket, or other seating
- Necessary medications

Learn More

To learn more about Solar Eclipses, either attend one of DCNR's educational programs https://events.dcnr.pa.gov/calendar?event_types%5B%5D=44684478482246 or visit NASA's 2024 Solar Eclipse website: <https://science.nasa.gov/eclipses/future-eclipses/eclipse-2024/>

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