

How Back Yard Astronomers Deal with Light Pollution

Lake County Astronomical Society



If you live in the Chicago metropolitan area, then you contend with light pollution every time you set out to observe the night sky from your back yard. The sky never really gets dark due to light scattered from things like street lamps and shopping centers. But there are ways to observe smarter.

First of all, the moon and planets are unaffected by light pollution. In fact, some experienced observers maintain that a little background illumination helps to counteract the glare from naturally bright planets such as Venus, Mars, and Jupiter. Many star clusters also hold up well, especially if the individual stars are bright. Nebulas and galaxies, on the other hand, are inherently faint, so if your sky is bright, considerable effort will be required to see them. Only the brightest of these objects, such as the Andromeda Galaxy (M31) and the Orion Nebula (M42) may be easily accessible.

But here are some tricks that will help:

Obviously, stay out of the path of direct illumination. If possible, place a building or tree between you and a street lamp or a neighbor's porch light. Some observers have constructed small portable light shields that can be set up and moved as circumstances dictate. Or if you're observing with someone else, just have them stand between you and the offending light. If a neighbor's light is a hindrance, they might be receptive to a polite request that they turn it off, especially if you invite them to have a look through the telescope.

The sky directly overhead is always the darkest, so wait until your target object is nearly as high in the sky as it can get. When observing in the lower part of the sky, you're looking through more of the atmosphere, which of itself makes faint objects harder to see. Also, light pollution is stronger as you approach the horizon, and it will be worse in certain directions.

The moon is an interesting object to observe, but when its light competes with fainter objects, you're not likely to see much else. So for the fainter objects, observe on a moonless night or time your observation so the moon is low in the sky.

Once you've located your target, you'll have a better view if you can keep any ground illumination from entering your peripheral vision. One way to do this is to

wear a hooded sweatshirt that you can pull up over your head. Some observers simply drape a dark-colored towel over their head as they look through the eyepiece. Higher magnification gives a darker background. So once you've located an object using the lowest power (widest field of view), then zoom in to your object.

Weather is a critical factor. Even a slight haze will scatter light pollution, making the sky much brighter. A hazy sky is the result of aerosols that include dust, humidity, and stuff that humans, volcanoes, vegetation, and smoke stacks dump into the atmosphere. It's variable from site to site and in different seasons of the year. You can get a rough measure of scattered light using a "thumbnail test". Examine the sky close to the sun by holding your thumb at arm's length to block the sun. You can also use the edge of a building or tree branch. Note the relative amount and brightness of the scattered light close to the Sun when there are no clouds interfering. The scattered light helps you predict the sky quality on the coming night. In general, the night sky will be at its darkest and clearest after the passage of a cool front. But it's also worth noting that a slightly hazy sky is best for observing the planets because it makes them appear steadier through the telescope, with less shimmering. If you observe when there's snow on the ground, you'll find that the snow makes your overall environment much brighter by reflecting both ground lights and light pollution from the sky.

Where you set up the telescope contributes to the quality of the image. At night a driveway or patio radiates heat stored during the day so the difference with the night air can cause the image to be unsteady. If possible, set up the scope on a grassy area. Also try not to observe an object over the roof of a building (more heat waves).

If there's a considerable temperature difference between the outdoors and where the telescope is stored then the scope should be brought outside about an hour before you observe. This will allow ample time for the optics to reach the ambient temperature, thus providing a steadier image.

Finally, if you need some illumination, avoid white light, which hampers your night vision. Instead use a flashlight with a red lens, or place some red cellophane over a regular flashlight.

In short, all is not lost just because you live under the dome of a light polluted sky.

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