

Photography Under the Night Sky



A full moon will result in very bright foreground features.

By Peter Scifres

Who among us has not stood in a beautiful landscape after dark and stared up at a brilliant starry night sky in awe and wonder? Advances in digital cameras and lenses make it possible for these moments to be not only memories but compelling images as well. **Landscape Astrophotographs**—images taken at night containing both sky and land foreground features—have become increasingly popular and are a lot of fun and satisfying to produce.

If you've never tried it, maybe it's time to get started. I'd begin by looking at other photographers' work. Images by Wally Pacholka (<https://astropics.com>), arguably the father of Landscape Astrophotography, are a good place to start. There are a few good books on the subject. Find some images that inspire you and begin to think about compositions and places that interest you, hopefully somewhat close to your home.

Landscape Astrophotography has a special set of challenges and issues that often pull against each other. You probably will like a reasonably bright land foreground feature(s) in your compositions, but the Milky Way in particular

requires a dark sky for good images. Wide open apertures are important to get as much light as possible onto the sensor but they constrain the depth of field. Long exposures and high ISOs are going to put noise into your images. By selecting appropriate equipment and using good field practices you can mitigate many of these problems.

What will you need?

You will need a digital camera body, of course, but ideally a relatively recently released one, which will have much better low light noise performance than older models. Examples are Nikon's 800 series, Canon's 5d III or IV models, or recent Sony AR models. Although not completely essential, your best bet is going to be a full frame model because (1) you will almost certainly be shooting wide and in this case a crop frame sensor is not your friend, and (2) all other things being equal, full frame cameras should give you better noise performance.

A fast, wide lens is critical. Many astrophotographers swear by Nikon's 12-24 F2.8. I use a Sigma 24 fixed F1.4 and have had very

good results. It has a great price point for this type of glass. The major manufacturers all sell a lens roughly equivalent to the Sigma. Even though relatively inexpensive I urge not using a fast 50mm for astrophotography as these are generally not wide enough for the scenes you will want to shoot.

You will need a tripod sturdy enough to support your setup during long exposures and you should have a cable release. An intervalometer is a must for star trails photography. Last but not least, you'll need appropriate night time outdoor equipment and clothing, especially a headlamp, preferably with a red LED bulb.

You've got some ideas and the right equipment, so let's start planning your shot(s), considering **where, what, and when** to photograph. Start with places you've been to during the day, with some distinctive landscape features that can be put in front of a night sky. Old trees, sharp mountains, calm lakes, or aged buildings can work nicely. Essential resources to help you pick locations are topographic maps—both hardcopy and electronic, Google Earth; and apps like The Photographer's Ephemeris. You will need to carefully consider light pollution and not select locations and compositions that have you aiming at bright light sources. Even if they are tens of miles away, in a long exposure/high ISO image they will show up as an orange glow on your horizon. The darker your skies and the more remote your locations the better.

Next up is what do you want in the sky? The Milky Way? The moon? Or do you want stars or star trails? A knowledge of basic astronomy is important to determine the compass location of celestial objects at a given time of year. This is especially important for Milky Way images as the most dramatic part—the core—is below the horizon in the northern hemisphere from late fall to spring. Because of the earth's rotation the Milky Way moves east to west 15 compass degrees per hour, so you will have to think through when on a given night it will be behind an interesting foreground feature. The same is true for a photogenic constellation such as Orion. Time of night is also important when considering the presence and position of the moon, which you may or may not want out. Nights leading up to the full moon will see the moon already up when it gets dark and then set early; on nights after the full moon the moon will rise after dark and be up the rest of the night. If you are planning to use it for lighting land features (see below), it should be behind or to the side of you when you plan to shoot.

And remember some practical matters. Is it safe to get to and be in the spot after dark? Will you camp nearby after you are done shooting, or drive to a motel?



The tree is light painted on a dark night.

Getting your image **focused** on the stars and on your distant land features will be difficult, and it's the downfall of many landscape astrophotographs. Auto focus won't work so you have two basic alternatives to obtain focus on the stars. Aim your camera at a bright star and get it as close to the center of the frame as you can. Switch into live view and zoom to 10x, hopefully keeping the star in the magnified frame. Now spin your focus dial. The star will change from disc to point and back to disc. When it's a point you are properly focused. Or during the day just focus on a distant object with the lens set on the same F-stop you will be using at night. With a small piece of tape on your

Photos © Peter Scifres

Any mention of products or services in this article or anywhere else in the *PSA Journal* does not constitute an endorsement or approval of those items.



In northern latitudes auroras can make for great night images.



Milky Way over New Mexico's Shiprock Rock



The arch is illuminated by a low powered, diffused flash.

lens barrel mark the spot where the focus dial sits. Or take a picture of it with your cell phone. Out in the field at night just set your focus dial to this spot.

For **lighting land features** you've got three basic alternatives. You can of course go with no lighting or ambient light. In this situation images of land features will be very dark without a lot of detail and it will be difficult to brighten them much in post without introducing noise into your image. Light painting, if the important land features in the composition are close to you, can work great. A headlamp is plenty of light and I recommend using a relatively low powered one. The lamp should already be moving when it's first trained on the foreground feature and has to be kept moving at all times thereafter or you will get hot spots. Also keep the beam away from the ground directly in front of you or that area will be too bright. This is dependent on the distance from the foreground feature and the brightness of the light—but to provide a feel for this when I light paint during an approximately 15 second exposure—my headlamp is typically on a nearby foreground feature for between 5 to at most 10 seconds total. It takes a lot of practice and attempts to get a good result, so be patient.

And then there is the moon. It provides very effective and impactful lighting when it's full or near full, but a Milky Way in such an image will be faint. Compositing might make sense. Pick a night a few days after the full moon and shoot an exposure after it gets dark. You'll get a good Milky



Lights from passing cars illuminated the cliff.

Way. Keep your tripod and camera in the same position, wait for the moon to rise, and shoot again. Composite in post.

Camera settings for Milky Way shots, with a F1.4 lens: Start with F1.8, ISO 3200, 15 seconds. Note that motion in the stars caused by the earth's rotation will constrain your shutter speed to 15-20 seconds unless you are ok with smeared stars. Experiment!

For a good starting point when the Milky Way is not out, but some moon is, try F2.8, ISO 1600, 15 seconds. For star trails I like to use an intervalometer to shoot as many two-minute exposures as my camera battery will stand. Set your ISO and aperture based on whether or not you have a moon out.

Let's get going, collect equipment, figure out some locations and times, and start practicing! And then enjoy quiet times in the outdoors under a brilliant night sky while you capture unique, striking images. ■