

Composition Tips for Astrophotographers

There's more to a great shot than just getting the exposure right.

Photographer Edward Weston famously once said that “Good composition is merely the strongest way of seeing.” As astrophotographers, it's easy for us to become obsessed with the technical aspects of the pursuit. But too much pixel peeping leads to the classic problem of not seeing the forest for the

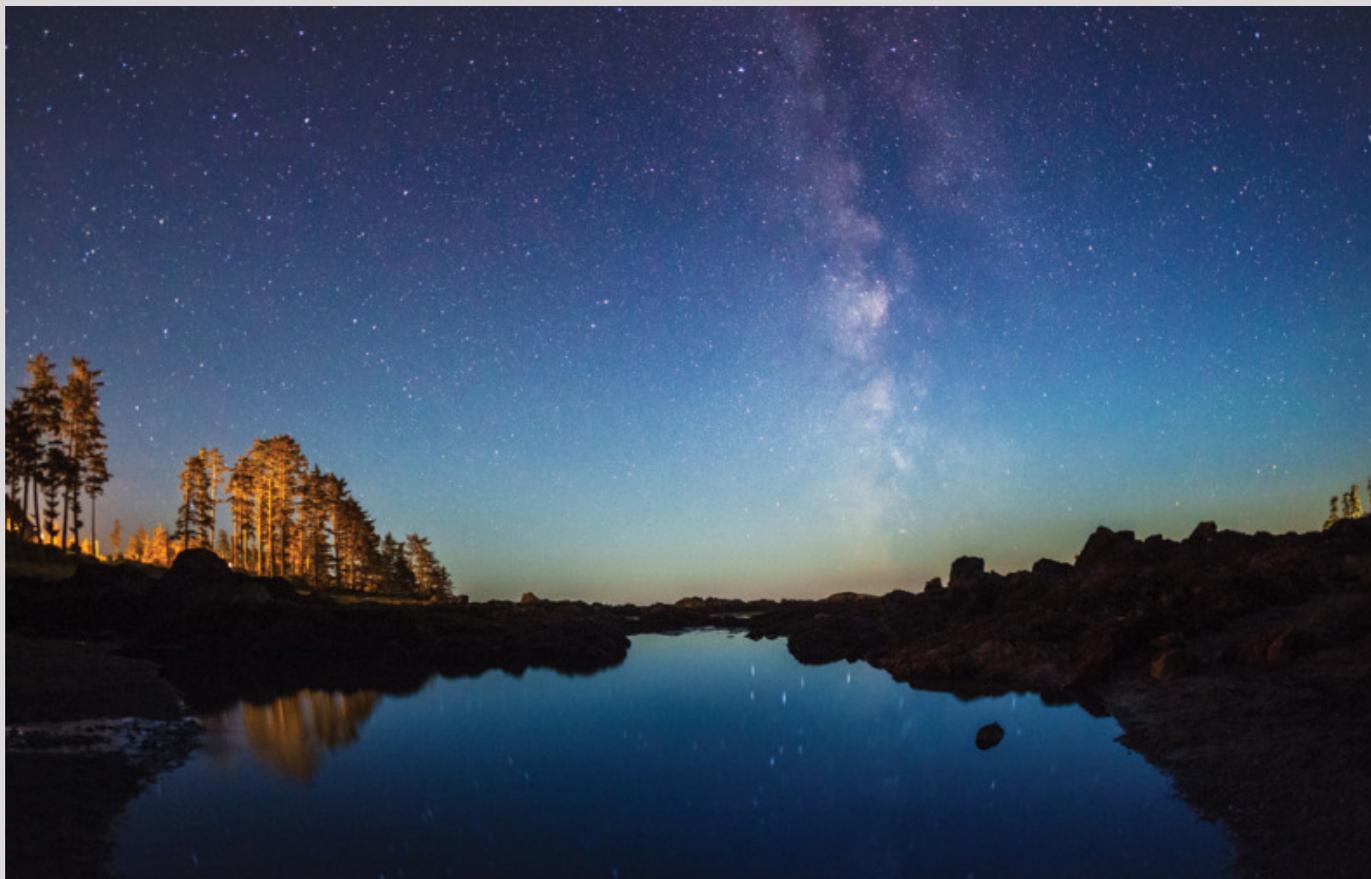
trees. At some point, you need to step back and consider how you go about composing your photos.

Three closely related factors determine how compelling your images end up being: scale, framing, and cropping. Master these and you'll be on your way to creating your best work.

The Goldilocks Zoom

The size of your camera's sensor in conjunction with the focal length of its lens determine its field of view. Careful planning will help confirm the combination you plan to use is a good match for what you want to photograph. A full-frame camera and ultra-wide lens may be perfect for capturing the majestic arch of the Milky Way, but a crop-sensor body and long telephoto optics are a better match for framing individual deep-sky objects. Your target needs to cover enough pixels on the sensor to record sufficient detail while still allowing some breathing room around the edges to prevent the overall composition from feeling claustrophobic. Getting the scaling just right is key to a successful image.

I use desktop planetarium software to pre-visualize the best combination of equipment for a specific target. My go-to application is *SkySafari*, but many other



▲ This nocturnal landscape demonstrates the many benefits of careful composition. The initial framing was done according to the “rule of thirds,” which suggests placing the horizon about one-third from the bottom of the frame, and the Milky Way to the right of center. This layout balances the visual weight of the trees on the left with the rocky beach on the right, while adding symmetry with the reflections of the Milky Way in the tide pool below.

programs allow you to superimpose a field-of-view box that shows what a specific camera and lens combination will yield. If your gear selection is limited to just one setup, you can still use this technique to find imaging subjects that are a good match. A quality zoom lens is handy for fine-tuning the image scale to match your target.

Frame and Fortune

Most camera sensors are rectangular (with aspect ratios like 3:2 or 4:3), so you'll need to decide whether to frame your shot horizontally or vertically. How you plan to display the final image will heavily influence your choice. Social-media platforms like Instagram and TikTok are optimized for the tall and narrow screens found on mobile phones. Conversely, landscape-style images look better on wide-screen monitors and video-centric platforms like YouTube. Often it makes sense to shoot both orientations to future proof your composition and provide maximum flexibility. (More on this later.)

Wide-field nightscapes that include foreground objects require you to determine where to place the dividing line between the horizon and the sky. Resist the urge to split the difference and place this transition in the middle of the frame. Instead, use the well-known *rule of thirds* to strengthen your composition. Imagine a tic-tac-toe grid projected on the scene — the lines and their intersection points offer the strongest placements in the field. Positioning the horizon line one-third of the way from the top or bottom of the frame will result in a more powerful composition, allowing either the sky or landscape to dominate the image.

Of course, as with any rule, there are exceptions. Full-disk portraits of the Moon look just fine when centered in the frame as long as you leave a little space around the edges. However, filling the frame could make sense if you want to show specific details, such as individual craters along the terminator. The trick is to make sure that your decisions are all intentional and that you take the time to consider other options.



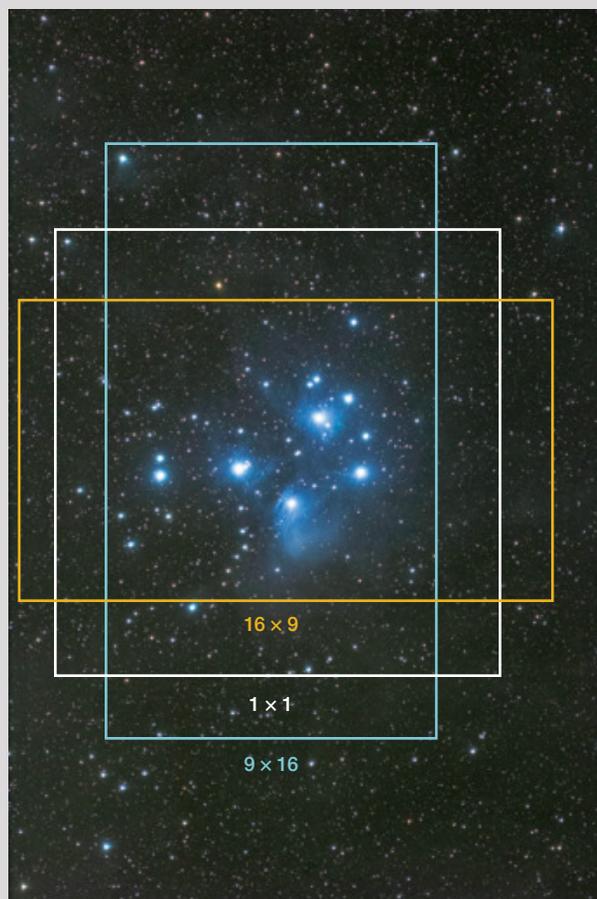
▲ This image pair hints at some of the many possible decisions you can make when framing your images. I think galaxies look better when they're placed at about a 45° angle relative to the frame (rather than straight up and down or perfectly horizontal). The author took this three-minute exposure of the Andromeda Galaxy with a Canon EOS 70D camera at ISO 1600 and a Canon EF70-200mm f4L USM telephoto lens.

Although a north-up orientation is a popular choice, closeups of deep-sky objects often benefit from rotating the camera for a better fit. And since there's no up or down in space, you can use some artistic license when framing your targets. Be aware, however, that there are some compositional archetypes in the field of astrophotography. While an argument could be made for inverting your image of the North America Nebula in Cygnus, it would look rather odd since it would clash with the orientation we're accustomed to seeing. Similarly, the Horsehead Nebula in Orion just doesn't look right if oriented north-south. Comets and edge-on

galaxies often benefit from a diagonal composition. Beyond simple aesthetics, this may allow zooming in to capture more details without exceeding the boundaries of the image frame.

If you find the field of view is too tight, you also have the option of

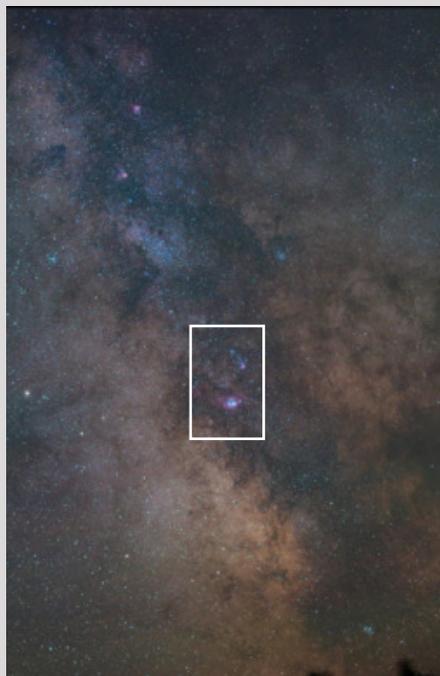
► You never know how your astro images will be used, so you want to make sure that your initial framing supports a wide range of potential crops. Here, some alternate layouts have been superimposed on the original image. Vertical or square cropping would work well for posting on Instagram, while a horizontal layout will be necessary when using the image on Facebook or in a YouTube video.



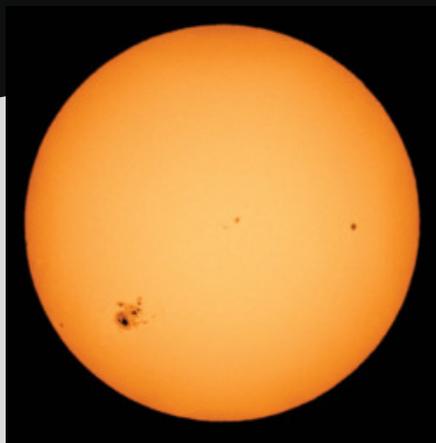
using the more advanced technique of mosaicking by shooting multiple, slightly overlapping frames to stitch together during post-processing. Programs like *Lightroom* or *Photoshop* have become remarkably good at compositing images with no visible seams, assuming that you allow about a 30% overlap between frames. I often shoot a three-by-three matrix of nine overlapping exposures to allow for maximum flexibility while increasing the overall resolution.

Border Patrol

Once you're satisfied with the overall dimensions of your image, it's a good idea to do some border patrol — a careful inspection along the edges of your image. Are there any distractions such as a tree branch intruding into the frame, or a bright star cut in half? You have two opportunities to take care of these problems. The first occurs in the field by ensuring you've optimized the framing and orientation of the shot.

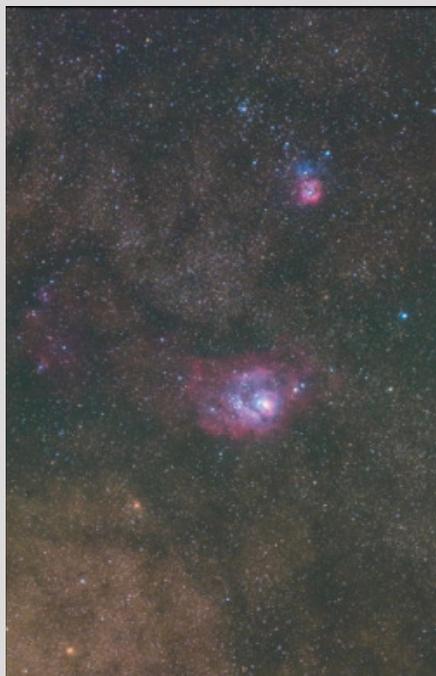


▲ Match your equipment to the subject. In the left frame, a 50-mm lens on a crop-sensor camera barely resolves the Lagoon and Trifid nebulae (M8 and M20, respectively) amid a sea of stars. Recording detail in these deep-sky targets requires at least a 300-mm lens (right frame).



▲ Rules are made to be broken — and that includes the “rule of thirds.” For full-disk shots of the Sun or Moon, it may be better to create a more symmetrical composition by placing the object in the center of the frame, as long as you allow a bit of breathing room around the edges to keep the composition from feeling too claustrophobic.

The second chance is by cropping the composition in post-processing. Your image will be stronger if you tighten the crop slightly to eliminate any trespassing objects. However, getting things right under the stars will ensure that you only have to perform minimal cropping later, thereby preserving the maximum field of your camera's sensor. For wide-field, nightscape shots you also want to check that the horizon is



perfectly level. Rotating the crop a bit to straighten things out will greatly improve your final result.

Bumper Crops

Back in the film days, life was simple. If you were viewing color slides or picking up 4-by-6 prints from the local drugstore, the capture and delivery formats matched. Today, things are different. Your digital camera's sensor may share the traditional 3:2 aspect ratio of 35-mm film, but modern playback devices do not. As noted earlier, smartphones, tablets, TV sets, computer monitors, and print media accommodate a wide variety of shapes and sizes. That's why it helps to build in a little wiggle room to accommodate how your images will be presented.

For example, suppose you want to post your work on Instagram. That platform is currently optimized for tall, portrait-orientation images with a narrow 9-by-16 format. Even vertical images from most cameras will need to be cropped to display properly. If you didn't leave enough extra space when framing your initial capture, you might be forced to trim away important parts of your image.

Conversely, if you decided to start a YouTube channel to show off your work, you'll need the exact opposite dimensions, namely, a 16-by-9 format. If you want optimal images for a variety of display formats, it's a good idea to shoot both vertical and horizontal compositions and leave some room around the edges. Even photographic paper comes in a variety of sizes, so if you're planning on printing your images, you'll likely face situations in which cropping will be required.

None of the compositional tools I've described here will transform a poorly exposed image into an award winner, but they will add polish and help your images stand out from the crowd. It's often the little things that matter most.

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