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# Skills

Ben Canales  
Professional  
photographer



"Learn to paint nighttime pics with a headlamp. Watch my video demo at [backpacker.com/nightsky](http://backpacker.com/nightsky)."

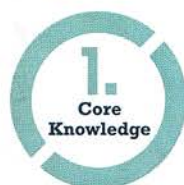
## Master Class: Take Better Night-Sky Photos

You've found the ideal starry sky. Now, shoot the sparkling display—without investing in a new camera. Use these composition and setting tips from award-winning photographer Ben Canales.



### Camera Models

These days, almost all cameras—from compact point-and-shoots to top-end DSLRs—have the controls you need to shoot at night. If you can adjust your camera's shutter speed, sensor speed (ISO), and/or the size of the lens opening (the aperture), you can apply the photo basics in these pages. No manual controls? Turn off your camera's flash, use the landscape mode, and apply Canales's preparation, composition, and editing tips.



### Boost Star Power

Evade light pollution, map the night sky, and adjust your eyes to see (and shoot) more stars.

#### » Select a site.

For the darkest skies, go 60 to 100 miles from cities. You want an open view of the heavens, with a horizon that fills one-third of the frame. At high elevations, notice the effect of a thinner atmosphere overhead: Shooting through fewer light-dispersing particles creates crisper, brighter shots.

#### » Find targets.

Research moon phases and constellations with apps like Star Walk (iPhone) or Google Sky Map (Android), or software like Stellarium (free; [stellarium.org](http://stellarium.org)), which shows you the sky view from specific places at any time of night. Check for forecasted auroras at [swpc.noaa.gov/Aurora](http://swpc.noaa.gov/Aurora).

#### » Improve night vision.

Allow your eyes to adjust to darkness by turning off the lights for 45 minutes. Need to illuminate the trail or camera controls? Cover one eye when the light is on—the protected eye will stay dark-adapted. If you need a headlamp, use one like Petzl's Tikka XP2 (\$55; [petzl.com](http://petzl.com)); its red LED won't ruin night vision.

## Oops! Avoid These Common Mistakes

» **Beginner** Leaving the camera's autofocus setting on, which delivers out-of-focus star shots. **Fix:** Set the camera to manual and adjust the focal length to infinity (∞). Check that far-off stars are in focus by snapping a test shot, then review the shot by zooming in to the sky's brightest star on the LCD display. If it appears out of focus, adjust.

» **Intermediate** Judging a shot's exposure by looking at the LCD screen. **Fix:** Confirm correct exposure using the histogram—a graph that shows an image's range of light. If the graph is shaped like a mountain or range, your image is exposed correctly. If the mountain shape has cliff-like edges at the ends of the graph, continue adjusting settings (see page 40).

» **Advanced** Using automatic noise reduction for every shot. While it improves image quality, it also doubles each picture's shooting time and burns through battery life. **Fix:** Disable noise reduction (in your camera's settings menu) for test images. Reset it for your last exposure. Not planning to print your shot? For digital, low-resolution displays you can clean up graininess at home using noise filters in basic editing software.

### Tip Eliminate shaky shots.

Use a tripod (weight the legs to add stability) or cradle your camera securely on a stuffsack full of dirt. Use a remote trigger or the auto timer; both eliminate shaking caused by pressing the shutter release button.

**Catch a Celestial Storm** In the pre-dawn hours on August 13, watch the Perseids meteor shower's 60 meteor/hour peak.



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## Skills: Master Class

See this summer's best stars by visiting the darkest national parks during new moons on July 18 and August 17.



### Take Test Photos

Shoot overexposed sample shots to gather landscape detail and improve composition.

- 1) **Situate and orient.** Point your tripod-mounted camera away from artificial light sources like distant cities or roads.
- 2) **Set your camera to capture extra light.** Open the aperture wide (low f-stop numbers represent larger apertures), and select the highest ISO (1600 or above). Use a shutter speed that allows your camera to catch excess light (30 seconds).
- 3) **Shoot a few overexposed pictures.** Many areas may appear white, but quality doesn't matter, it's composition that counts. Examine these shots for desirable elements like rocks or trees—or for distractions like an angled horizon, bright spots caused by light pollution, or clouds. Note the focus of stars and foreground objects.
- 4) **Adjust composition and focus.** Turn and pan the camera to frame your desired scene; tilt it to level the horizon. Refocus if necessary.
- 5) **Fine-tune.** Repeat steps 3 and 4 until you've framed the desired shot. Then, based on conditions and content (see chart below), adjust ISO, aperture, and shutter speed to expose properly.

### Tip Shoot RAW images.

Plan to print? RAW files are like negatives, and allow more editing flexibility. Save storage space: Shoot in RAW, but delete test shots.

## Capture Celestial Fireworks

Use these exposure settings and composition tips to enhance night pictures.

	Exposure time	Aperture (f-stop)	Sensor speed (ISO)	
	32m	f/16	400	To capture arcs of light like these (left), shoot long exposures on clear nights (clouds obscure the stars). For vortex-like circles, center your frame on the North Star.
	+ 8s	f/2.8	+ 1600	Aiming at the Milky Way? It's brightest in the southern sky; go south of cities and orient south. For the aurora, go north of cities, and point north.
	1/250s	f/11	100	Zoom in with your longest lens and focus on the moon's surface features. Crop shots with photo editing software at home (to enlarge the moon's relative size).
	2m	f/16	1600	A quarter moon can cast enough light to brighten a scene. On cloudy nights, expect shadowless images. On clear nights, shadows may be harsh.

**Pack More Juice** Long exposures and cold temps zap battery power. Bring at least one extra

PHOTOS BY BEN CANALES (4); TIM SEAWER (MOON); MAP INFO BY GOOGLE/NOAA'S NATIONAL GEOPHYSICAL DATA CENTER; USAF WEATHER AGENCY/BLUE MARBLE; TEXT BY RAY FOX





## Layer Images for Otherworldly Effects

Combine different exposures for a complex final image.

Create a scene that merges your favorite nighttime shots into one. First, take an underexposed base image of your scene, then add light or change exposure settings in subsequent shots to accentuate different features—foreground objects, the stars, or alpenglow on the landscape. In Photoshop or other photo-editing software, overlay your darker base image with the highlighted ones, and use layer masks to obscure or reveal elements you want to include in the final image. Layer short-exposure star shots to create star tracks with free layering software like StarStax (starstax.net).

### Tip Capture sharp pictures of a moving target.

The Earth's rotation can blur the moon and stars during long exposures. Adjust your ISO (higher) and f-stop (larger) to minimize exposure time, eliminating motion-caused blur. Determine max exposure time with this equation: 400 divided by the focal length. The result is your exposure-time limit, in seconds.



## Paint with Light

Experiment with headlamps and other lights to show foreground detail, take more dynamic shots, and have fun.

» **Illuminate objects.** During a long exposure, flash or sweep your headlamp over trees, people, or rock formations. You'll brighten them in the final photo, while still exposing for and capturing the sky. You can also shine a headlamp in a tent (turn it on for several seconds during the shot) to give it a glowing appearance.

» **Write with a beam.** Hold your light, point it directly at the camera while the shutter is open, and "write" with it across your frame. Spelling words? Letters will record as mirror images; scribble them backward so they're legible in the finished photograph. Experiment with a long exposure time and low ISO, like 100.

» **Change lights.** Take advantage of the different light temperatures, intensities, and beam sizes cast by multicolored LEDs, fluorescent and incandescent bulbs, and candles. Use separate light sources to paint different areas of the same scene. For example, in one photo use a headlamp to illuminate a tent, a lantern to light up a person, and a compact LED to write words.

set, or a charger like the Joos Orange (\$150; 1 lb. 8 oz.; solarjoos.com).

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