



# Night Photography

Camera Club of Richmond

May 8, 2019



# What is Night Photography?

- The art of capturing photos at night using available light - and adding highlights (light painting)
- Photographing the stars in the sky either as star points, or in star trails by extending the exposure time
- And/Or - it can be combining the two, by including a highlighted foreground with a starry background.



# The Tools of Night Photography

- Any **digital camera** with Manual Mode and Bulb capability
- A **tripod**
- A **remote shutter release** or use your camera's timer
- An intervalometer, or a stop watch, or some other **method of timing exposures** longer than 30 seconds
- **Light sources** – such as flashlights, sparklers, lasers, glow strips, candles, use your imagination
- A **wide-angle, fast lens** **required** for star points (12-28mm depending on your camera and what lenses you own)
- **Extra batteries**
- **Color gels** to put over the lens of your light source to enhance the light
- A **photo app** to know moon, sun, and star phases and positions from your spot on the planet (PhotoPills, The Photographer's Ephemeris)
- **Dark clothing** so you aren't seen by the camera as you paint the scene
- A **red flashlight** so you don't spoil your night vision as you look at at your camera's settings
- **Creature comforts** – a chair, clothing to match the element

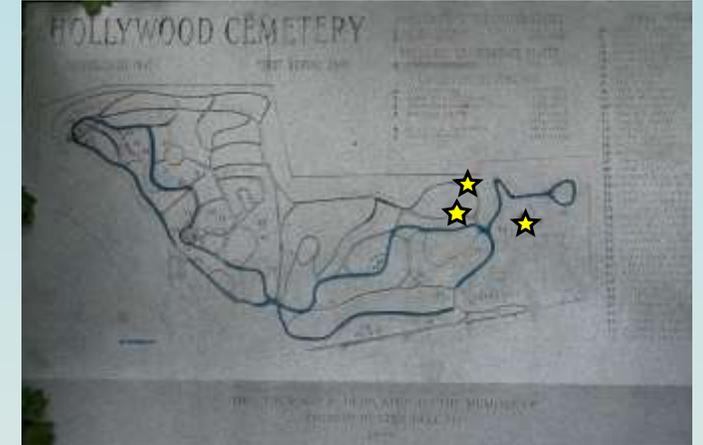
# Steps

- **Compose**

- Scout the location during the day
  - ID subjects, ambient light sources, hazards
- Check the best dates for moon, weather, etc.
- Plan your shots and the dance
- Focus / Hyperfocal distance planning

- **Expose**

- Set up
- Shoot Iterations
- Shoot backgrounds if needed
- Long exposure noise reduction



# Light Painting Camera Settings

**The goal** is to expose for the ambient light at a low ISO to minimize noise and long exposure to allow time for light painting

- Use **Manual Mode** shooting **RAW** format
- Consider both ambient and added light for **White Balance**. The moon is Daylight (5500K). I use Auto and adjust in post processing
- Set to **low ISO** (your camera's base, 100 or 200)
- Use **mid-range f-stop** to maximize your lens's sharpness – f/8 to f/10
- Set **shutter speed** to BULB – the exposure time will vary depending on the ambient light
- **Long Exposure Noise Reduction** is off – it will double the time for each iteration.

f/9, 75 seconds, ISO 100

Sony 24-70 at 24mm, Sony a7rii



# Light Painting Camera Settings

- **Image Stabilization** should be off.
- Know how to turn any light your camera makes (LCD, etc.) OFF for your colleagues
- Use your **red flashlight** to check your settings

f/20, 20 seconds, ISO 100

Sony 24-70 at 36mm, Sony a7rii



## Light Painting Exposure Process

- Begin with setting the exposure for the **ambient light** using the **six stop method**
  - Set your ISO 6 stops above your base ISO (6400 for many cameras)
  - Experiment with the timing to find the optimum exposure at your desired aperture. Every second at ISO 6400 is one minute at ISO 100
  - Set your ISO at 100 and your exposure from seconds to minutes
- **Focus** by shining a flashlight on your subject. Once focused, switch to manual focus and do not touch!
- Use an external shutter release and timer to begin the exposure.



f/9, 75 seconds, ISO 100, Sony 24-70 at 24mm, Sony A7rii

## Light Painting Techniques

- Wear **dark clothing** so you are not seen
- Keep the **light and yourself moving** to avoid overexposure and showing your silhouette
- **Light from the side, bottom, or top** to provide texture
- **Never** point the light toward the camera!
- Be prepared to try **many exposures**. It is easy to overexpose. The key is to use a light touch



f/9, 75 seconds, ISO 100, Sony 24-70 at 24mm, Sony A7rii



## Star Points

The challenges include **focusing**, and keeping the exposure short enough to keep the stars sharp.

**Focusing in the dark** is nearly impossible. Here are some strategies

- Focus in daylight, then mark the spot on your lens to reference later
- Calculate the hyperfocal distance for the object in the foreground and the stars in back, adjusting aperture, iso to your focal length. (PhotoPills or TPE)
  - Then have an assistant shine a bright light on the object to focus to it.
- Focus in live mode, take a test shot, and check the result enlarging the image in live mode.



Vertical Panorama, f/2.8, 15 seconds, ISO 3200, Zeiss Loxia 21mm, Sony A7rii



## Star Points

The challenges include focusing, and keeping the **exposure** short enough to keep the stars sharp.

There are a couple of ways to calculate exposure to ensure **tack sharp** stars

- Use the **500 rule**; divide your full-frame equivalent focal length into 500 to calculate the maximum exposure
  - Example at left,  $500/21 = 23.8$  seconds max
- Or use the **NPF rule** (it's complicated so use an app)
  - Example at left from PhotoPills = 21 seconds
  - N=Aperture, P=Photosites, or pixel density, F=focal length
- Be prepared to try **many exposures**, experimenting with low (open) apertures and different ISO's. I try for the lowest ISO to avoid noise, and the highest aperture for sharpness.



f/4, 18 seconds, ISO 6400, Zeiss Loxia 21mm, Sony A7rii

# Putting it all together

## A Note about White Balance

- Depending on light pollution, your WB should be between 4000 - 5500
- If you are also light painting, the temperature of the added light will affect the overall look
- I generally use Auto White Balance, then adjust in post processing (ALWAYS shoot in **RAW**)

Taken at Theodore Roosevelt National Park, ND

f/4, 25 seconds, ISO 3200

Laowa 12mm, Sony A7rii





## Star Trails

There are a couple of approaches to making **star trails**.

- Shoot one **long exposure** – the longer the exposure, the longer the trails.

**OR...**



f/3.5, 489 seconds (8 min 9 sec), ISO 250, Zeiss Loxia 21mm, Sony A7rii



## Star Trails

Take **multiple exposures and stack them.**

This can be done using available apps (Sequator, StarStax, etc)

Or, process them directly in Photoshop using Layers and Lighten blending mode, as I did here.



50 stacked images, f/2.8, 20 seconds, ISO 1000, Laowa 112mm, Sony A7rii



Sometimes it takes teamwork to pull off a shot.

We had three people with flashlights in this exposure. Note the different temperatures of the lights

f/2.8, 204 seconds (3 min 24 sec), ISO 800, Zeiss Loxia 21mm, Sony A7rii



Arches National Park, Windows

f/3.2, 3 seconds, ISO 6400, Zeiss Loxia 21mm, Sony A7rii



Arches National Park,  
Long Arch



f/4, 182 seconds (3 min 2 sec), ISO 400, Zeiss Loxia 21mm, Sony A7rii



Powhatan Wildlife Management Area



f/3.2, 15 seconds, ISO 2000, Zeiss Loxia 21mm, Sony A7rii



Powhatan Wildlife Management Area



f/4, 30 seconds, ISO 1600, Nikon 12-24mm at 12mm, Nikon D7200



Arches National Park



**f/6.3, 275 seconds (4 min 25 sec), ISO 100, Zeiss Loxia 21mm, Sony A7rii**



Arches National Park,  
Balanced Rock



f/3.5, 19 seconds, ISO 3200, Zeiss Loxia 21mm, Sony A7rii



Arches National Park

f/8, 83 seconds, ISO 400, Zeiss Loxia 21mm, Sony A7rii

# Resources

- Photopills – [www.photopills.com](http://www.photopills.com)
- National Parks at Night – [www.nationalparksatnight.com](http://www.nationalparksatnight.com)