

Brian Narveson / Photography

Presents

Milky Way Photography

Capturing the Image
is
The Easy Part

Agenda

- Equipment
- Preparing to shoot
- Focus
- Camera Settings
- When to Shoot
- Where to Shoot
- How to find the Milky Way
- What to expect (Why is the photo different than what I see)
- Sample Photos
- Post Processing Hints

Equipment

- DSLR or Camera with Manual Mode capable of 20 second exposures
- Tripod
- The Widest angle lens your have (15mm-20mm recommended)
 - Above 20mm your need to reduce exposure time to get points of light for stars
 - You can use less than 15mm but it may distort the image
- Take all filters off of lens unless you are going for a special effect
- Headlamp and/or small flash light (red light is best)
- Flash light for light painting
- Soft lint free cloth to remove moisture from lens
- Extra Batteries (long exposures drain batteries)
- Painters tape to freeze focus
- Water and snack
- Compass and/or Cell phone app. for locating Milky Way
- Clothing for temperature
- Bug Spray in summer

Preparing to Shoot

- Scout Location in daylight if possible
 - Look for foreground item of interest
 - Plan for at 2/3's of composition to be sky
- Plan shoot based conditions
 - Shoot at least one hour after sunset (two hours or more is better)
 - Determine Sunset (ask Siri)
 - No moon is best (ask Siri for moon rise)
 - Do you want the moon in the photo? (Risky – Moon adds light pollution)
 - What is the forecast?
- Do you want color in the sky?
 - Astronomical Twilight
 - 48-72 minutes after sunset
 - Use night photography techniques
 - Foreground object in silhouette
 - Little light in the sky, but horizon visible
 - Stars visible
 - Very Challenging Exposure (DO NOT try until you have dark sky experience)

Preparing to Shoot (Focus)

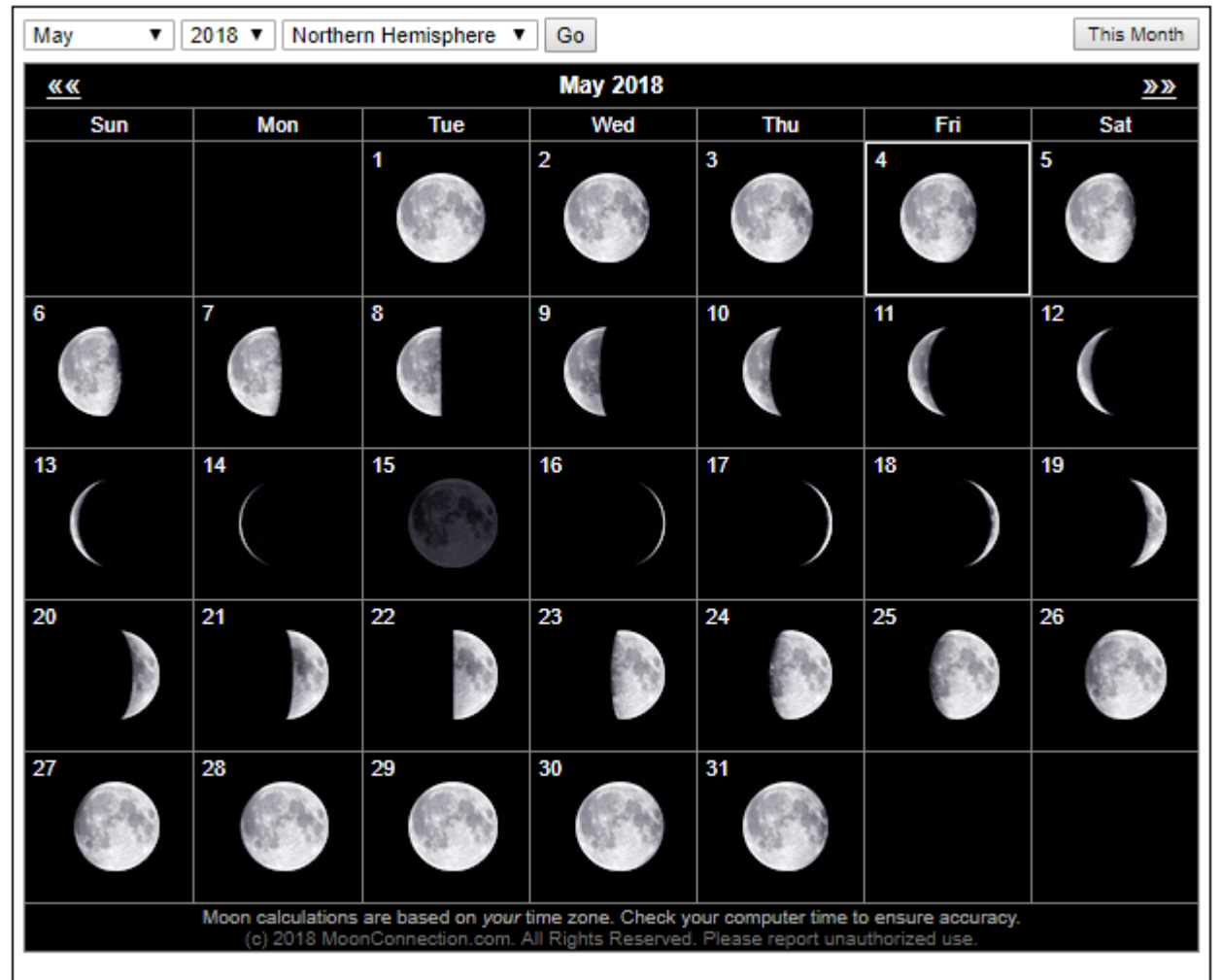
- Focus Lens in Daylight before the shoot
 - Find Object at least 30 feet away to focus on
 - Set lens for manual focus
 - Put Camera in Auto mode
 - Turn on Live View, Magnify to 10X, locate what you want in focus with joy stick
 - Manually focus and tape lens
 - Some photographers use a 4X magnifying glass to view LCD for even sharper focus
 - Turn off Live View
 - Change camera to manual mode
 - Check with test shot at 10X
 - Recheck again at shoot site (I continue to learn this the hard way)

Preparing to Shoot

- Essential Questions for a Successful Shoot
 - When is the new moon?
 - When is the moon up if not the new moon?
 - Where will the Milky Way Rise?
 - When will the Milky Way Rise and Set?
 - When do you have a dark sky (no moon) between these times
 - Where can you shoot without light pollution?

Preparing to Shoot (When to Shoot)

- The Moon is the greatest source of light pollution
- Know what phase it is in.
- www.moonconnection.com



Preparing to Shoot (When to Shoot)

- The moon is the biggest source of light pollution
- Know when it will rise and set.
- Know where it will rise and set in relation to the Milky Way
- <https://www.timeanddate.com/moon/usa/la-crosse>

2018	Moonrise/Moonset		
May	Moonrise	Moonset	Moonrise
1	-	7:15 am ↙(249°)	9:53 pm ↘(114°)
2	-	7:51 am ↙(245°)	10:51 pm ↘(117°)
3	-	8:31 am ↙(242°)	11:46 pm ↘(119°)
4	-	9:16 am ↙(241°)	-
5	12:35 am ↘(119°)	10:05 am ↙(241°)	-
6	1:20 am ↘(118°)	10:58 am ↙(243°)	-
☾	1:59 am ↘(116°)	11:54 am ↙(246°)	-
8	2:34 am ↘(112°)	12:53 pm ↙(250°)	-
9	3:06 am ↘(107°)	1:54 pm ↙(255°)	-
10	3:36 am ↘(102°)	2:56 pm ↙(261°)	-
11	4:04 am →(96°)	4:01 pm ↙(267°)	-
12	4:32 am →(90°)	5:08 pm ↙(274°)	-
13	5:01 am →(83°)	6:17 pm ↙(281°)	-
14	5:33 am ↗(76°)	7:28 pm ↘(287°)	-
●	6:09 am ↗(70°)	8:41 pm ↘(293°)	-
16	6:51 am ↗(65°)	9:53 pm ↘(297°)	-
17	7:40 am ↗(62°)	11:01 pm ↘(299°)	-
18	8:37 am ↗(61°)	-	-
19	-	12:01 am ↘(299°)	9:41 am ↗(62°)
20	-	12:54 am ↘(296°)	10:50 am ↗(65°)
☾	-	1:38 am ↘(292°)	12:00 pm ↗(70°)
22	-	2:16 am ↘(287°)	1:10 pm ↗(76°)
23	-	2:49 am ↙(281°)	2:19 pm →(82°)
24	-	3:19 am ↙(275°)	3:26 pm →(89°)
25	-	3:47 am ↙(268°)	4:32 pm →(95°)
26	-	4:15 am ↙(262°)	5:37 pm ↘(102°)
27	-	4:44 am ↙(256°)	6:40 pm ↘(107°)
28	-	5:15 am ↙(250°)	7:42 pm ↘(112°)
○	-	5:49 am ↙(246°)	8:42 pm ↘(116°)
30	-	6:27 am ↙(243°)	9:38 pm ↘(118°)
31	-	7:10 am ↙(241°)	10:30 pm ↘(119°)

Preparing to Shoot (Where is the Milky)

- Where is the Milky Way
 - What most people want to know is where is the “core”.
- Ask Siri (ask when will the Milky Way rise) and you will get a table of when and where (as a compass heading)
- Download Stellarium software (free) or Stellarium app for phones
- Enter date for shoot. Find MW rise compass heading. Advance clock until you see Sagittarius.
- Sagittarius, its always right next to the core.
- See Stellarium screen capture at right for simulation of Milky Way at 3:00 AM Wednesday May 9, 2018.
- **But check for Moon Rise**



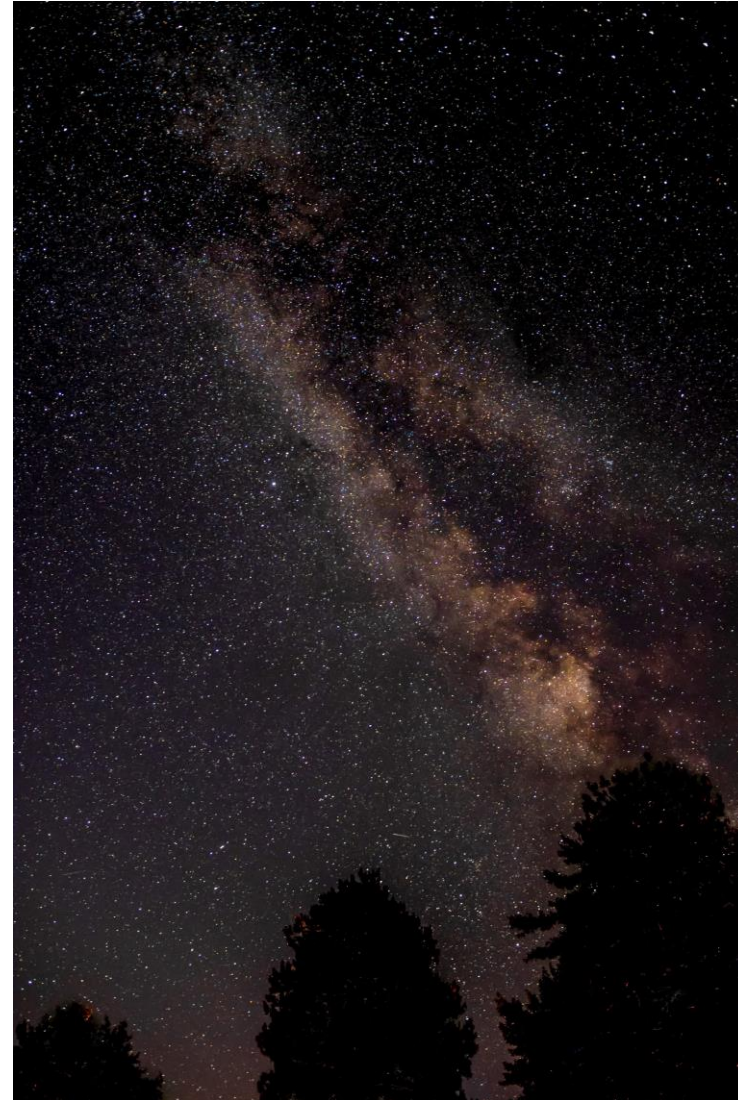
Preparing to Shoot (When to Shoot)

- Best Viewing Months are July and August, but it is visible from May 1 to October 1.
- In July and August you get to sleep and get great Milky Way Shots
- New Moon is August 11, 2018
- Screen capture shows Milky Way at 10 PM.



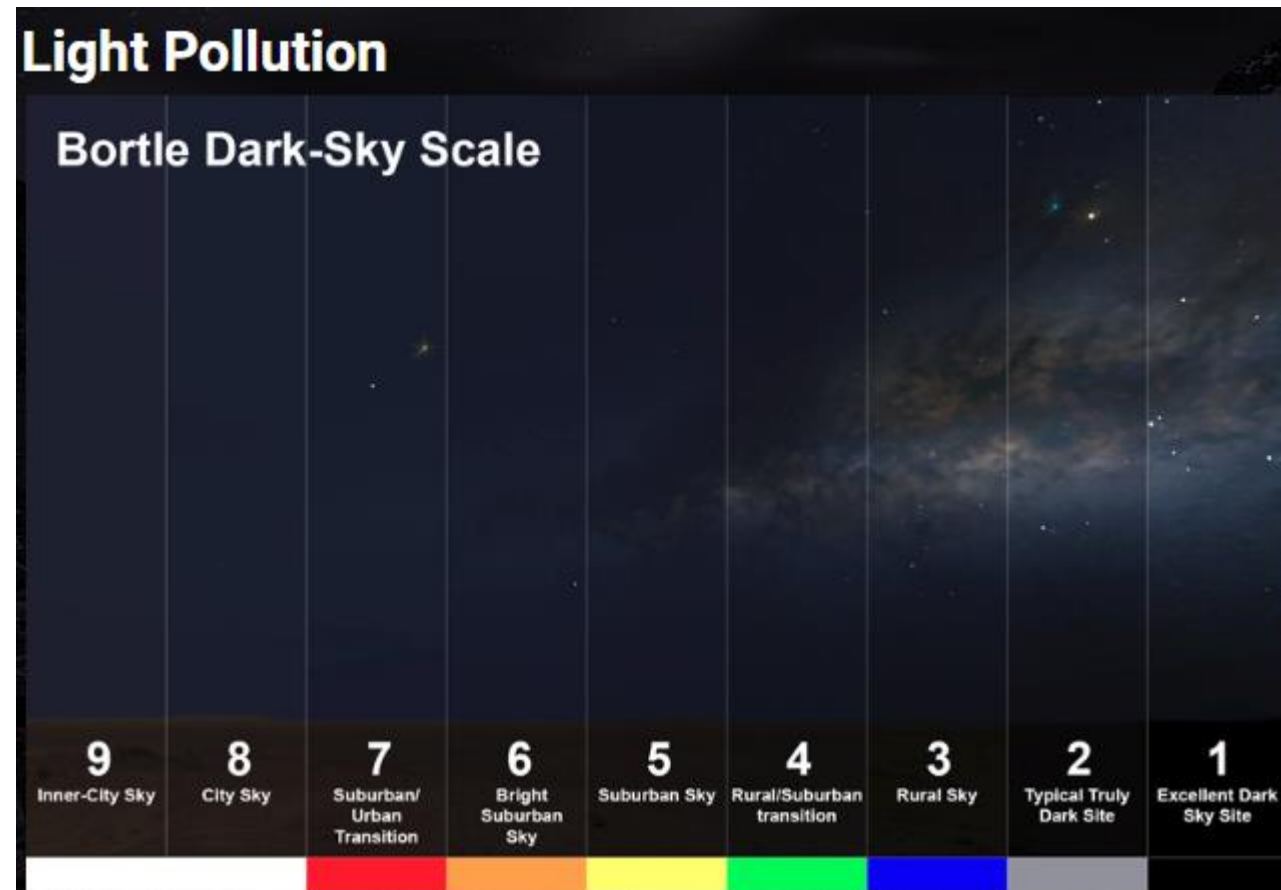
Preparing to Shoot (When to Shoot)

- My photo August 11, 2017
- Camera Setting
 - ISO 2000
 - Sigma 18-35mm set at 18mm
 - F/1.8
 - 20 seconds
- Shot on Chippewa Flowage,
Dark Sky area near
Hayward, Wisconsin



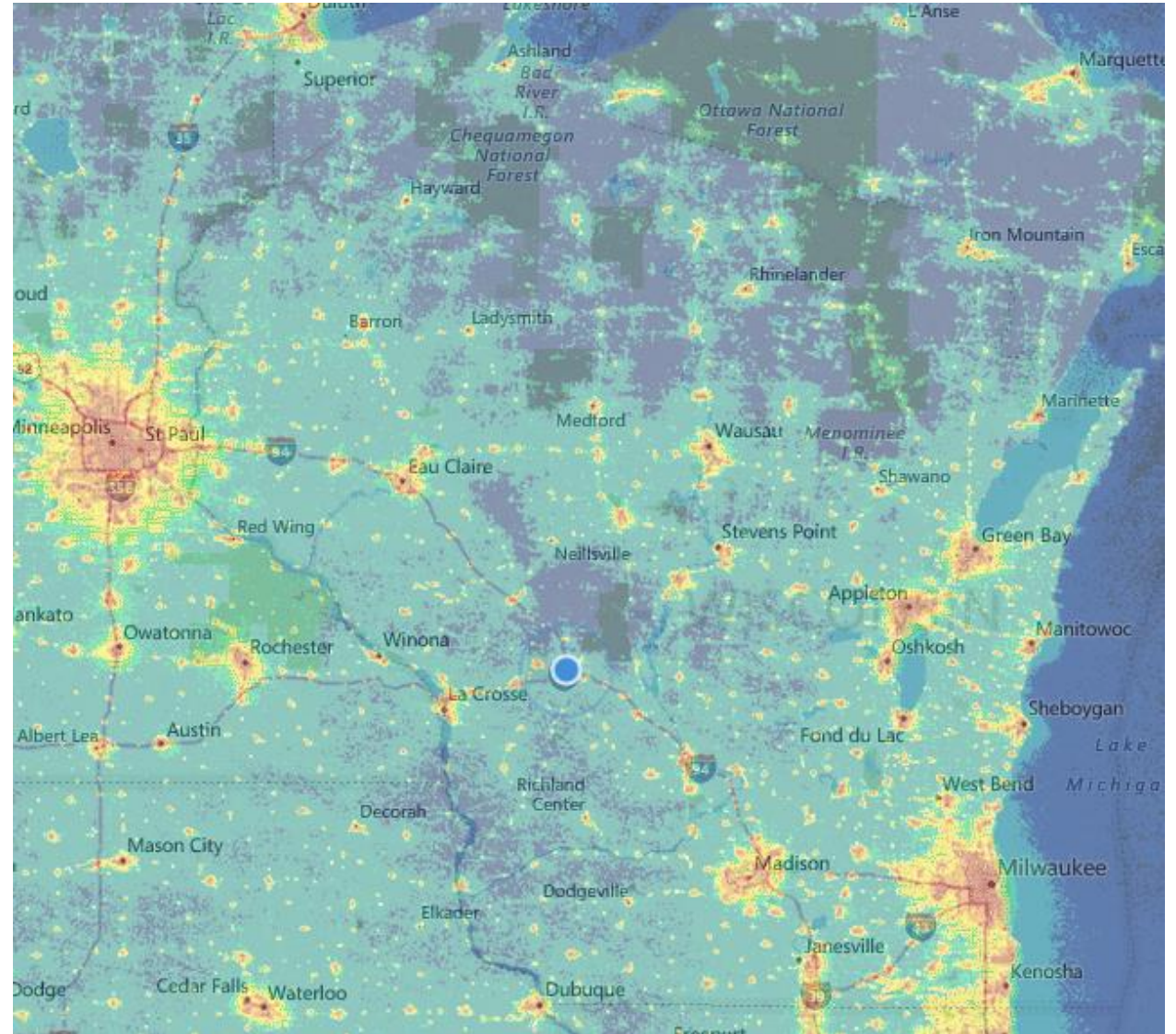
Preparing to Shoot (Where to Shoot)

- Get as far away from light pollution as possible.



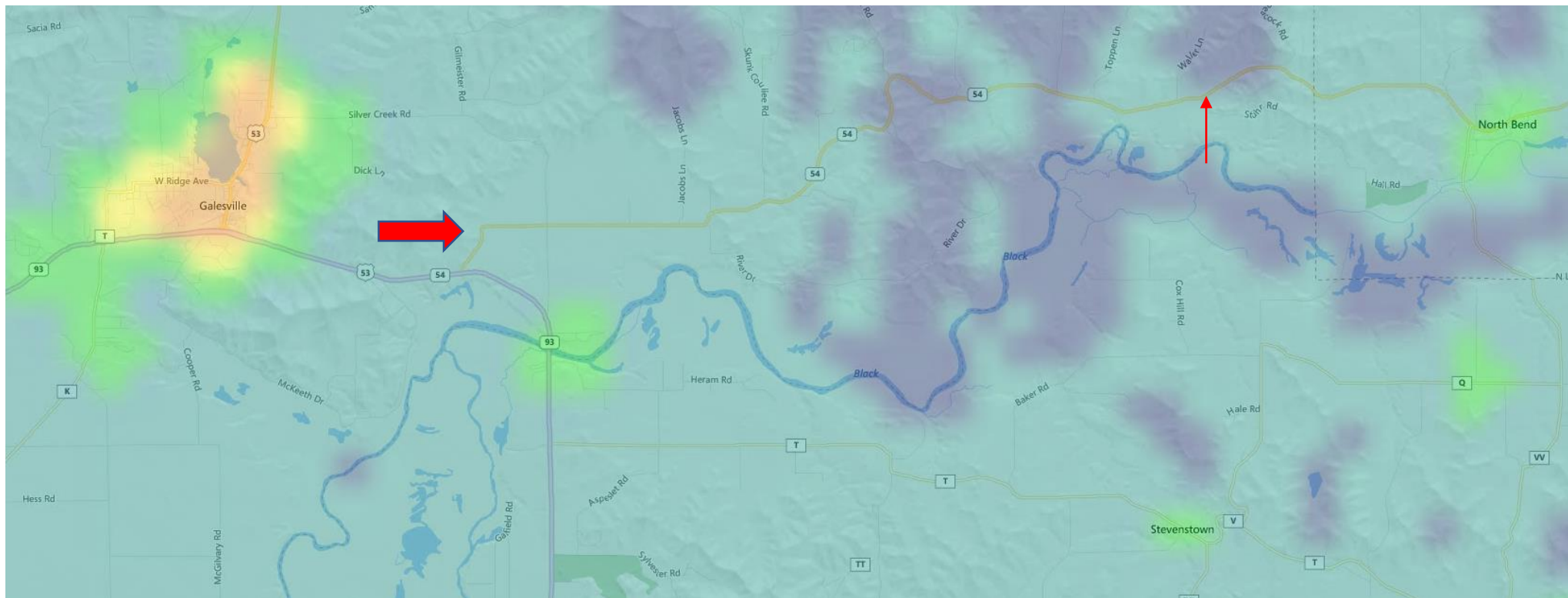
Preparing to Shoot (Where to Shoot)

- Use a Dark Sky's Map
- www.lightpollutionmap.info



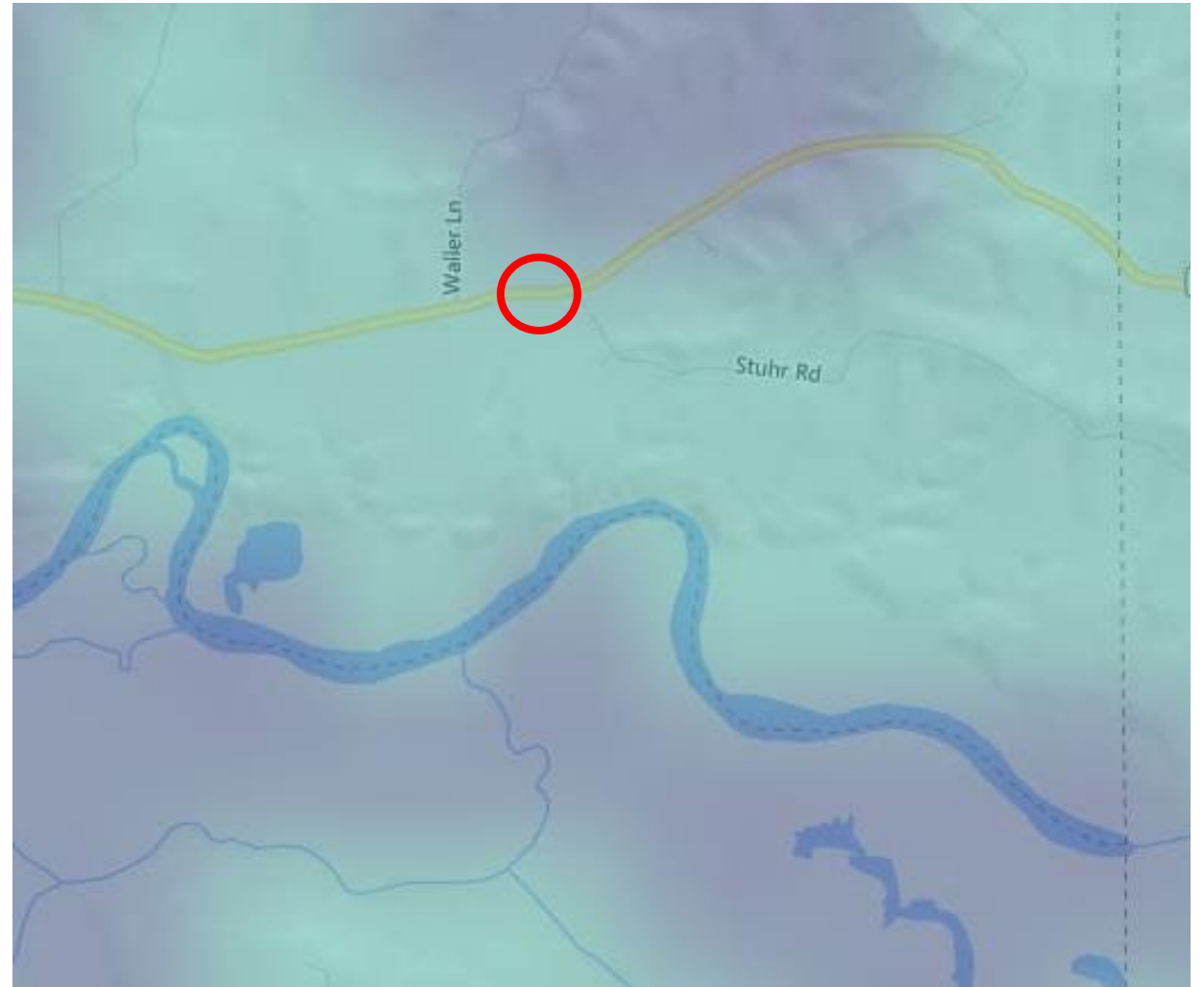
Preparing to Shoot (Where to Shoot)

- Use a Dark Sky's Map
- www.lightpollutionmap.info
- State Hwy 54 East



Preparing to Shoot (Where to Shoot)

- Use a Dark Sky's Map
- www.lightpollutionmap.info
- Great spot to the south on Hwy 54 between Waller Ln. and Stuhr Rd.
- 7.9 Miles east of Hwy 53 junction.
- Nice pull off, reasonably Dark skies to the south



Preparing to Shoot (Where to Shoot)

- Daylight shot of location
- Great shot to the south on Hwy 54 between Waller Ln. and Stuhr Rd.
- 7.9 Miles east of Hwy 53 junction.
- Nice pull off, reasonably Dark skies to the south



Now to the Easy Part

Taking the Photo

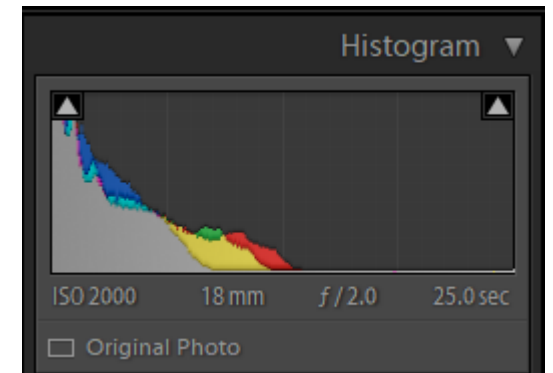
Camera Settings

- Mount Camera on Tripod
- Set File Type to **RAW**
- Put Camera in **Manual** mode
- Set Aperture to widest open (lowest f number)
- Set Shutter Speed to 20 seconds
- Set ISO to 6400
- Take test shot to see if stars are points of light (round not oval)
 - “Yes” Done, or gradually increase exposure time 1 sec at a time until they start to turn oval
 - If “no” decrease exposure time 1 second at a time until stars are points of light
- Decrease ISO to as low as possible to get good exposure (use histogram not camera LCD)

Camera Settings

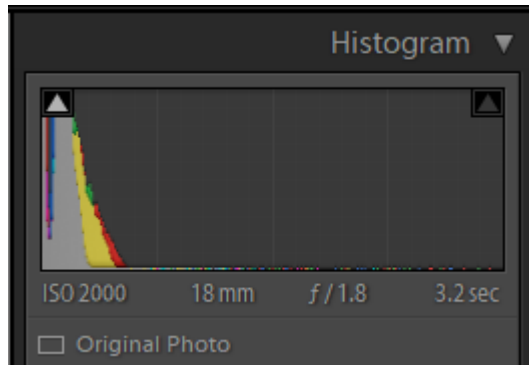
- ISO Considerations

- The higher the ISO the more noise you have to deal with in post.
- Reduce ISO to only what's needed for good exposure
- Histogram will look something like this with correct exposure
- Do not count on increasing exposure in post, it will increase the noise.
- LCD will fool you. Your eyes are used to the dark and the image will appear brighter than it is.
- Keep exposures from several ISO settings



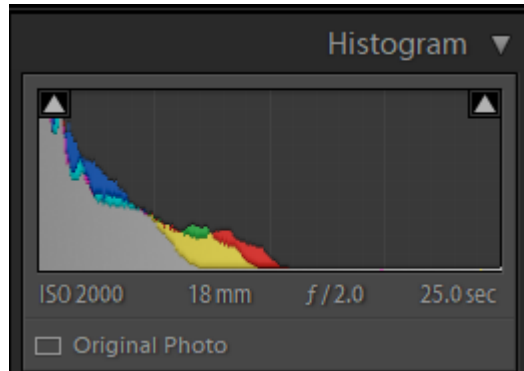
What you will see with the naked eye

- Your eye is equivalent to about ISO 800 and 3 seconds with an f/1.8 lens
- You will be able to see the Milky with Class 1-3 light pollution



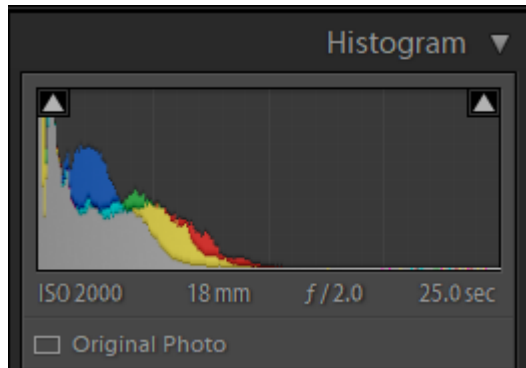
What the Camera Sees

- Monday May 7 at 1:22 AM, before all of the Core of the Milky Way rises
- Camera Settings
 - Aperture f/2.0
 - Lens Sigma 18-35mm
 - Exposure 25 seconds
 - ISO 2000



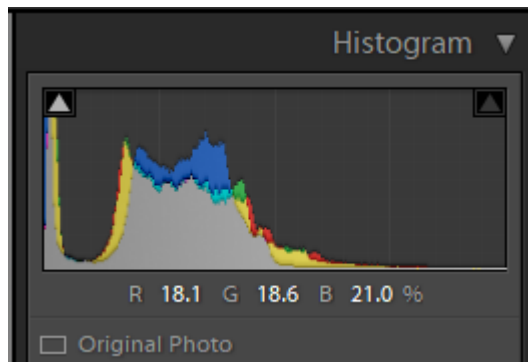
What the Camera Sees

- Monday May 7 at 1:46 AM, after the Core of the Milky Way rises
- Camera Settings
 - Aperture f/2.0
 - Lens Sigma 18-35mm
 - Exposure 25 seconds
 - ISO 2000



What the Camera Sees after the Moon Rises

- Monday May 7 at 2:22 AM, after the Moon rises
- Camera Settings
 - Aperture f/1.8
 - Lens Sigma 18-35mm
 - Exposure 25 seconds
 - ISO 2000
- Image too bright to get a good Milky Way photo



Post Processing

- Best Software to Start with:
 - Elements Camera RAW
 - Lightroom Classic CC
 - Camera RAW or RAW filter in Photoshop CC
- Recommend Adjustment Work Flow
 - Set “Color Temperature” to preference
 - Decrease Magneta for a Canon
 - Decrease Green for a Nikon
 - Set “White Point”, Try shift-double-click white slider
 - Set “Black Point”, Try shift-double-click black slider
 - Adjust Contrast to preference
 - Adjust Clarity to preference
 - Increase vibrance to preference (but don’t over do it)
 - Increase saturation slightly (easy does it)
 - Increase “Color Noise” slider until color noise disappears
 - Increase “Luminance Noise” slider, but be careful, it reduces sharpness significantly above 50.

Possible topics of Future Tutorials

- How to shoot the moon
 - Great moon photos merging multiple exposures
- Composition of star shots including light painting
- Star Trails
- Post processing of star shots with live adjustment demos