

Welcome to Astronomy Workshop

Sponsored by
The Saint John Astronomy
Club

Astrophotography

Part

Two

What settings should I use?

Constellations

- Exposure: 15 to 40 seconds
- Aperture: f/2 to f2.8
- Sensitivity: ISO 800 to 1600



What settings should I use

Twilight Landscapes

- Exposure: 1 to 10 seconds
- Aperture: f/2.8 to f/5.6
- Sensitivity: ISO 100



What settings should I use

- **AURORAE**
- **Exposure: 3 to 30 seconds**
- **Aperture: f/2 to f/2.8**
- **Sensitivity: ISO 400**



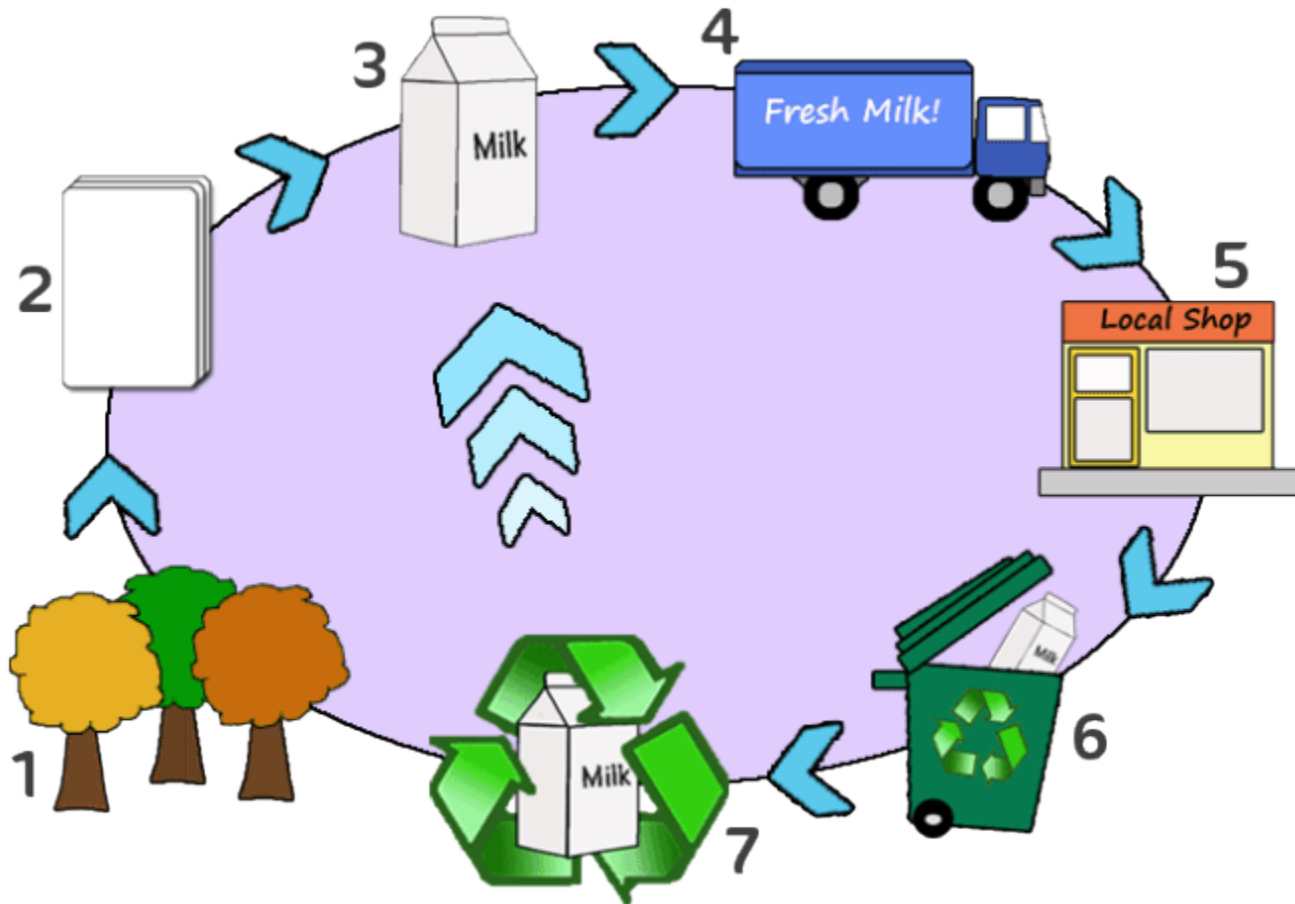
What setting should I use

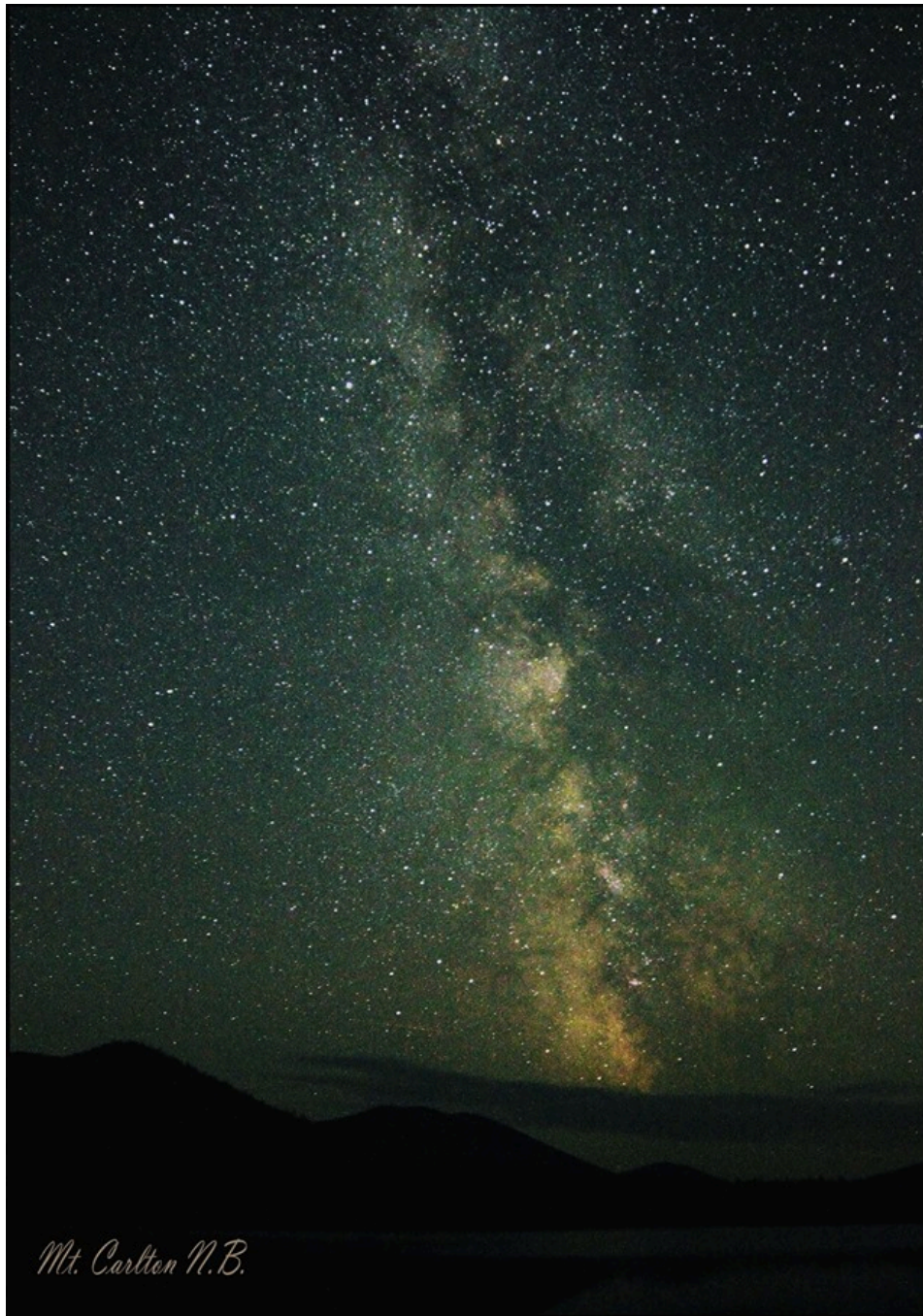
STAR TRAILS

- Exposure: 5 to 60 min/stack
- Aperture: f/4 to f/11
- Sensitivity: ISO 100/400



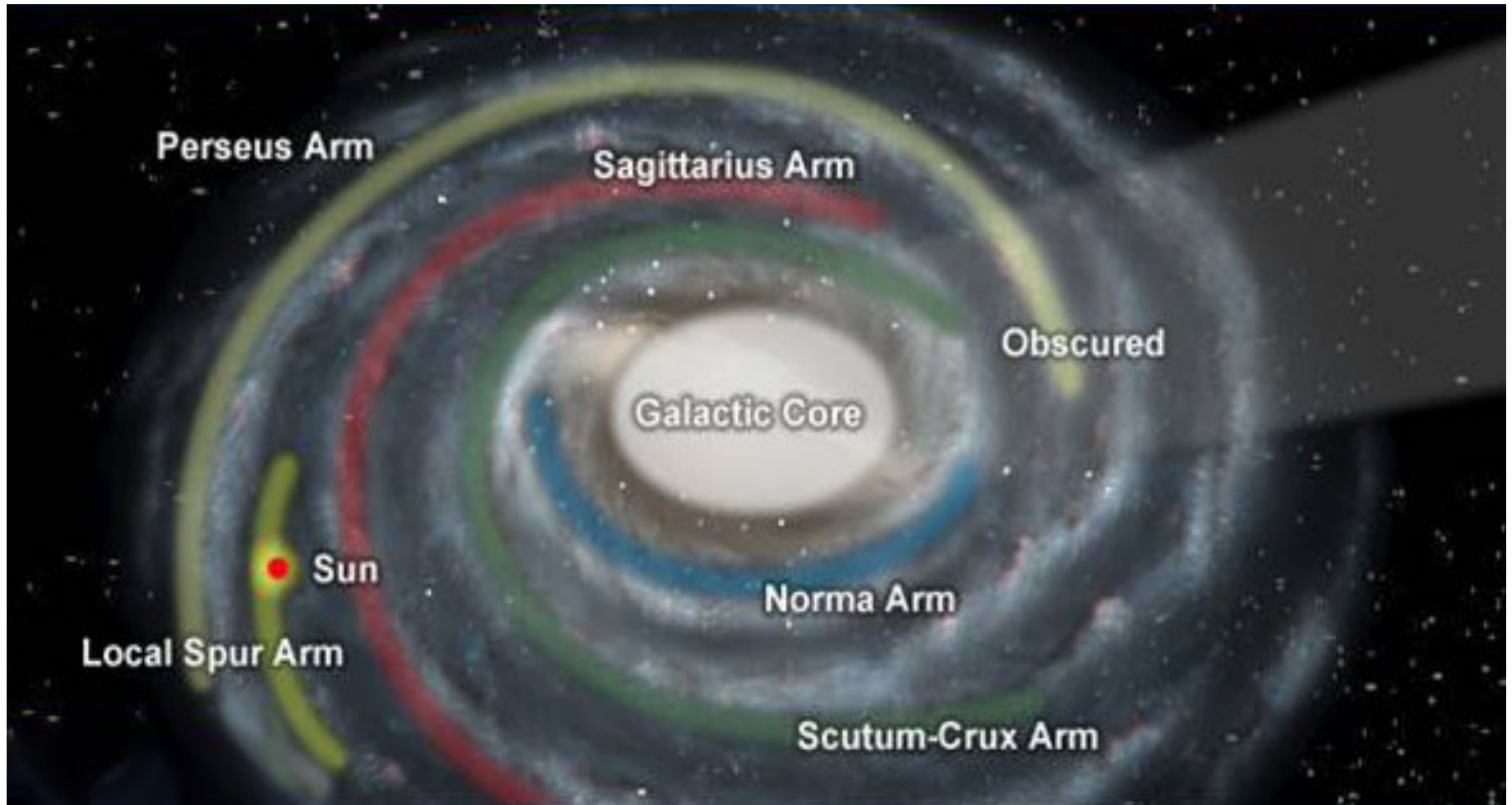
The Milky Way





The Milky Way

The Milky Way is a spiral galaxy believed to contain four major spiral arms, all of which start at the galaxy's centre, as well as a number of smaller arms. The major arms are the Perseus Arm, the Norma Arm, the Scutum-Crux Arm. Our Sun is located on a spur called the Orion Arm. (Image credit: NASA)



What portion are we seeing?

- We're seeing the galaxy edge on, from the inside, and so we see the galactic disk as a band that forms a complete circle around the sky.
- Which parts you can see depend on your location on Earth and the time of year, but you can always see some part of the disk.
- The galactic core of the Milky Way is located in the constellation Sagittarius, which is located to the South in Canada, and only really visible during the Summer. In really faint skies, the Milky Way is clearly thicker and brighter in that region.

Mt. Carleton

Side

shot

14mm

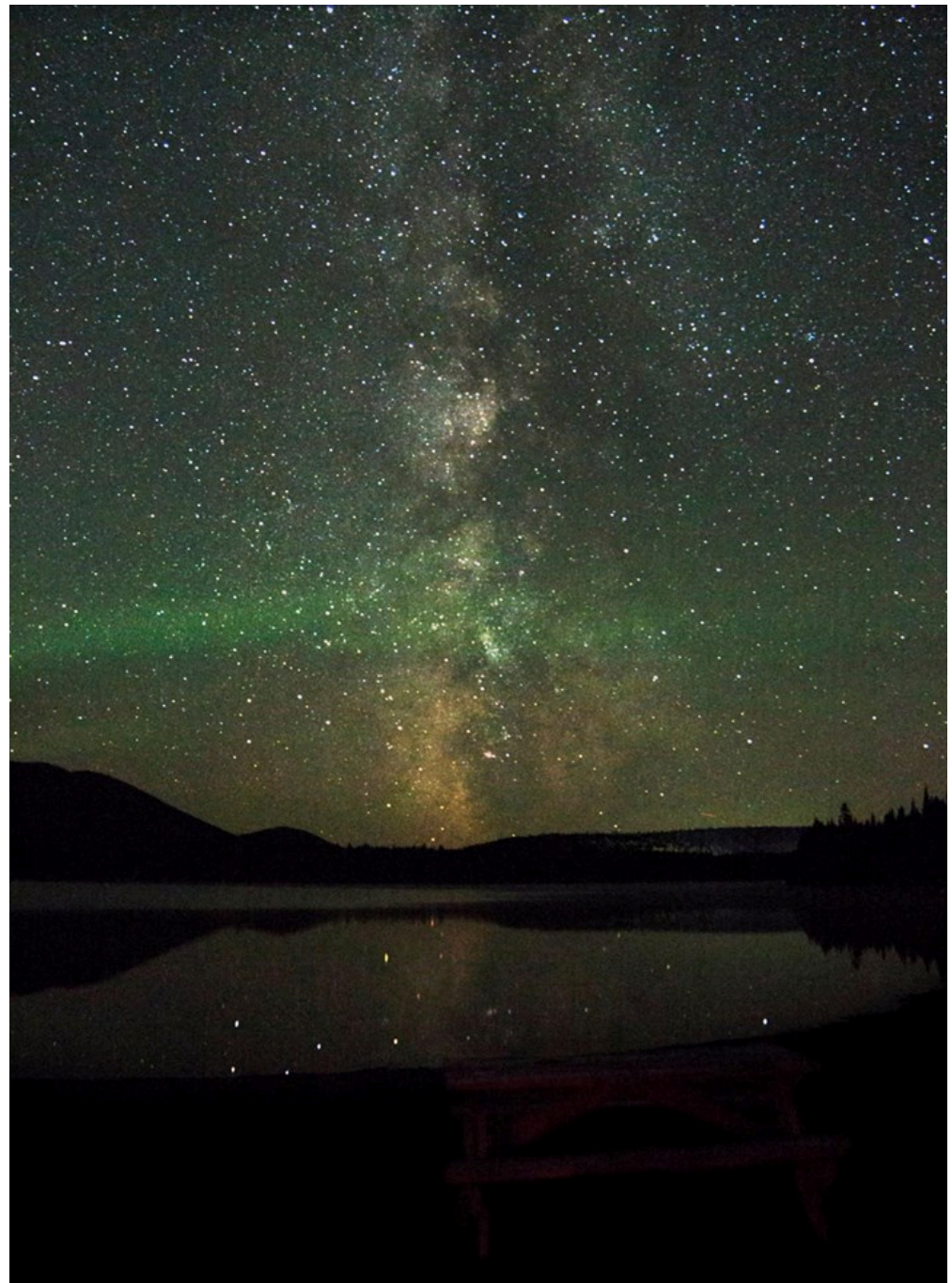
F2.8 ISO

1600

20sec.

Tripod

mounted



Fundy National Park



*Milky Way
Fundy National Park
New Brunswick, Canada*

Mount Carleton

Side shot
14mm f-2.8
60 sec, ISO 1600,
piggy backed on
a telescope



Cygnus Region Milky Way



Wide angle shot 2 x 2 min. (APS-C) 14 mm F2.8 3200 ISO



Milky Way with campground

STAR TRAILS





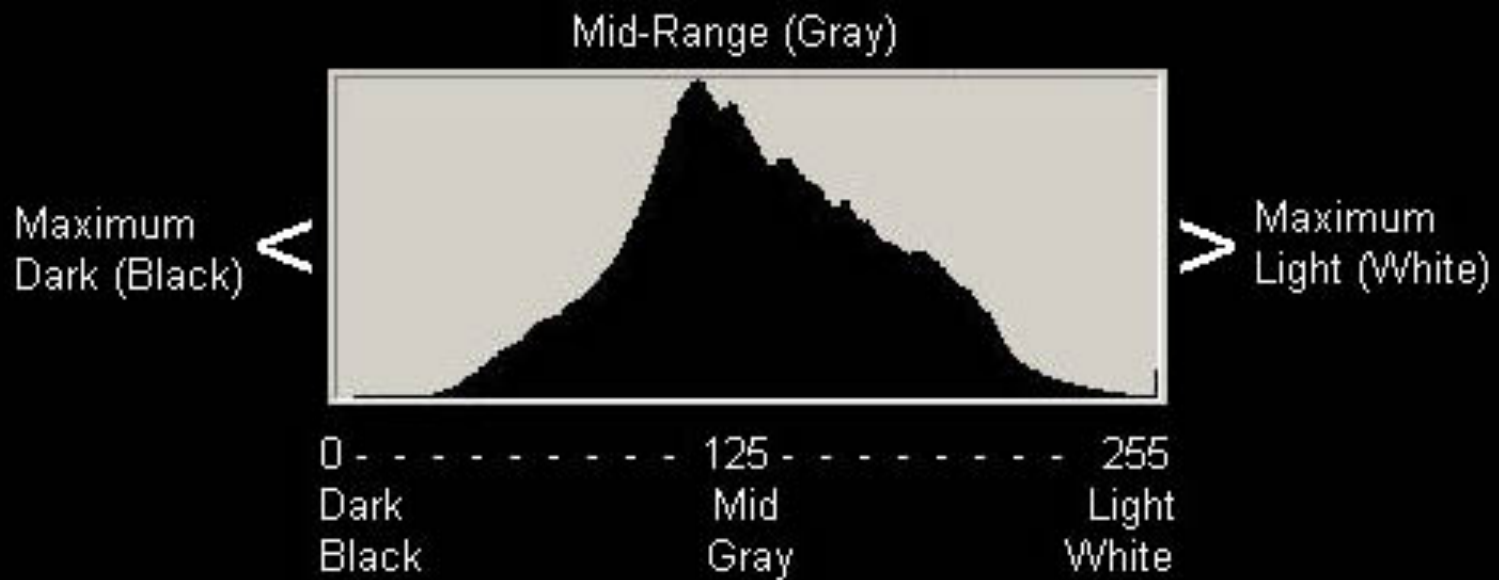
A **star trail** is a type of [photograph](#) that utilizes [long-exposure](#) times to capture the apparent motion of stars in the night sky due to the rotation of the Earth. A star trail photograph shows individual stars as streaks across the image, with longer exposures resulting in longer streaks. Typical exposure times for a star trail range from 15 minutes to several hours, requiring a 'bulb' setting on the camera to open the shutter for a longer period than is normal.

Ways of taking images

Place the camera somewhere **solid**, open the shutter and do a series of **test exposures**. Try starting at **ISO 400 at f/2.8 or f/4**. The correct exposure is when the peak of the mountain of the **histogram** on the back of the camera reaches about **1/3 to 1/2 of the way from the left hand side to the right**. Depending on how much light pollution you have at your observing site, it may be as short as 30 seconds. At dark sites, you may be able to expose as long as 5 to 10 minutes.

Histogram on DSLR

Figure 1

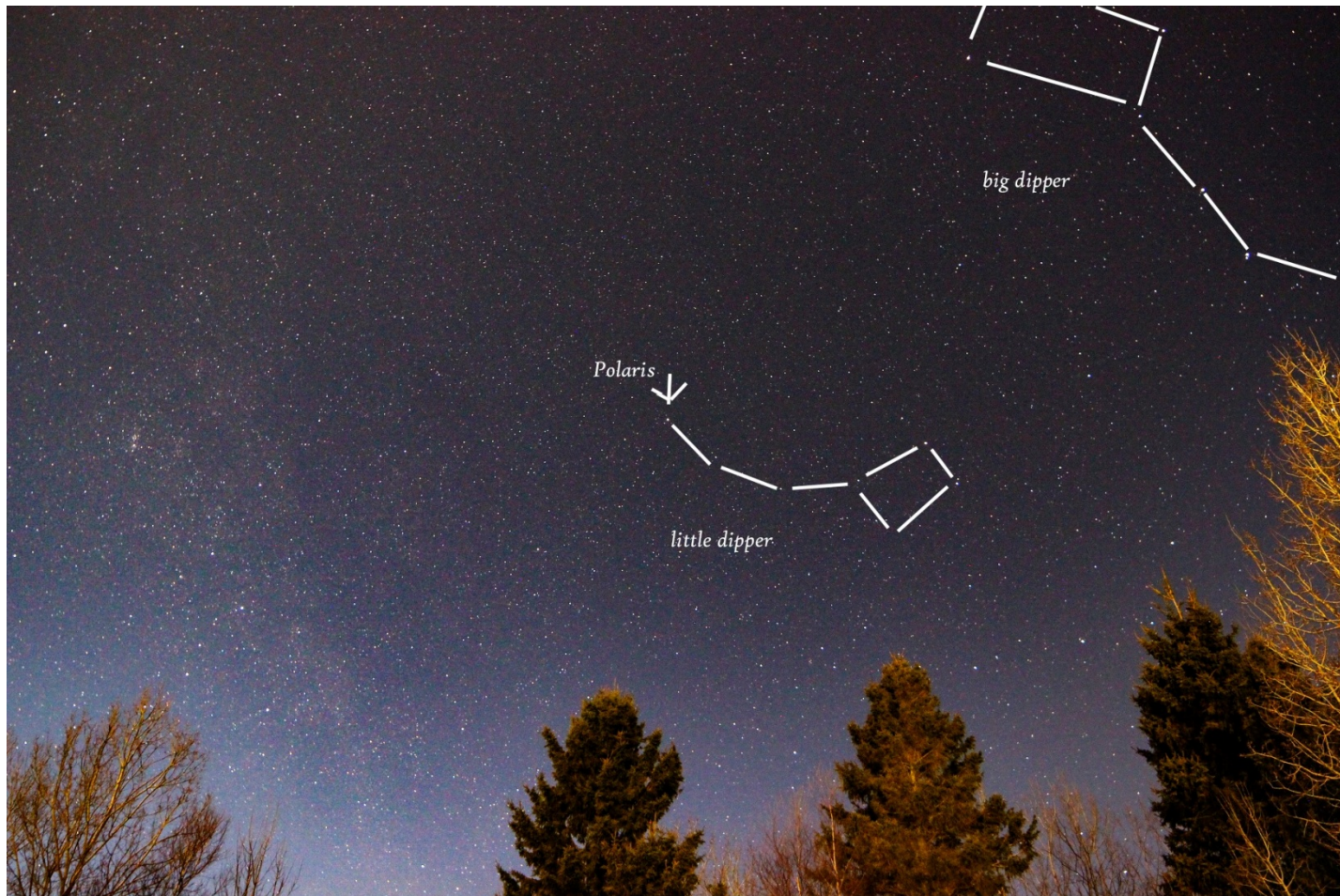


- **Use this exposure time for all of your exposures**, and just keep shooting a lot of frames. Be careful not to move the camera at all between exposures.
- Later, you can put all of these short exposures together in Photoshop with Chris Schur's [Star Trail Action](#), or with Achim Schaller's freeware [StarTrails](#) program to create the equivalent of a single long exposure.



Place the camera on a tripod, focus the lens on **infinity**, set the **ISO to 400**, set the lens to its **widest aperture**, and **lock the shutter open** for the exposure you determined by the histogram.

Polaris the North Star



The straight diagonal streak in the upper left of this photo is a meteor. The curved streaks are the trails of stars that were recorded during the 5.5 hour time exposure on a fixed tripod with an 18mm f/3.5 lens at ISO 64

