What To Bring

Contact Mark Bowie at mbowiephoto@gmail.com or 413-442-9125 with questions.

I consider the following items important. You can learn more about them at the workshop, but I made this checklist as a reminder to bring them if you already own them. **Items essential to this workshop are in bold**. You might also consider renting lenses, cameras or other gear from [Lens Pro To Go](https://www.lensprotogo.com) or

other rental companies.

**Photo Equipment**

**Camera** – Mirrorless or DSLR, full frame or cropped sensor. C**amera Manual**.

**Lenses** – There will likely be photo opportunities for your full range of lenses, from extreme wide angle to telephoto and macro. I use lenses ranging from 14-400mm at night, including a macro lens, but get the most use out of my 14-24mm, 24-70mm, and 80-200mm lenses. When buying lenses, I recommend getting the best quality you can afford, with maximum apertures of f/2.8 or wider for night photography.

**Non-abrasive Lens Cleaning Cloth and Wipes.**

**Tripod** – Sunset, twilight and nighttime light levels are too low to photograph properly without a *sturdy* tripod. I recommend buying a lightweight carbon fiber tripod with a ball head (I like Induro and Gitzo brands). Expect to pay $300-$400 for the set. Watch [Hunt’s Photo](http://www.huntsphotoandvideo.com) for sales. A quality set should last many years.

**Lots of Memory Card Storage** – I use fast 64 & 128GB cards, good for stills & video.

**Camera Battery Charger and Extra Batteries.**

**Sensor Cleaning Tools** — I use Eclipse solution and Sensor Swabs Ultra from [Photographic Solutions](http://photosol.com/products/).

Light Pollution Filter – To reduce haze, glare & colors of light pollution while increasing contrast. I use the [Haida NanoPro MC Clear-Night Optical Glass Filter](https://www.haidaphoto.com/en/?gclid=CjwKCAjwmMX4BRAAEiwA-zM4JnqfFJkt9SRQxdqk58geFsrexXvlucb_ITccVZ9HuDuGgaWy1483eRoCtkgQAvD_BwE). I can also recommend the [Kase Wolverine filter](https://kasefilters.com/product/kase-wolverine-100mm-light-pollution-filter-neutral-night).

Polarizing Filter. *Often used during daytime shooting, but not often at night, maybe in cities to reduce glare.*

Neutral Density Filters, Graduated Neutral Density Filters – *Often used during daytime shooting, but not often at night.* I use [Tiffen](https://tiffen.com/tiffen-filters/) 3- and 6-stop IR-ND neutral density filters. I also recommend ND filters from Kase or Breakthrough Filters. They have minimal color casting. I also use [Singh-Ray](http://www.singh-ray.com) 2-stop soft- and 3-stop hard-edge graduated filters.

**Shutter Release** ­­– You can use a wired cable release, a wireless remote, or the camera’s self-timer (except in BULB). Shutter releases are available for specific camera models, from simple units that only trip the shutter, to more advanced units with intervalometers that allow us to program exposure time, count down the exposure, shoot multiple exposures and timed intervals. I use my Nikon Z6’s internal intervalometer to shoot time-lapses. I also use the [Vello Shutterboss](https://www.bhphotovideo.com/c/search?Ntt=Vello%20Shutterboss%20&N=0&InitialSearch=yes&sts=ma&Top+Nav-Search=) III ($99) wireless intervalometer for shooting time-lapses.

**Flashlight &/or Headlamp** – for light painting, seeing camera controls & navigation. Preferably with a red light, or cover with a red filter, to limit distracting others. I use the [Pelican 2720 LED Headlamp](https://www.pelican.com/us/en/product/flashlights/headlamp/2720). LED flashlights are particularly powerful & small. I use the [Coast](https://coastportland.com/) HP7R. [Fenix](https://www.fenixlighting.com/) also makes quality LED flashlights.

Continuous Lights – for light painting. I use the [F&V Lighting Z96 UltraColor LED Video Light](https://www.fvlighting.com/z96-ultracolor-led-video-light-95-cri.html), the smaller [Aputure AL-M9 Amaran LED Light](https://products.aputure.com/al-m9-mobile/), and a small [LumeCube](https://lumecube.com/) multi-color LED panel.

**Dew Heater/Lens Warmer/ThermaCare or similar brand heat wraps/hand or foot warmers** – to prevent condensation on lenses at night, especially during long time-lapses. I have a Lens Warmer made by Move Shoot Move that has a USB plug to power with a battery charger. I have also used heat wraps that have a Velcro strap to easily wrap around the lens barrel. Available at Walmart and drug stores. A box of 3 costs about $6. Hand or foot warmers can be secured to the lens with rubber bands.

**Eyepiece Cover/Small Towel/Gaffer’s Tape** – to cover the viewfinder and prevent stray light from impacting the sensor.

**Rain Cover** – For camera and lens protection. An inexpensive plastic shower cap works well in many instances. I also use [Op-Tech plastic rain sleeves](https://optechusa.com/rainsleeve.html) that have a drawstring at one end and that slide over camera & lenses. A set of 2 costs about $6.

**Battery-powered Alarm Clock/Watch** – In case cell phone service isn’t available.

Cell Phone.

**Apps for Night Photography**

[Stellarium.org](http://stellarium.org/) and the new [Stellarium-web.org](https://stellarium-web.org/).

[PhotoPills](https://www.photopills.com/)

[Sky Safari Plus 7 (Mac)](https://skysafariastronomy.com/)

[Sky Guide](https://itunes.apple.com/us/app/sky-guide/id576588894?mt=8)

[Star Walk](http://vitotechnology.com/star-walk.html)

[Clear Outside](https://clearoutside.com/forecast/50.7/-3.52)

**Computer Equipment**

**Laptop Computer** – I highly recommend bringing a laptop computer for downloading, processing and viewing your images.

**Processing Software** – Good choices include [Adobe](https://www.adobe.com) Lightroom, Photoshop, or Elements. I use [Adobe’s Creative Cloud Photography Plan](https://www.adobe.com/creativecloud/plans.html?promoid=6NCS7DGT&mv=other), which includes Lightroom & Photoshop, for about $10/month. Free 30-day trials of these programs are available.

Noise Reduction & Sharpening Software – Lightroom’s DeNoise feature is excellent. I can also recommend [DXO’s](https://www.dxo.com/) PhotoLab and PureRAW, or [Topaz Labs’](https://www.topazlabs.com/) Photo AI, DeNoise AI and Sharpen AI.

[**StarStax**](https://www.markus-enzweiler.de/software/software.html)– free star trail merging software – for Mac & PC

[Starry Landscape Stacker](https://itunes.apple.com/us/app/starry-landscape-stacker/id550326617?mt=12) – Combines a series of images of the same composition, re-aligns the stars to keep them as points of light, while keeping the landscape static, and reduces the noise. Available for Mac only on the App Store for $39.99.

[Sequator](https://sites.google.com/site/sequatorglobal/) – similar to Starry Landscape Stacker – for PC – free; donations welcome

[Star XTerminator](https://www.rc-astro.com/software/sxt/) – Star Minimization and nebulosity processing software - Mac & PS

To create time-lapse movies, you may also want the following software:

1. Lightroom. A free trial version is available at <http://www.adobe.com/downloads.html>

2. Photoshop. A free trial version is available at <http://www.adobe.com/downloads.html>

3. LRTimelapse: The free download will allow you to load up to 400 images: <https://lrtimelapse.com/download/>. Particularly good at reducing flicker in daytime time-lapses.

To play the movie: iMovie or VLC Media Player for the Mac, or Windows Movie Maker.

**Power Strip** – Please bring if convenient. For easy access to power.

Back-up device – Such as an external hard drive.

**Flash Drive** – For sharing images.

**Clothing & Outdoor Gear**

Historical average temperatures for Tupper Lake, NY in July vary from a low of 54 to a high of 75 degrees. It’s preferable to dress in several warm layers as temperatures can change significantly and quickly at night.

**Warm Jacket and Pants**

Fleece Under Layer – Can be added or removed as the temperature changes.

**Rain Jacket & Rain Pants** – For rain and wind protection.

Warm Gloves, Hat

**Hiking Boots** – preferably waterproof

Wading boots or sandals– For photographing in the waters.

Dress for instructional sessions will be casual.

Water bottle.

Energy bars or other snacks.