SHOOTING STARS

Under the Selwyn stars

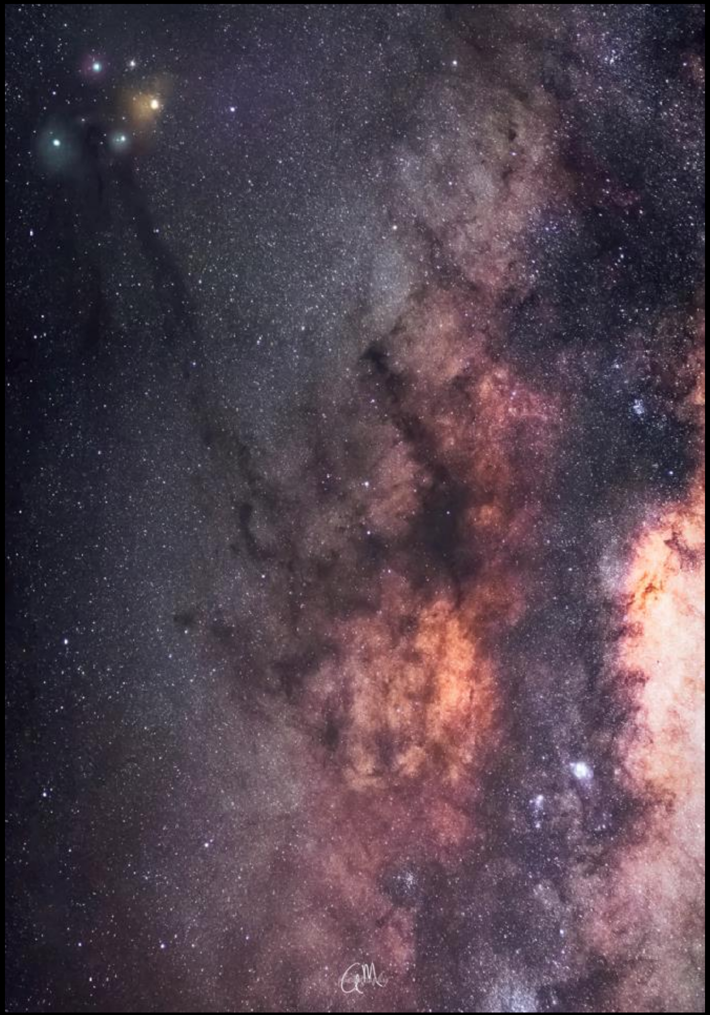
BASIC EQUIPMENT

- DSLR
- TRIPOD
- GOOD PRIME LENS
- REMOTE RELEASE
- HEADLIGHT (WITH RED LIGHT)
- LENS HEATER (OPTIONAL)
- WARM CLOTHES!!!
- CELLPHONE

BASIC SETTINGS

- M – MANUAL MODE
- SHOOT IN RAW AND JPEG (if you want to edit)
- MANUAL FOCUS
- ISO 3200 OR HIGHER (UNLESS ON A TRACKING MOUNT)
- WHITE BALANCE – AWB/TUNGSTAN/3500-3900K
- DELAYED SHUTTER RELEASE (2 SEC)
- F STOP – GENERALLY AS WIDE AS POSSIBLE (THERE ARE EXCEPTIONS)
- RULE OF 500 OR 300 – DEPENDS ON THE CAMERA SENSOR SIZE.
    - FULL FRAME (500 RULE) – 20MM = 25SEC EXP, 50MM = 10SEC EXP
    - CROP SENSOR (300 RULE) - 20MM = 15.5SEC EXP, 50MM = 6.25 SEC

20MM VS 50MM VS 85MM



HELPFUL APPS AND SITES

- For Apple users – PHOTOPILLS (APP)
- For Android users – STELLARIUM (APP)
- STARWALK
- AURORA FORECAST
- DARKSKY FINDER
- WINDY (WEATHER AND CLOUDS)
- JMA (**Himawari Real-Time Images)**
- SEQUATER
- ICE
- SPACEWEATHER.COM

MILKY-WAY SEASON

- THE MILKYWAY CORE IS VISIBLE FROM MID/LATE FEB THROUGH TO MID/LATE NOVEMBER (depending on moon phases)

- RISING IN THE EAST JUST BEFORE SUNRISE IN FEB THE MILKYWAY RISES EARLIER EACH MORNING UNTIL MID JUNE WHEN IT IS RISING JUST AFTER SUNSET.

- SETTING IN THE WEST TOWARDS MID JUNE/JULY GIVING SOME SPECTACULAR OPTIONS FOR SHOOTING THE FULL MILKYWAY ARCH

- SOME OTHER TARGETS LMC AND SMC, ORIONS BELT (and associated Nebula) THE MOON, SOUTHERN LIGHTS (AURORA AUSTRALIS) AIRGLOW AND ZODICAL LIGHT (best in spring and Autumn)

CANTERBURY REGION

- DARK SKIES

Canterbury has some spectacular sites close to Christchurch (ranging from 20 mins to 2hrs drive)for Astro.

North along the beaches from Woodend to inland Hanmer Springs and Kaikoura.

Similarly to the south of Christchurch, starting from Lake Ellesmere and inland to the Southern Alps (including Castle Hill) and of course the dark skies of Tekapo.

To the east of the city Banks Peninsula offers magic at night all through the year from Port Levy all the way around to Tumbledown bay.

http://darksitefinder.com/

TYPES OF IMAGES

- STAR TRAILS

Made up from either a single long exposure at a low iso or multiple images stacked on top of each other to give the impression of the stars moving against a fixed background.

Really effective when there is no clouds, some moon light to illuminate the foreground and to show the rotation of the earth against the milky way.

TYPES OF IMAGES

- LANDSCAPES

Generally capturing the location of shooting as well as the sky above.

Generally made of single images or multiple row panorama shoots to get the full expanse of the sky into one image.

In the early season the milky way rising straight up is a striking image.

Later in the season when the milky way starts to get lower than 45 degrees above the horizon the full arch looks amazing above the mountains or out to sea (from the south of the Peninsula)

TYPES OF IMAGES

- DEEP SKY

Generally now getting into more advanced imagining techniques including stacking, using trackers and high end lenses & telescopes with specialised Astro modified cameras or specially designed sensors mounted to telescopes and trackers.

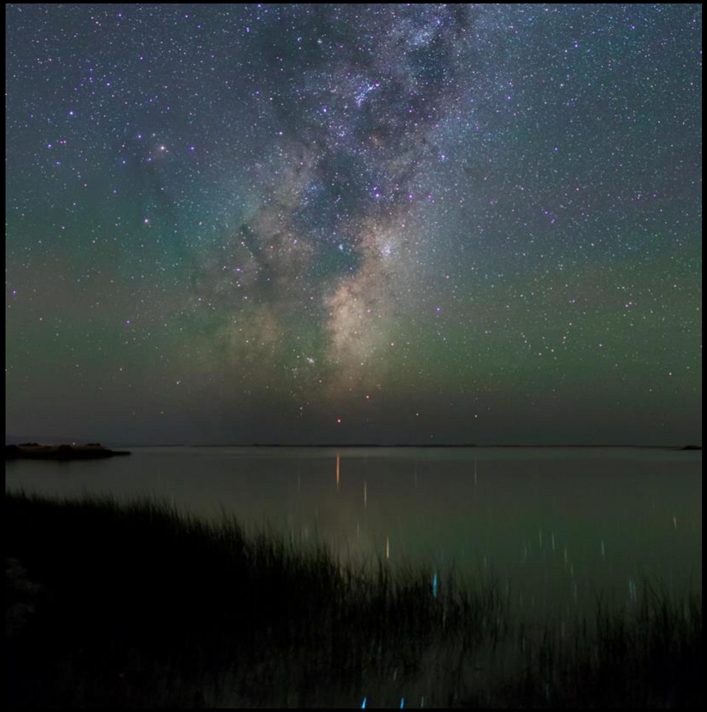
TOP IMAGE – RHO OPHIUCHI (one of the closest star forming regions to our Solar system), approx. 460ly away)

LOWER IMAGE – LMC (large Magellanic Cloud – satellite galaxy around 160,000 lyears away) containing around 30 billion stars

OTHER TARGETS

- AIRGLOW

Airglow (also called **nightglow**) is a faint emission of light by a planetary atmosphere. In the case of Earth's atmosphere, this optical phenomenon causes the night sky never to be completely dark, even after the effects of starlight and diffused sunlight from the far side are removed. This phenomenon originates with self illuminated gases and it has no relationship with Earth's magnetism and sun spot activity.



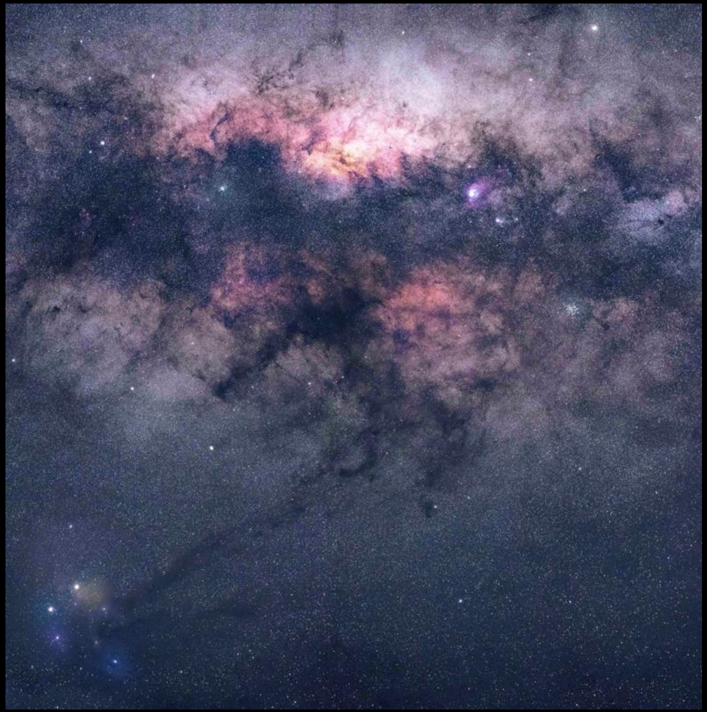
OTHER TARGETS

- GALACTIC KIWI

The Kiwi lay between three official constellations: Scorpius, Ophiucus and Sagittarius towards the core of the Milky way

- SOUTHERN LIGHTS

Auroras are the result of disturbances in the magnetosphere caused by the solar wind. These disturbances alter the trajectories of charged particles in the magnetospheric plasma



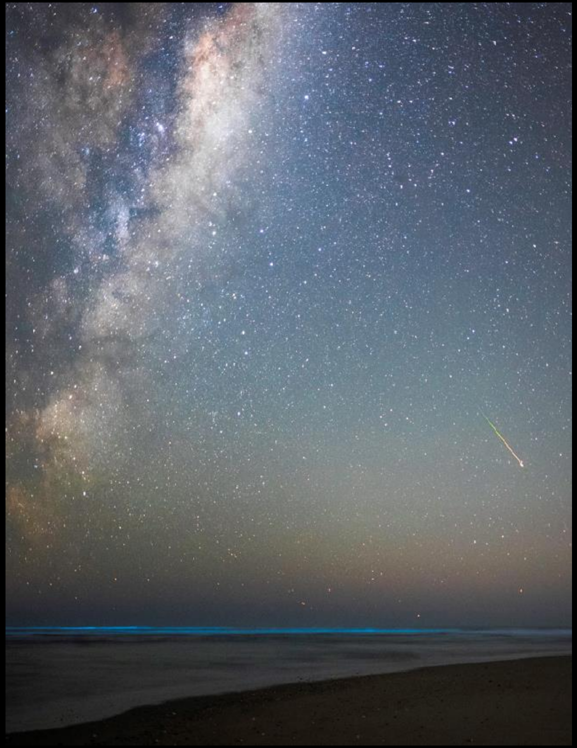
OTHER TARGETS

- ZODIACAL LIGHT

- The zodiacal light is a faint, diffuse, and roughly triangular white glow that is visible in the night sky and appears to extend from the Sun's direction

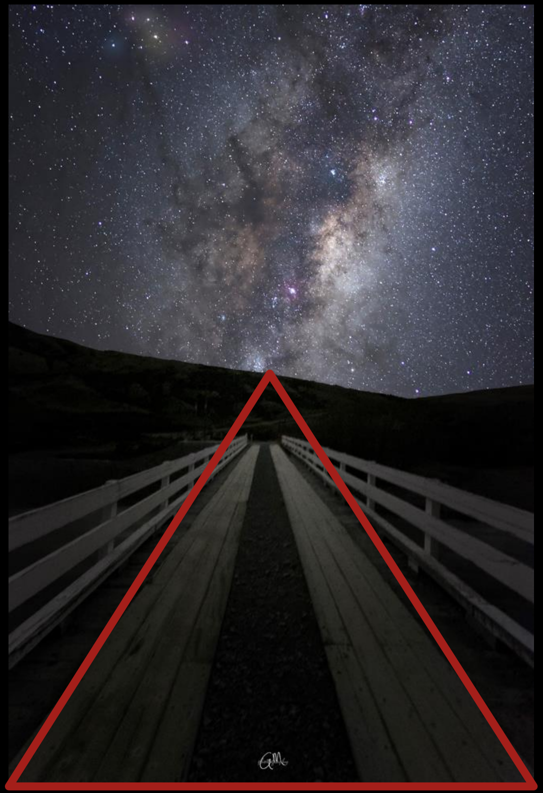
- METEORS

- Meteors, also known as shooting stars, are pieces of dust and debris from space that burn up in Earth's atmosphere, where they can create bright streaks across the night sky. When Earth passes through the dusty trail of a comet or asteroid's orbit, the many streaks of light in the sky are known as a meteor shower.



COMPOSITIONS

- Rule of Thirds
- Leading Lines
- Silhouettes



COMPOSITIONS

- Reflections
- Buildings

COMPOSITIONS

COMPOSITE IMAGES

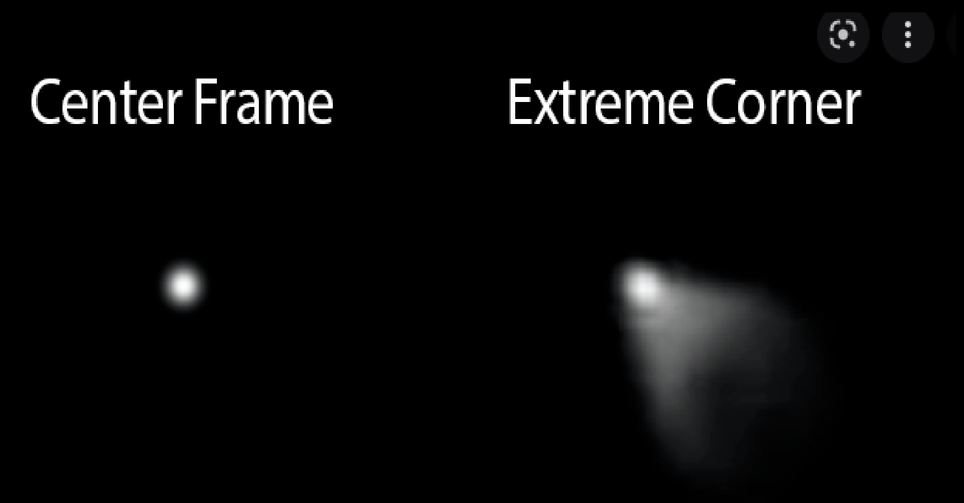
- By combining blue hour or daytime shots with the nigh sky to create your own Astro images

EYE VS CAMERA

Camera sensors are very sensitive to lights, that's why you can see camera can take pictures in dark night with high ISO and its often pretty clear.
In our eyes we have millions of rod-shaped and cone-shaped cells along every eye's <u>retina</u>. These **rods and cones** are necessary for eyesight.
While **cones** are great at registering bright lights, colors and fine details, they're not so useful for helping you see in the dark — that's where your rods come in.
Rods excel in peripheral vision and are much more sensitive to light photons, which makes them extremely helpful in low-light settings. Without rods scattered across your retinas, any sort of darkness would be virtually blinding.
But there's a catch: <u>Rods can't process color. This is why your night vision usually isn't very colorful and often seems to be in black and white</u>.

TRACKED VS UNTRACKED

DISTORTIONS AND EFFECTS



- COMA - Coma, also known as “comatic aberration”, is a type of optical aberration that results in off-axis points of light appearing comet-shaped. As light rays from the edges of the frame pass through various parts of a spherical surface, they vary in magnification, creating a series of asymmetrical circular shapes of increasing sizes.
- To try and minimize this affect I normally stop down (so if the lens is quick at f1.4 I’d shoot at f2-2.8

DISTORTIONS AND EFFECTS

- **NOISE** Low-light situations impact your signal-to-noise ratio, thus introducing noise in your image. The signal here refers to the actual information, data that you will be capturing. In order to get the best image quality, the idea is to capture enough signal in order to overpower the backdrop of noise. To compensate for low lighting, photographers may use high ISO setting, a longer shutter speed or setting a wider aperture.
- When shooting a scene, each pixel emits a signal when it meets with light. When shooting in low-light condition, pixels have little light fluctuation to report but are being amplified by high ISO settings. At high ISO the camera’s sensor becomes more responsive to light. The higher the ISO, the brighter the resulting shot. There is nevertheless a trade-off: by increasing the ISO, more noise will be added to the final image. It is important to note that ISO settings have no creative impact on your photography, unlike aperture and shutter speed.
- Generally larger sensors perform better in low light situations. Software programs are great from reducing noise as is stacking multiple images which effectively reduces noise by averaging the impact across multiple images.

DISTORTIONS AND EFFECTS

Camera shake

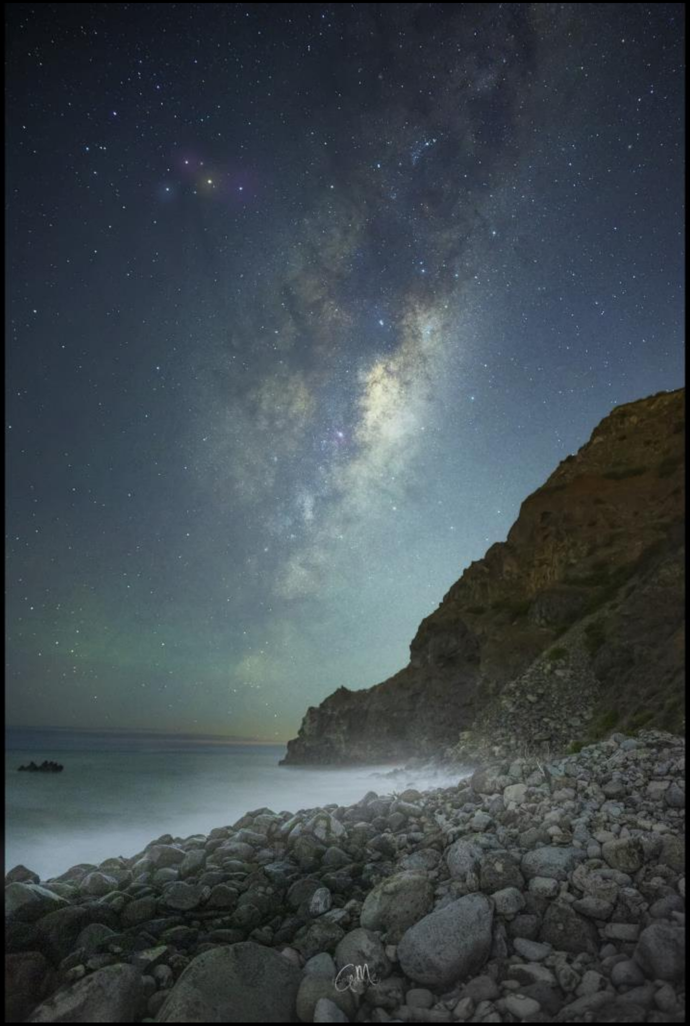
Because we are shooting at longer exposure times its easier to get camera shake.

1. Enable the mirror lock (not req'd on mirrorless cameras)
2. Use a study tripod
3. Weight the tripod down
4. Find a sheltered spot out of the wind
5. Use a remote or delayed shutter release.

PROGRESSION

2016

2020




MOUNT ENYS

QUESTIONS