

Newsletter September 2025

September's shaping up to be a busy month!

So much on the horizon this month as we come into spring! We've got a Moth and Butterfly talk lined up at The Headwaters Eco Lodge. Bring along your moth diaries if you have any moths recorded.

Plus a Star Party planned for kids—and adults too—though the exact date's still up in the air as we'll need to look ahead for a stretch of good weather. Fingers crossed for clear skies and warmer nights. We'd love for you to join us as we explore the green space behind the skate park, which we're hoping will be our new gathering space and the future home of the Star Compass.

This month we'll also see a total lunar eclipse and a partial solar eclipse.

On the astronomy front, there's been some cool news worldwide. Plus, we were thrilled to see that on July 22nd—the exact date of the 2028 total solar eclipse—the sun was still just visible from Glenorchy. Even better, we've pinpointed some prime spots to watch the eclipse in all its glory.

If astrophotography is your thing, it might be good to start thinking now about getting solar filters for your camera and proper solar glasses for yourself for 2028. Staring straight at the sun is will damage your eyes and could also damage your camera sensor. We'll have more on that in the coming years but we'll be one of only places in NZ to experience the total eclipse so it's going to be a busy time!

FUN FACT: Did you know that observing the lunar eclipse is what made early astronomers realise that the Earth is a sphere and not flat?

The circular shadow cast by the Earth on the Moon during a lunar eclipse, regardless of the time or location of the eclipse, was a key observation that led ancient Greeks to infer the Earth's spherical shape

Coming up this month:

- ✚ 7th Sept : Full moon
- ✚ 8th Sept : Lunar Eclipse Begins at 3:28 am totality is at 6:11am and ends at 7:07am
- ✚ 9th Sept : Moth and Butterfly talk at The Headwaters Eco Lodge @ 7.00pm
- ✚ ?? Sept : Star party - family friendly, at the green behind the skate park. Start about 7:30 pm. Bring food to share and warm clothes.
- ✚ 21st Sept: New moon
- ✚ 22nd Sept: Partial solar eclipse early morning 5.00am to 8:00am so we probably won't get to see it (but you may notice something weird happening with the sunrise that morning)
- ✚ 22nd Sept: Spring Equinox
- ✚ 27th Sept: GY Flower Show
- ✚ 28th Sept: Daylight savings begins



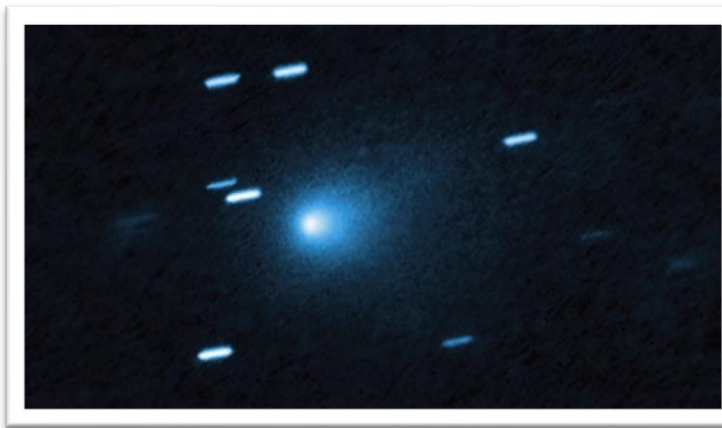
World Astronomy News

A team of scientists has found the recently discovered interstellar comet 3I/ATLAS is teeming with water ice. This water could have been sealed in the comet for 7 billion years, which would make it older than the solar system itself.

The team also found a mixture of organic molecules, silicates and carbon based minerals on the object, meaning 3I/ATLAS resembles

asteroids found at the outskirts of the solar system's main asteroid belt between Mars and Jupiter.

The team's observations, made with the SpeX instrument on the NASA Infrared Telescope Facility (IRTF), perched upon the mountain Mauna Kea in Hawaii, and the Gemini Multi-Object Spectrograph equipped on the Gemini South Telescope in Chile.



The Hubble Space Telescope's image of 3I/ATLAS, showing the comet and a burgeoning tail.

(Image credit: NASA/ESA/David Jewitt (UCLA)/ Image Processing: Joseph DePasquale (STScI))

Meanwhile the Vera Rubin telescope discovered 2,104 asteroids in just a few days.

This is five times more than all the astronomers in the world discovered during the last 200 years since the discovery of the first asteroid.

The image to the right is about 2% of the view of the Rubin telescope.

HOT TIP: You can go to the Rubin Telescope website and explore the images the telescope is recording. Here is the link <https://rubinobservatory.org/>



Learn the night sky

This month...

The Moon will be full on September the 7th and the New Moon is on September the 21st.

If you are somewhere without mountains then you may see a partial solar eclipse on the morning of the 22nd, and a total lunar eclipse the morning of the 8th. They're always really fun to watch, but...

Super Important!

Never look directly at the Sun. You can seriously hurt your eyes, and even go blind. Your eyes don't have pain receptors to tell you when you're frying them with the sun so you can bring on blindness really quickly. Proper eye protection, like eclipse glasses or a special solar filter, is the only safe option. Sunglasses don't work.



Lagoon Nebula

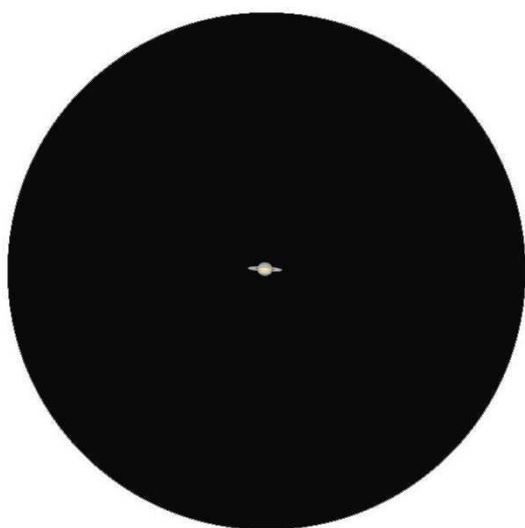
Photo credit: Brian Boyle

In the Morning sky

Two "morning stars" are visible as both Jupiter and Venus are present Jupiter looks to be more golden than Venus.

In the Evening Sky

Saturn is visible once again rising in the east at sunset and setting in the west as the sun rises. It will be in opposition on the 21st of September, which means it is the closest to Earth at that time and is at its brightest in the sky.



Fun Fact! Did you know when Saturn was first observed with a telescope, it was thought to have ears!

At this time of the year, the Māori name for Scorpius is Te Matau A Maui – the fishhook of Maui that drags the Milky Way from the sky. This is because after sunset you can see the fish hook at the Zenith and it then moves towards the western part of the sky, appearing to drag the milky way towards the horizon as the night progresses.

Let's talk about a Solar Eclipse

On Monday the 22nd of September New Zealand will experience a partial solar eclipse Starting at 5:25 am and ending at 8:36 am

What is a Solar Eclipse?

A solar eclipse happens when the Moon moves between the Earth and the Sun, blocking all or part of the Sun's light from reaching the Earth. This occurs because of a unique coincidence. Although the moon is 400 times smaller than the sun, the sun is 400 times further away, so the two look about the same size in the sky. There are three main types of solar eclipses:

- **Total eclipse:** The Moon completely covers the Sun, turning day into night briefly.
- **Partial eclipse:** Only a part of the Sun gets covered by the Moon.
- **Annular eclipse:** The Moon covers the Sun's centre, leaving a "ring of fire" around the edges.

For the South Island of New Zealand this September, we'll witness a **partial solar eclipse**, where the Moon will cover a portion of the Sun.

<https://glenorchydarkskies.org.nz/contact/>

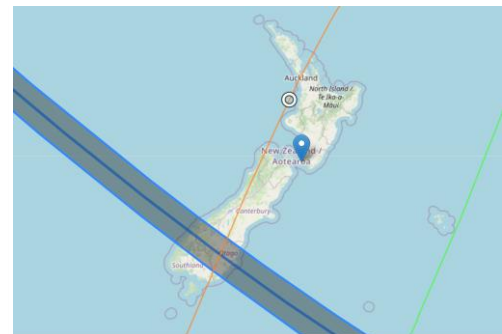
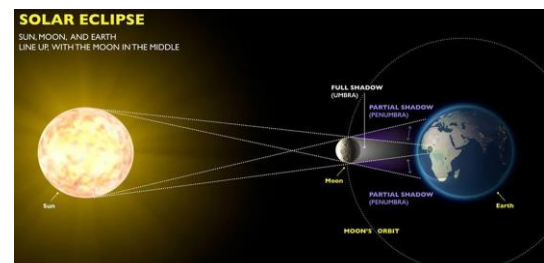
Keep it starry!

The Tāhuna Glenorchy Dark Skies Crew

When the Moon moves in front of the Sun, it blocks sunlight and casts two types of shadows on Earth:

1. **Umbra:** The darkest part of the shadow, where the Sun is completely blocked (total eclipse).
2. **Penumbra:** The lighter, outer shadow where only part of the Sun is blocked (partial eclipse).

Here's a diagram to visualize:



But not everyone experiences every solar eclipse. Getting a chance to see a total solar eclipse is rare. The Moon's shadow on Earth isn't very big, so only a small portion of places on Earth will see it. You have to be on the sunny side of the planet when it happens. You also have to be in the path of the Moon's shadow.

On average, the same spot on Earth only gets to see a solar eclipse for a few minutes about every 375 years. We'll be in that sweet spot in July 2028! Check out its pathway in the image above.

