Snake River Skies

The Monthly Newsletter of the Magic Valley Astronomical Society. July 2025

Membership Meeting
July 12th at the Herrett Center
CSI main campus at 6:00pm

Centennial Observatory
See Inside for Details

Faulkner Planetarium
See Inside for Details

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Magic Valley Astronomical Society is a member of the Astronomical League

M-51 imaged by
Rick Widmer & Ken Thomason
Herrett Telescope - Shotwell Camera

July Newsletter

Message from the Club Vice President Greetings: Friends and Members.

Happy Summer everyone! First, a reminder our upcoming annual picnic July 12th at the Herrett Center. Cooking starts at 6:00pm. Again, we are asking all who attend to bring a side dish such as a salad or dessert or chips. We will handle the ice cream. Then from the 25th and 26th will be our Castle Rocks Star Party. Hope to see many of you there. While our crazy spring offered only a few clear and calm nights, July will hopefully offer better weather and a chance to catch some fun objects.

Calendar Quick Review

On July 4 you can photograph Mercury at its greatest east elongation.

The Full Buck Moon on July 10.

The Manhattanhenge of July 12. It is a fantastic spectacle by which the Sun aligns itself during Sunset with some of the streets that form a grid on the island of Manhattan in New York (USA).

Take advantage of the New Moon week (July 24 or 25) to capture the Galactic Center of the Milky Way. It is the last month of optimal visibility!

On the night of July 31-August 1, the peak of the Delta Aquariids Meteor Shower occurs. During those nights, the Moon will be thin. So, you will not have any Moonlight :)

Our August speaker will be David Olsen talking about Charles Messier.

Clear Skies Dr. Jay Hartwell

Visit our Website
www.mvastro.org

Moon Phases for July 2025

SUN	MON	TUE	WED	THU	FRI	SAT
		1 Waxing crescent 39.8% 6 days	2 First Quarter 1:30 P.M. 7 days	3 Waxing gibbous 58.9% 8 days	4 Waxing gibbous 68.1% 9 days	5 Waxing gibbous 76.5% 10 days
6 Waxing gibbous 84.1% 11 days	7 Waxing gibbous 90.5% 12 days	8 Waxing gibbous 95.4% 13 days	9 Waxing gibbous 98.7% 14 days	10 Full Buck Moon 2:38 P.M. 15 days	11 Waning gibbous 99.2% 16 days	12 Waning gibbous 96.1% 17 days
13 Waning gibbous 90.9% 18 days	14 Waning gibbous 83.6% 19 days	15 Waning gibbous 74.6% 20 days	16 Waning gibbous 64.3% 21 days	17 Last Quarter 6:39 P.M. 22 days	18 Waning crescent 41.7% 23 days	19 Waning crescent 30.6% 24 days
20 Waning crescent 20.5% 25 days	21 Waning crescent 11.9% 26 days	22 Waning crescent 5.5% 27 days	23 Waning crescent 1.4% 28 days	24 New Moon 1:12 P.M. 0 days	25 Waxing crescent 1.1% 1 day	26 Waxing crescent 4.5% 2 days
27 Waxing crescent 9.8% 3 days	28 Waxing crescent 16.7% 4 days	29 Waxing crescent 24.7% 5 days	30 Waxing crescent 33.5% 6 days	31 Waxing crescent 42.7% 7 days		

Twin Falls, Idaho, United States
Source: The Old Farmer's Almanac

July's full Buck Moon will rise on **Thursday, July 10**, reaching peak illumination at 2:38pm Mountain Daylight Time. It will be below the horizon at that time, so plan to look towards the southeast after sunset to watch it rise into the sky.

Several other names for this month's Moon also reference animals, including **Feather Moulting Moon** (Cree) and **Salmon Moon**, a Tlingit term indicating when fish returned to the area and were ready to be harvested.

Plants are also featured prominently in July's Moon names. Some of our favorites are **Berry Moon** Anishinaabe, **Moon When the Chokecherries are Ripe** (Dakota), **Month of the Ripe Corn Moon** (Cherokee), and **Raspberry Moon** (Algonquin, Ojibwe).

Thunder Moon (Western Abenaki) and **Halfway Summer Moon** (Anishinaabe) are alternative variants that refer to the stormy weather and summer season.

Daza-mea' (Shoshone-Paiute) Summer Moon

The Sky this Month

A memory of comets past! Comet NEOWISE in July 2020 about 90 minutes after sunset as seen from Calgary. At this latitude, a prominent display of noctilucent clouds joined the comet before fading around midnight. Image credit and copyright: Brian Ventrudo.

1. The Milky Way takes center stage as the new season gets underway, and deep-sky observers finally get to surf the hundreds of star clusters and nebulae along what the ancient Chinese poets called the ‘Silver River’. Mercury and Mars linger low in the west after sunset. Venus, Jupiter, Saturn, Uranus, and Neptune call to early-morning observers to look towards the eastern sky before sunrise. And, as the month comes to a close, a fine meteor shower sends tiny bits of celestial flotsam to burn up in our skies to the southeast.

2. Astronomers released the first few images from the astonishing Vera Rubin telescope last month. I have no words to describe them. This telescope will image the entire southern sky every few nights and compile a motion picture of anything and everything that changes in the night sky, from passing asteroids to supernovae, and from variable stars to the behavior of dark energy. It's the "greatest astronomical discovery machine ever built", said one astronomer. And - oh my - the images! See them for yourself, and learn more about this amazing instrument at this excellent article at the *New York Times* (gift link).

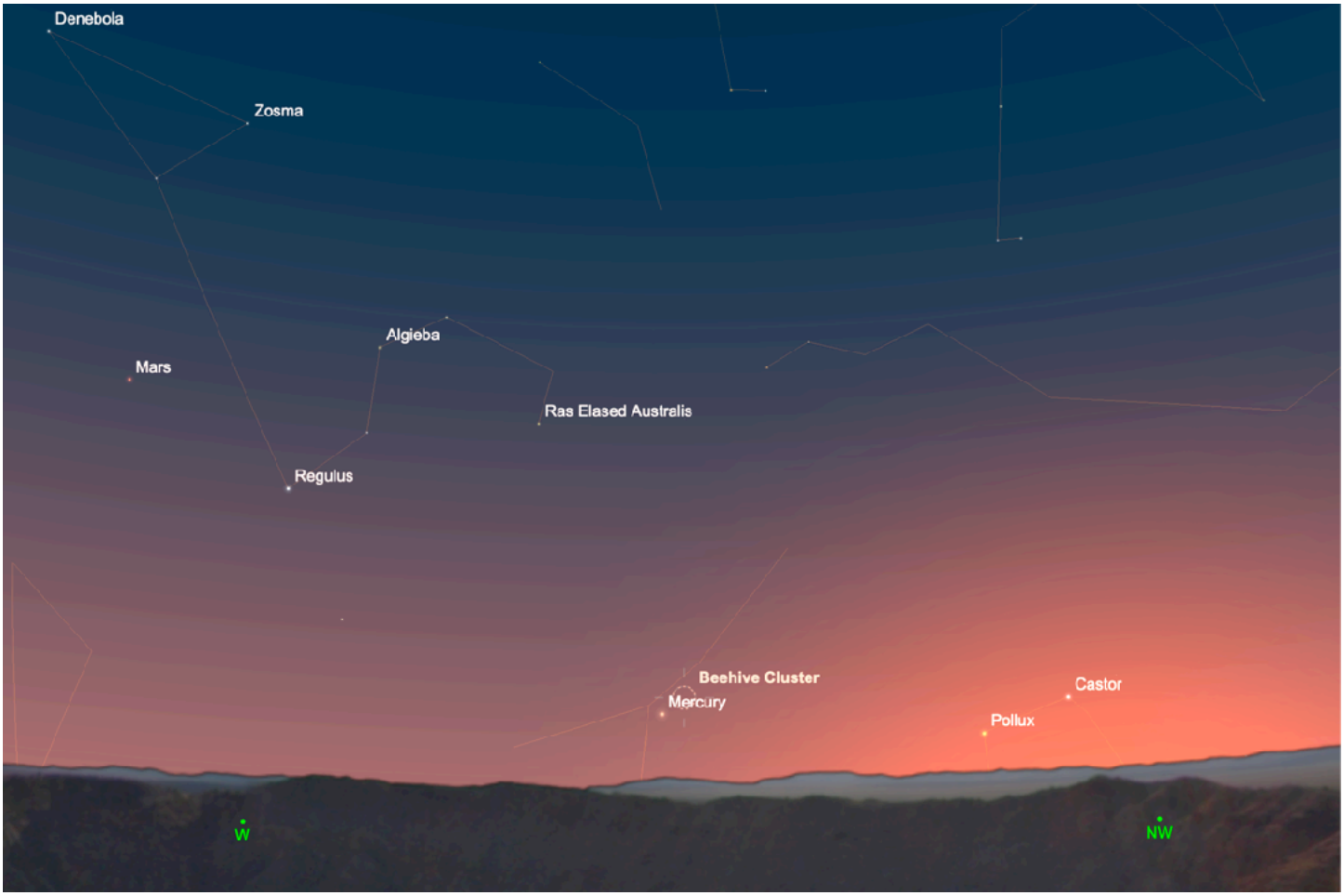
3. At midsummer, it's never dark enough at my location for stargazing. Instead, I'm touring the deep sky with the help of some mesmerizing simulated tours of a few well-known constellations. Even *Star Trek* never showed the universe like this. Let's crank the speed up to Warp 10 and have a look at the stars of Taurus, Orion, and Sagittarius in 3D thanks to the Gaia space telescope.

4. The European Space Agency's Solar Orbiter spacecraft shows the first-ever view of the sun's south pole.

5. Don't panic - but the Earth will run out of oxygen one day (not soon). The cause? Global warming. But not *that* kind of global warming. Here's how it will play out...

2 July 2025. First Quarter Moon, 19:30 UT

3 July. Earth reaches aphelion, its greatest distance from the Sun, at a distance of 152,087,376 km.



Mercury lies near the Beehive star cluster (Messier 44) in the twilight western sky on July 3, 2025.

3 July. Grab a pair of binoculars or a wide-field telescope to see Mercury some 1.5° south of the Beehive star cluster (M44) in the evening twilight. Low over the horizon for northern observers, the planet is more easily visible during this apparition in the southern hemisphere. Tonight, the planet shines a magnitude +0.5 tonight but grows dimmer as it moves back towards the Sun in the latter half of July.

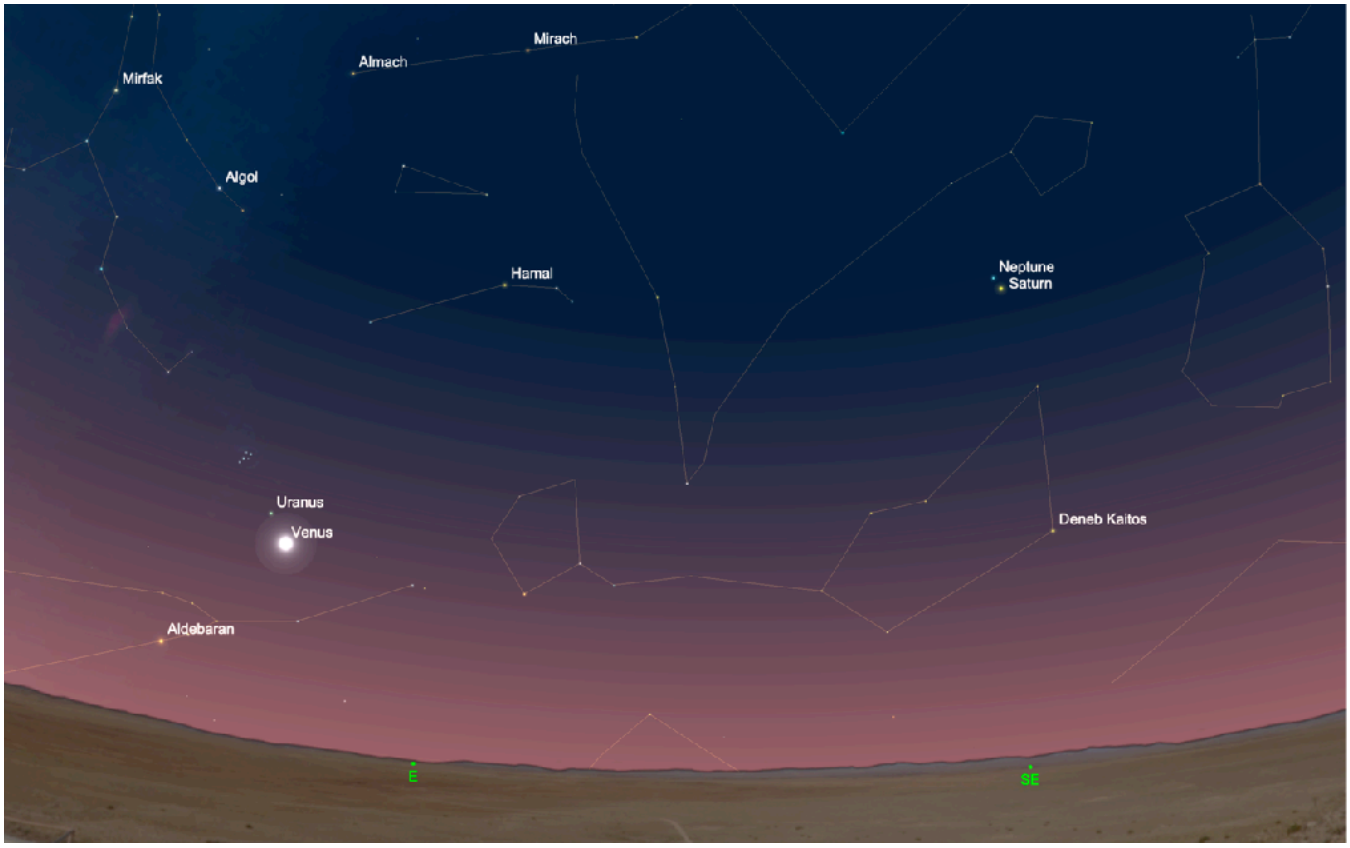
4 July. Uranus lies about 2° north of Venus in the morning before sunrise. Look for the pair with a pair of binoculars or a telescope with a sufficiently large field of view. Venus is now moving away from Earth and shrinking and growing slowly dimmer. Still, this morning, the planet shines at an impressive magnitude -4.1 and presents a thick gibbous disk in a scope. And here's a fun fact about Uranus – this month it moves north of +20° declination for the first time since the mid-1950s! Mercury reaches greatest eastern elongation at 26° from the Sun.

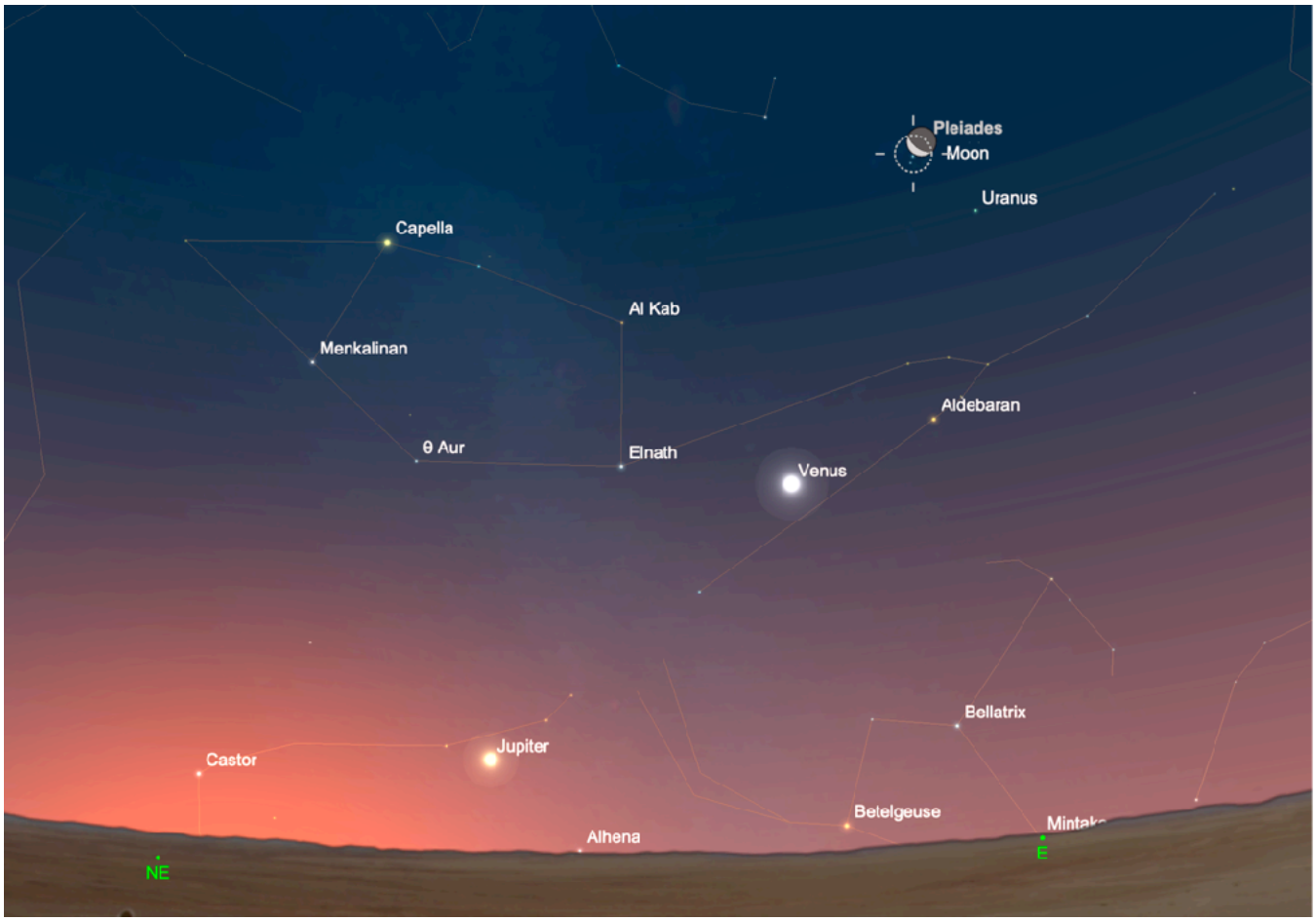
5 July. Neptune reaches its first stationary point and now starts moving (very slowly) westward against the background stars. Today it lies 1° north of Saturn in the morning sky. The pair fits nicely in the same field of view of a telescope.

7 July. Look for a fattening gibbous Moon just under 5° southeast of Antares at the heart of Scorpius.

10 July. Full Moon, 20:37 UT (the 'Full Buck Moon', or 'Full Hay Moon').

14 July. Saturn reaches its first stationary position in Pisces and now moves westward against the background stars each night. A mid-month, it rises near midnight local time. Now through the end of the year presents the best time to observe this ringed world as it slowly brightens and grows larger. The rings still appear as thin lines sticking out from the side of the planet, but their angle also slowly increases in the coming months and years. Saturn passes 4° south of the waning gibbous Moon on the 16th.





Top
Venus and Uranus, Saturn and Neptune, paired together in the eastern sky on the morning of July 4, 2025. Below The crescent. Bottom: Moon passes

18 July. Last Quarter Moon, 00:38 UT

20 July. A thin Moon passes 0.8° north of the Pleiades low in the eastern sky before sunrise. Also look for brilliant Venus and Jupiter further towards the horizon.

24 July. New Moon, 19:11 UT.

26 July. A slender crescent Moon, just two days old, sinks after sunset towards the northwestern horizon about 2° behind Regulus, Leo's brightest star.

28 July. Mars, now fading and heading out for the year, lies just over a degree north of the crescent Moon in the western sky after sunset. After its middling apparition earlier in the year, the planet moves closer to the Sun each night as it fades to magnitude +1.6. It serves as a curiosity now, an extra 'star' in Leo, but offers little to the telescopic observer until its next apparition in 2027.

2**9-31 July.** The Delta Aquariid meteor shower peaks. This annual event favors observers in the southern hemisphere and southerly latitudes in the northern hemisphere, though all observers can see some of these slow-moving meteors. The Delta Aquariids appear to radiate from a point near the star Skat (delta Aquarii) in the constellation Aquarius. The shower peaks around July 29-30, but unlike most meteor showers, the Delta Aquariids lack a sharp maximum which means meteors are visible from mid-July through early August. The maximum hourly rate can reach 15-20 meteors in dark sky.

And the astronomy quote of the month - a little motivation for all of us to get out and see the night sky:

"My dear Kepler, what would you say of the learned here, who, replete with the pertinacity of the asp, have steadfastly refused to cast a glance through the telescope? What shall we make of this? Shall we laugh, or shall we cry?"

- Galileo

Phil Harrington's Cosmic Challenge

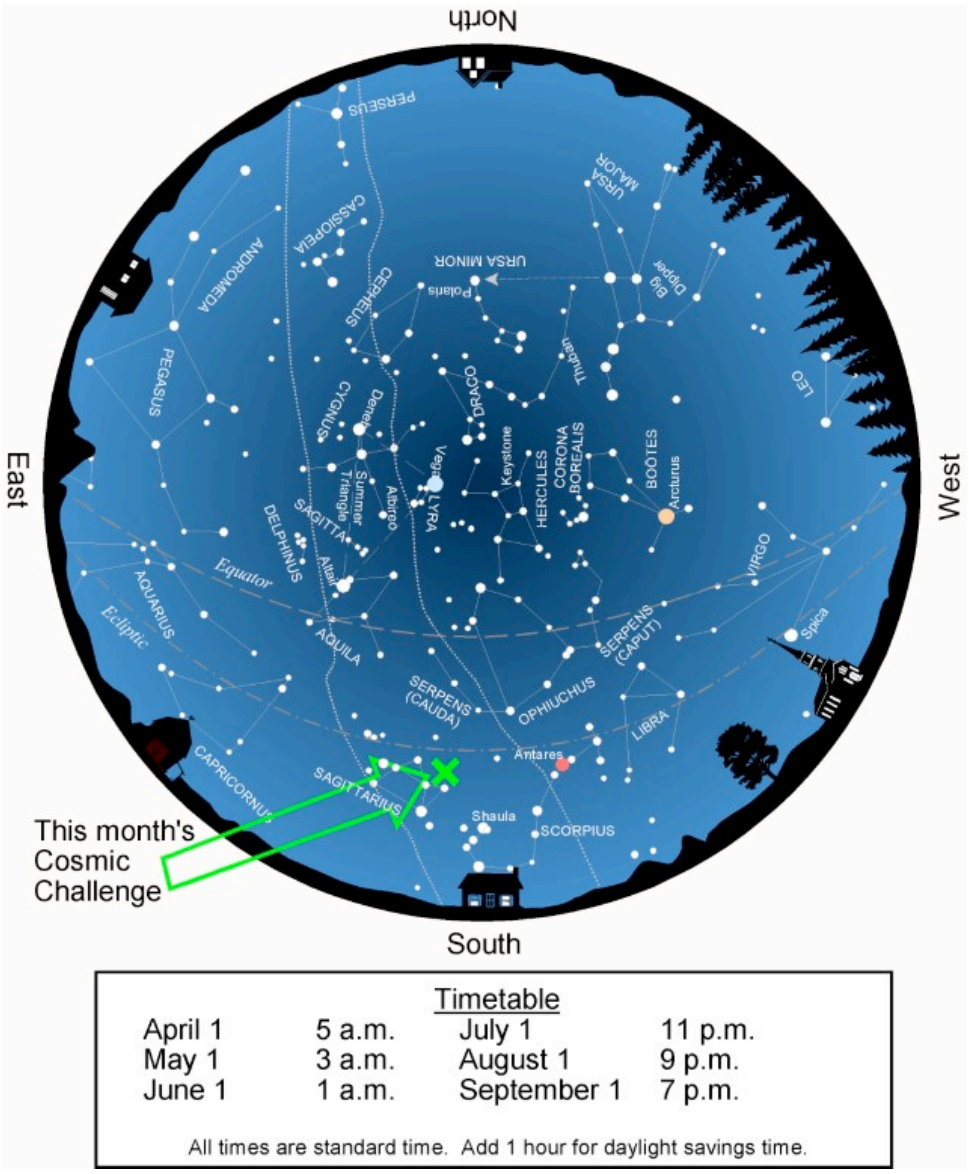
Cosmic Challenge: Barnard 86

This month's suggested aperture range:
3- to 5-inch (76-127mm) telescopes
Featured scope: Tele Vue TV-85 on a Vixen Porta II Mount
(Editor's own scope)

Target	Type	RA	DEC	Constellation	Opacity	Size
Barnard 86	Dark nebula	18h 03.0m	-27° 52.0'	Sagittarius	5	5'

The summer sky is full of starless voids, almost looking like holes in the universe. For much of the 19th and early 20th centuries, astronomers were at a loss to explain what they were. Were they actually empty regions or were they some sort of dark material that simply blocked the light from stars that lay beyond?

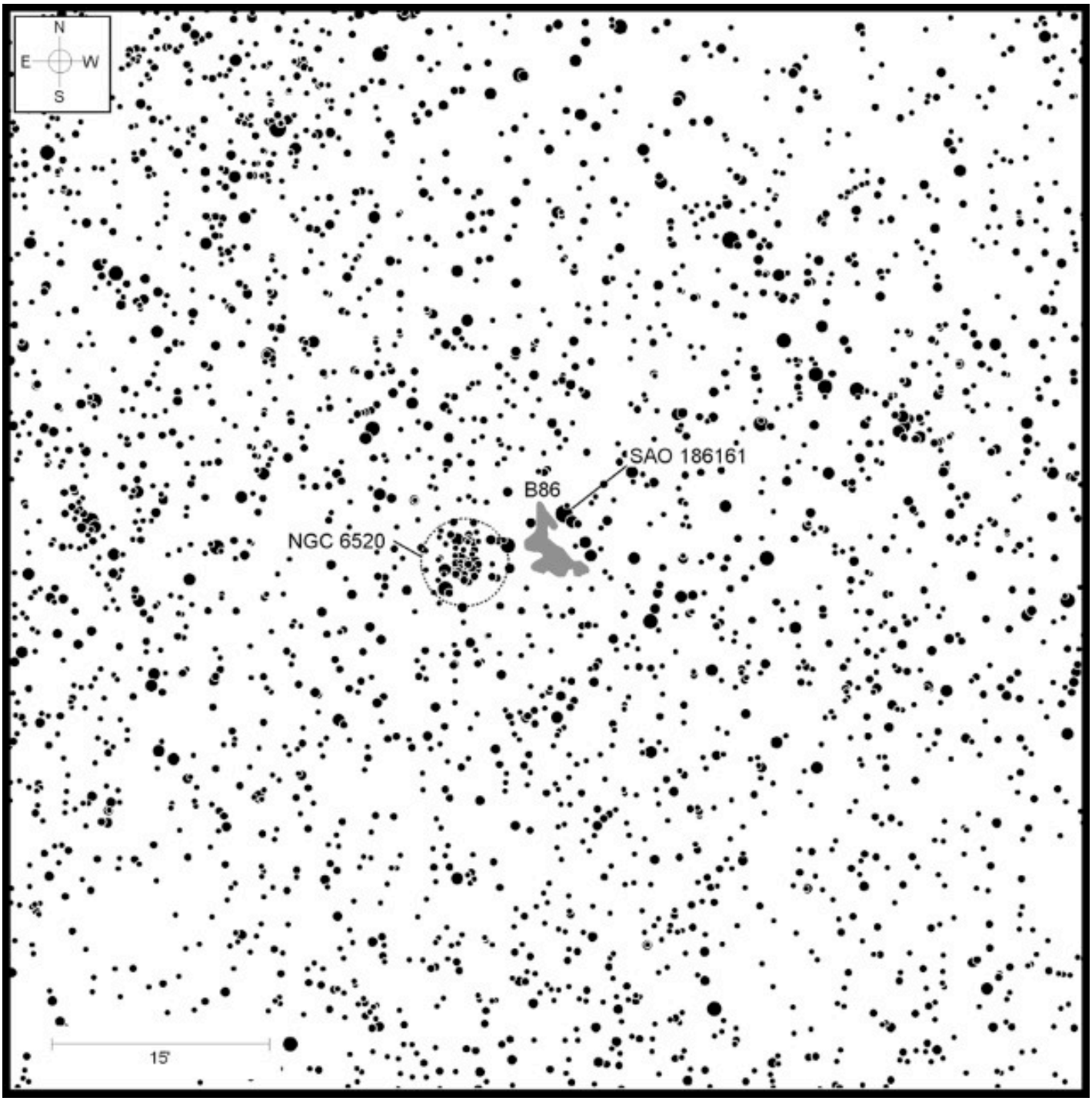
Below: Summer star map showing the location of this month's Cosmic Challenge.
Credit: Map adapted from **Star Watch** by Phil Harrington



Timetable

April 1	5 a.m.	July 1	11 p.m.
May 1	3 a.m.	August 1	9 p.m.
June 1	1 a.m.	September 1	7 p.m.

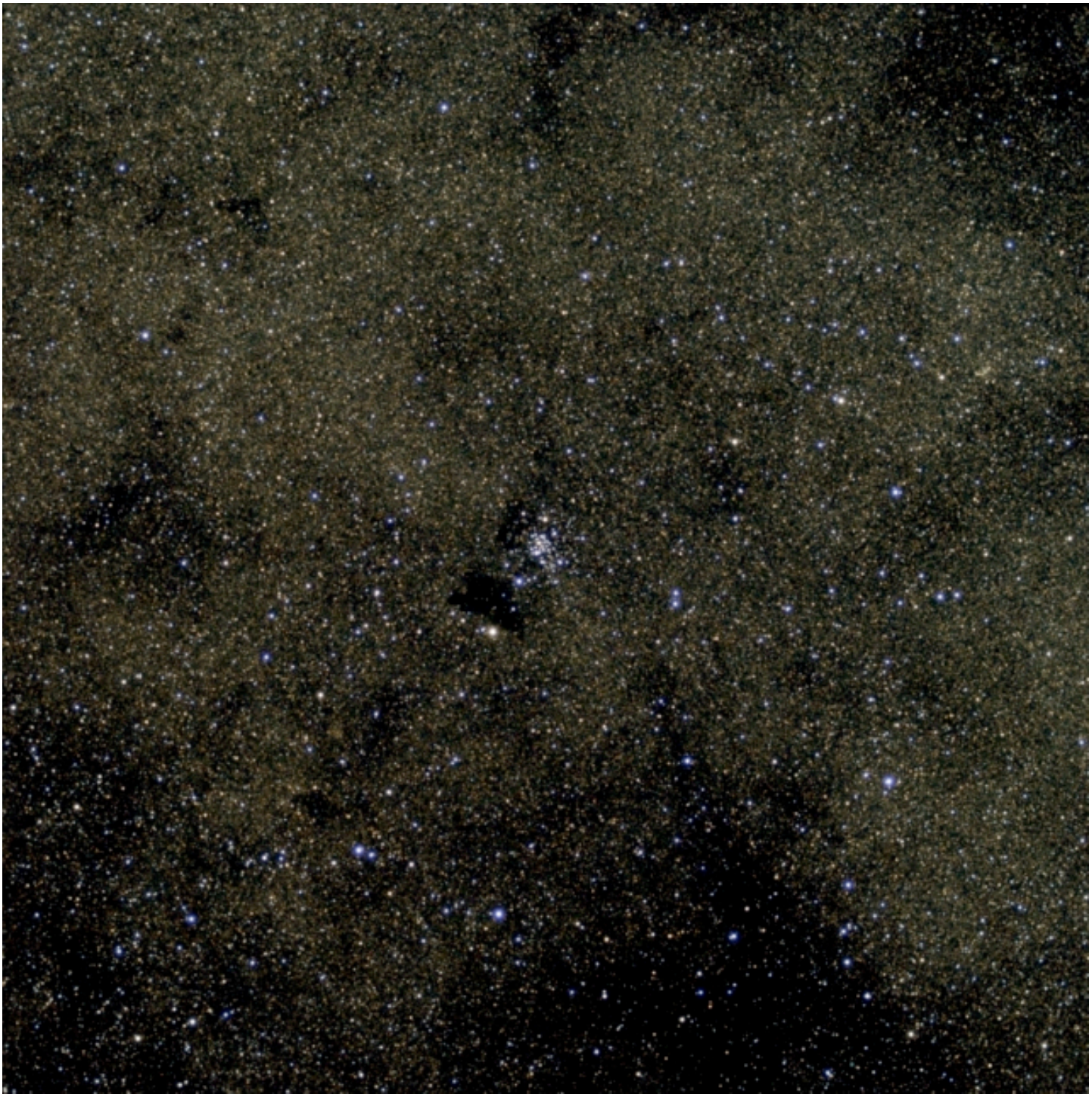
All times are standard time. Add 1 hour for daylight savings time.



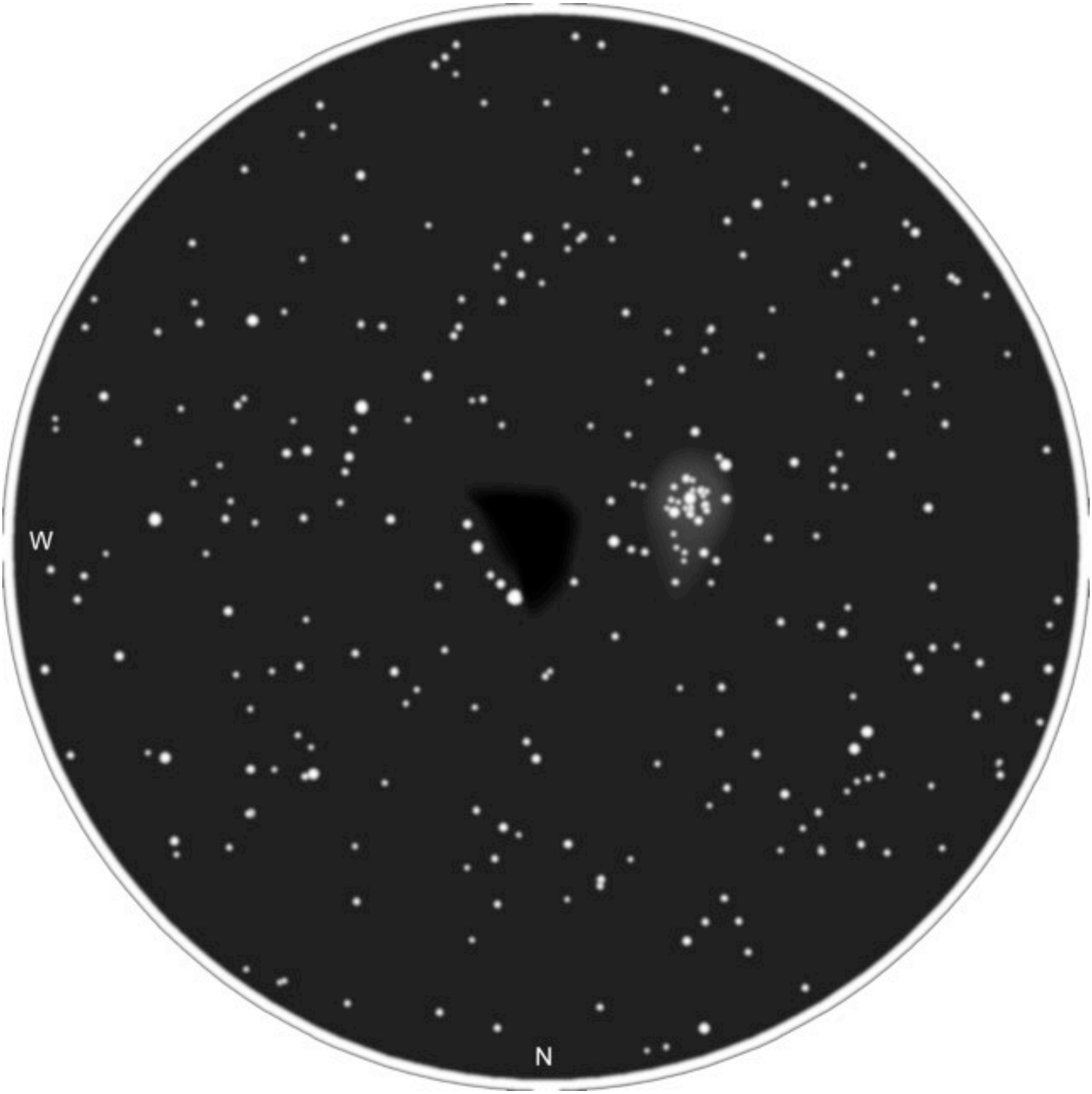
Above: Finder chart for this month's Cosmic Challenge. Credit: Chart adapted from **Cosmic Challenge** by Phil Harrington

The first astronomer to make an in-depth study of these mysterious regions was Edward Emerson Barnard. Barnard's 1919 paper in the Astrophysical Journal, On the Dark Markings of the Sky with a Catalogue of 182 such Objects, outlined the results of his initial investigation, that these voids were anything but empty. Rather, they were vast clouds of opaque interstellar matter. Barnard's research was ongoing at the time of his death in 1923, but ultimately led to a second, expanded listing of "A Photographic Atlas of Selected Regions of the Milky Way" being released posthumously in 1927. This second publication expanded Barnard's catalog of dark nebulae to 349 total entries. A century later, his research still stands today as the benchmark for all subsequent investigations.

Whether it is due to light pollution, a lack of good charts, or maybe because there are so many bright objects to observe, many amateurs tend to shy away from seeking out dark nebulae. In a way, that makes sense. No other deep-sky genre so easily falls victim to less-than-perfect sky conditions than dark nebulae. The slightest haze or light pollution is usually enough to increase the sky's ambient background brightness enough that it swallows up these dark, cold clouds of interstellar dust grains.



Above: Image of B86 and NGC 6520 taken by New Zealand Cloudy Nighter RMS82 using a Starwave Ascent 80ED, 0.8 reducer (f/5.6), a Player One Saturn-C SQR (IMX533) camera, and an iOptron AZ Mount Pro.



Above: Digitized sketch of B86 and NGC 6520 through the author's 4-inch (10.2-cm) refractor.

Barnard 86 enjoys several distinct advantages over some other dark nebulae when it comes to visibility. For one, it lies sandwiched between the open cluster NGC 6520 and the orangish 7th-magnitude star SAO 186161. Its position in between these two bright targets makes zeroing in on its exact location a fairly simple exercise. Another plus is that, unlike many dark nebulae that show only vague outlines, B86 has sharply defined borders. We can see exactly where it starts and where it ends. Finally, its rating of 5 on a 1-to-5 opacity scale indicates this cloud is truly dark.

Since Barnard 86 measures only 5' across, a magnification of between 100x and perhaps 125x will serve up the best view of it and its two bright neighbors. B86 appears decidedly wedge-shaped through amateur telescopes, with its western border facing SAO 186161 perhaps twice as long as the side closest to the cluster. NGC 6520 also spans about 5', with some two dozen stars visible through my 8-inch (20-cm) reflector.

Their close proximity in the sky naturally leads to the question of whether Barnard 86 and NGC 6520 are physically related or simply aligned by chance along the same line of sight. Astronomical evidence suggests a genuine spatial association. Both objects lie in the direction of the Galactic bulge, and distance estimates for each place them at approximately 6,000 light-years from Earth, making a physical relationship plausible.

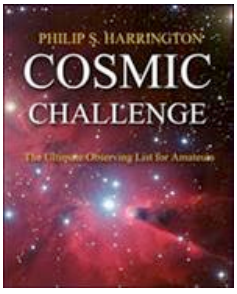
Barnard 86 is likely part of the same molecular cloud complex from which NGC 6520 formed. Open clusters like NGC 6520 are born from such dense clouds, and it's probable that Barnard 86 represents an as-yet uncollapsed remnant of the original stellar nursery. The stars in NGC 6520 are relatively young—just a few hundred million years old—so the survival of a dense, dark cloud nearby is consistent with the typical timescales of molecular cloud dispersal.

Thus, Barnard 86 and NGC 6520 are not merely an optical pairing; they are likely kin, sharing a common origin within the same star-forming region. Today, the brilliant stars of NGC 6520 light up the surrounding space, while Barnard 86 remains a dark, brooding sibling. Together, they make a wonderful study in contrast.

Incidentally, for those who might be traveling to Stellafane in Springfield, VT, at the end of this month, you will find that both B86 and NGC 6520 are on my 2025 Binocular Observing Olympics (BOO) list. I hope you'll try to see all 20 objects on this year's list and earn a special pin for the accomplishment. You can see and download the full BOO list as well as much more about the convention on Stellafane's website.

Have a favorite challenge object of your own? I'd love to hear about it, as well as how you did with this month's test. Contact me through my website or post to this month's discussion forum.

Until next month, remember that half of the fun is the thrill of the chase. Game on!

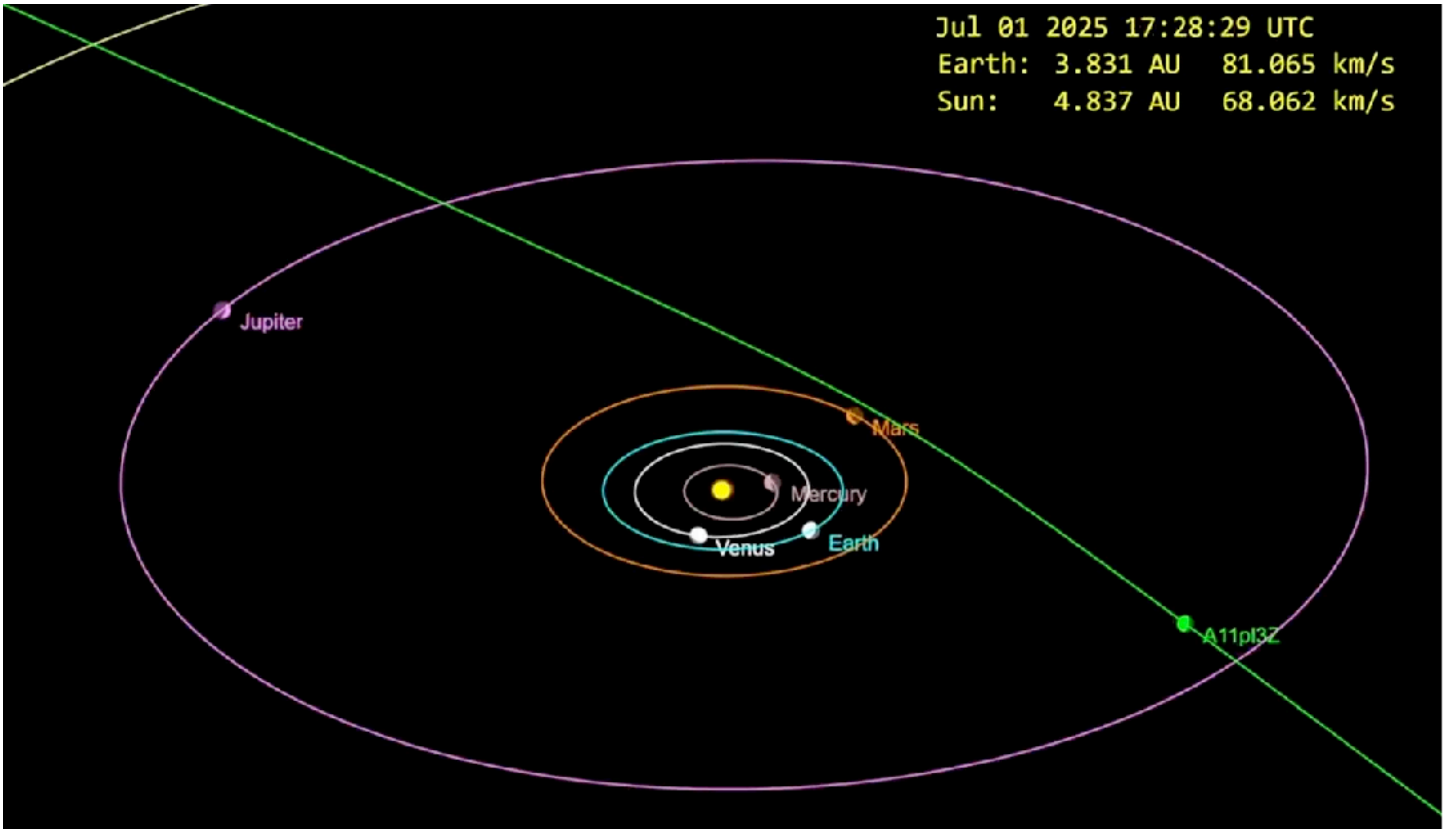


About the Author:

Phil Harrington is a contributing editor to Astronomy magazine and is the author of 9 books on astronomy. Visit www.philharrington.net to learn more.

Welcoming a New Interstellar Object: A11pl3Z

Article by Avi Loeb



Inferred trajectory of the new interstellar object A11pl3Z through the inner solar system. (Image credit: Tony Dunn)

On the early morning of July 2, 2025, I woke up at 2AM for a two-hour interview on Coast to Coast radio to discuss my research on interstellar objects. This was a fortunate timing as rumors just appeared overnight on X and Bluesky about the discovery of a new interstellar object, A11pl3Z.

Objects originating from outside the solar system are flagged by having a speed above the minimum value needed to escape from the Solar system, which is 42 kilometers per second — a thousand times over the speed limit on a highway — in the vicinity of Earth. The first reported interstellar object, `Oumuamua, was not a familiar comet nor a familiar asteroid. It was inferred to have a disk-like shape and to exhibit non-gravitational acceleration, raising the possibility of an artificial origin. The second reported interstellar object, Borisov, appeared like a familiar natural comet. Will the next object on the interstellar roulette table be anomalous or familiar?

The IAU Minor Planet Center added A11pl3Z to the Near-Earth Object confirmation list on July 1, 2025, with a similar listing appearing on the NASA/JPL CNEOS website. The preliminary fit for the trajectory of A11pl3Z suggests an eccentricity of about 6, a hyperbolic velocity of about 66 kilometers per second and an interstellar origin. Interestingly, this is the typical velocity of interstellar objects that we predicted in a paper that I published with Morgan MacLeod a year ago about the production of interstellar objects from the spaghettification of rocky planets by common dwarf stars.

An extrapolation of A11pl3Z's orbit implies that its closest distance to Earth would be 2.4 times the Earth-Sun separation (=astronomical unit, abbreviated as AU) on December 17, 2025 and that it will pass much closer to Jupiter around March 10, 2026. This is because the Earth happens to be on the other side of its orbit around the Sun when A11pl3Z gets close to the Sun. Its closest distance from the Sun is expected to be about 1.4 AU on October 27, 2025, three weeks after its passage within 0.4 AU from Mars. The current distances of A11pl3Z are about 3.8 AU from Earth and 4.8 AU from the Sun as of July 2, 2025.

The amateur astronomer Sam Deen identified earlier images of A11pl3Z in the ATLAS Survey from June 25–29, 2025, implying that it is almost certainly interstellar in origin. The amateur astronomer Filipp Romanov stacked 5x20 second images from the iTelescope.Net T72 (0.51-m f/6.8 reflector + CCD) in Chile and detected a G magnitude of 17.5. The H-magnitude of 12 listed by NASA/JPL suggests a diameter of about 20 kilometers. Better data will refine the size estimate as well as the orbital parameters of A11pl3Z.

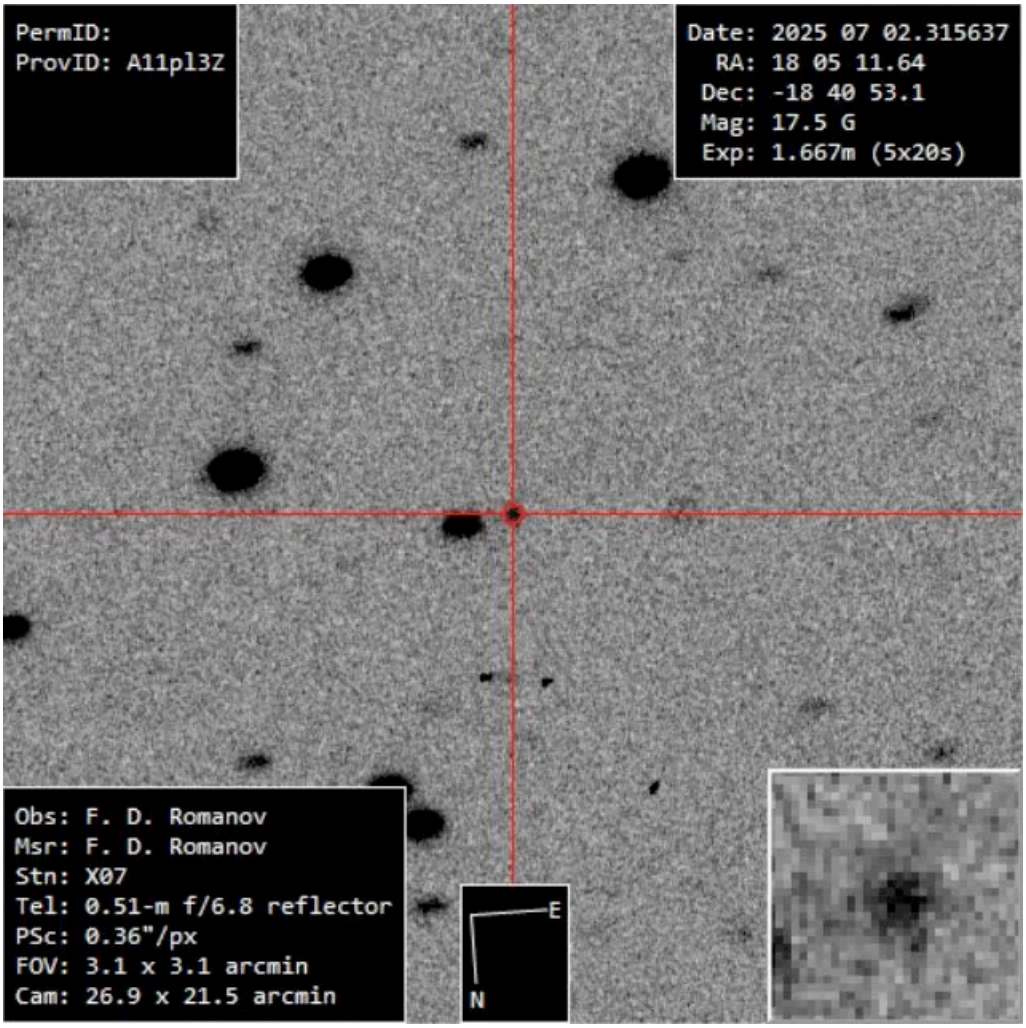


Image of **A11pl3Z** taken by Filipp Romanov by *iTelescope.Net T72* in Chile on July 2, 2025.

Observing **A11pl3Z** also with the Webb telescope, located a million miles away from an Earth-based telescope, will allow us to detect via parallax any non-gravitational acceleration to exquisite precision, as shown in a recent paper I wrote with my student Sriram Elango. The Webb telescope can also measure the emitted infrared flux and surface temperature of **A11pl3Z** — which when combined with its known parallax distance, can be used to infer its surface area. If the object is tumbling, it would be possible to use the evolution of the surface area projected along the line-of-sight in order to map the shape of the object in three dimensions. The known size and shape and the reflected flux of sunlight from the object will allow us to infer its surface albedo (reflection coefficient) for sunlight. We did not have direct measurements of the area, surface temperature or albedo for `Oumuamua.

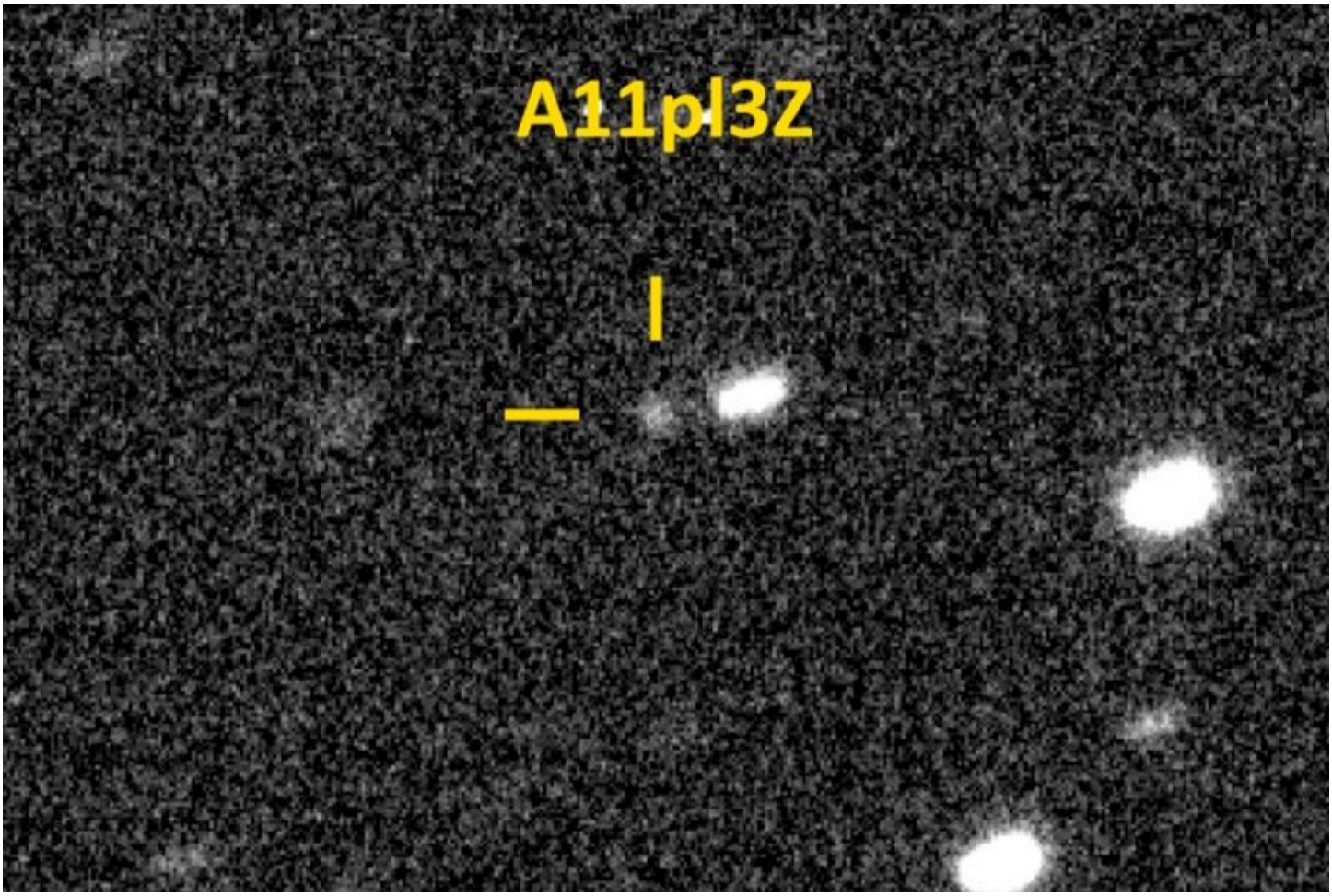
If **A11pl3Z**'s brightness stems from reflecting sunlight at the typical albedo of order 10%, then its diameter of 20 kilometers is about 100–200 times larger than the estimated length of `Oumuamua (and over a thousand times larger than `Oumuamua's width) and about 50–100 times larger than the core of the comet Borisov. If all three objects are rocks, then **A11pl3Z**'s mass is over ten million times larger than that of `Oumuamua and at least a hundred thousand times larger than the core mass of Borisov.

This is surprising because one expects high mass objects to be much rarer. Based on data about the Main Asteroid Belt in the Solar system, one would expect millions of objects like `Oumuamua for each object on the mass scale of **A11pl3Z.**

How come we did not observe millions of `Oumuamua-scale objects before discovering A11pl3Z?

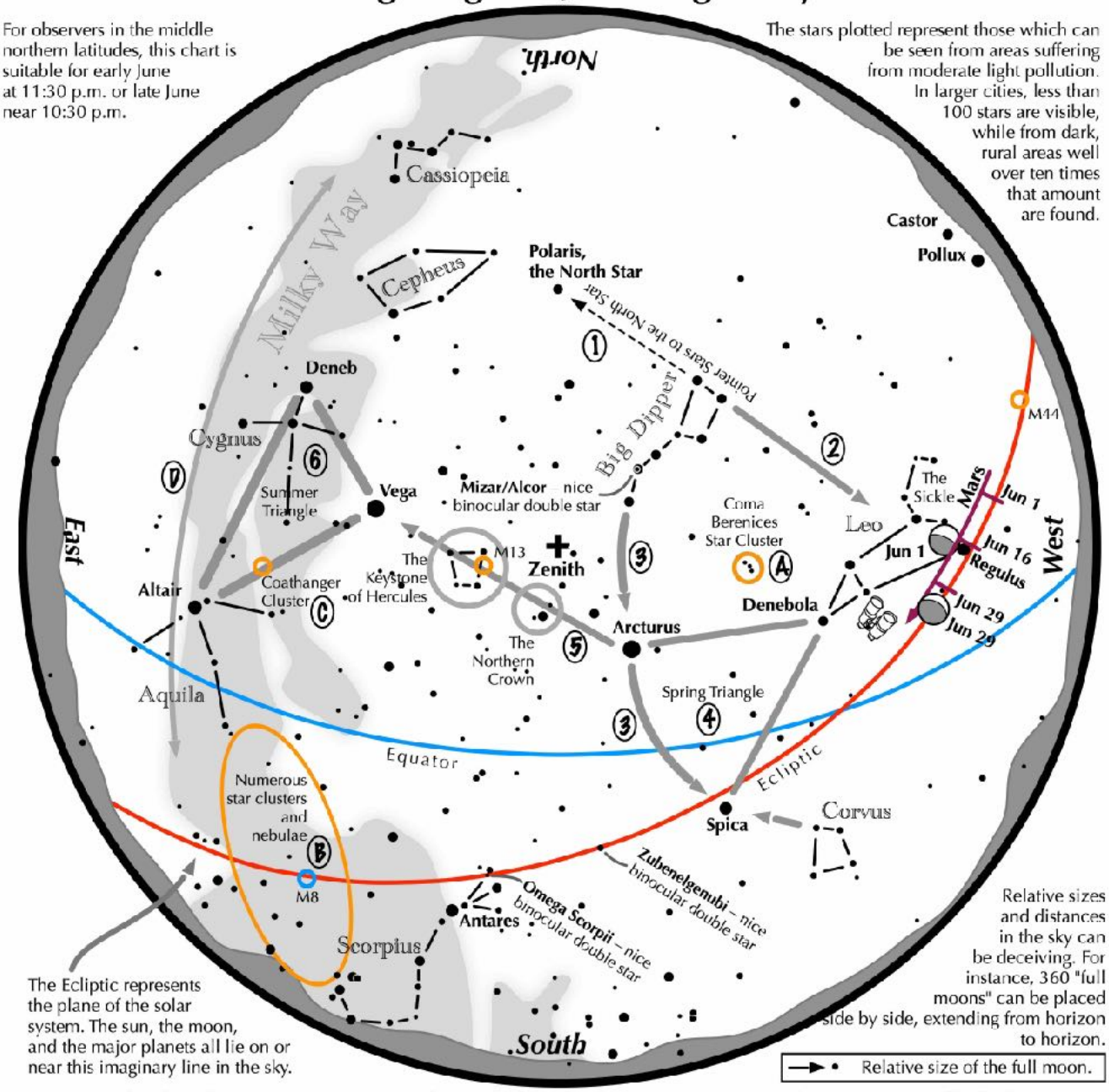
Of course, we may have missed many of them but probably not millions of them. It is also possible that the size distribution of interstellar rocks is bimodal with a peak around a diameter of 20 kilometers. Another possibility is that **A11pl3Z** is a comet and we are detecting the reflection of sunlight from its cometary plume of gas and dust, whereas its mass is contained in a much smaller core. Other, more speculative, possibilities are that **A11pl3Z**'s albedo is much larger than usual or that it generates its own light. In the comet case, **A11pl3Z**'s nature will be closer to that of the comet Borisov and very different from that of `Oumuamua, which did not show a coma and had an extreme disk-like shape, given that the amount of sunlight it reflected changed by a factor of ten as it was tumbling every 8 hours.

Based on its direction of motion**, A11pl3Z** appears to be coming at an inclination of 175 degrees relative to the Earth's orbital plane from the thin disk of stars in the Milky-Way galaxy. In the coming months, we will learn much more about **A11pl3Z**'s properties based on data from multiple ground-based telescopes including the new Rubin Observatory in Chile, as well as possibly from the Webb space telescope. Stock your popcorn.



Professor Avi Loeb is the head of the Galileo Project, founding director of Harvard University's — Black Hole Initiative, director of the Institute for Theory and Computation at the Harvard-Smithsonian Center for Astrophysics, and the former chair of the astronomy department at Harvard University (2011–2020). He is a former member of the President's Council of Advisors on Science and Technology and a former chair of the Board on Physics and Astronomy of the National Academies. He is the bestselling author of "Extraterrestrial: The First Sign of Intelligent Life Beyond Earth" and a co-author of the textbook "Life in the Cosmos", both published in 2021. The paperback edition of his new book, titled "Interstellar", was published in August 2024.

Navigating the June Night Sky



Navigating the June night sky: Simply start with what you know or with what you can easily find.

1. Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
2. Draw another line in the opposite direction. It strikes the constellation Leo high in the west.
3. Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the June evening sky, then Spica.
4. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
5. To the northeast of Arcturus shines another star of the same brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
6. High in the east are the three bright stars of the Summer Triangle: Vega, Altair, and Deneb.

Binocular Highlights

A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
B: Between the bright stars of Antares and Altair, hides an area containing many star clusters and nebulae.
C: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
D. Sweep along the Milky Way for an astounding number of faint glows and dark bays.

What's Up, Doc? †
July 2025

Dr. Aaron B. Clevenson, Director, Insperity Observatory

This document tells you what objects are visible this next month for many of the Astronomical League Clubs. If you are working on an advanced club, then I assume that you are tracking where your objects are all the time. I have concentrated on the common and starter level clubs. This information is based on 9 PM **Mountain** Daylight Time for **Twin Falls, Idaho**.

Naked-Eye Clubs

Meteors – any night, any time, anywhere, the darker the sky the better.

Shower	Duration	Maximum	Type
Lyrids	4/14 to 4/30	4/23 0100 UTC	CLASS 1
Eta Aquarids	4/15 to 5/27	5/6	CLASS 1
Pi Puppids	4/16 to 4/30	4/24 0600 UTC	Class 3
Delta Pavonids	3/11 to 4/16	3/31	Class 4
April Epsilon Delphinids	3/31 to 4/20	4/9	Class 4
Alpha Virginids	4/6 to 5/1	4/18	Class 4
Kappa Serpentids	4/11 to 4/22	4/16	Class 4
h-Virginids	4/24 to 5/4	5/1	Class 4

Key to Meteor Classes:

- Class 1 – Major Meteor Showers
- Class 2 – Minor Meteor Showers
- Class 3 – Variable Meteor Showers
- Class 4 – Weak Meteor Showers

Constellations, Northern Skies – any night, any time, anywhere, the darker the sky the better.
Last Chance this cycle: Cassiopeia, Andromeda, Traingulum, Aries, Caelum. Transit Ursa Major, Lynx, Leo Minor, Cancer, Leo, Hydra, Sextans, Pyxis, Antlia, Vela. New arrivals: Bootes, Virgo, Corvus.

Binocular Clubs

Binocular Messier – Monthly highlights include:
Easy – 3, 34, 35, 36, 37, 38, 41, 42, 44, 45, 46, 47, 48, 50, 67, 93, 103.
Medium – 40, 49, 53, 63, 64, 78, 79, 81, 82, 94.
Hard – 1, 51, 65, 66, 68, 97, 101, 104, 106.
Big Binoculars – 58, 59, 60, 61, 84, 85, 86, 87, 88, 89, 90, 95, 96, 99, 100, 102, 105, 108, 109.

Deep Sky Binocular – Monthly highlights include (by Astronomical League numbers):
3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42.

Other Clubs

Messier
In addition to those listed under Binocular Messier, check out: 43, 76, 91, 98.

Caldwell
1, 2, 3, 5, 6, 7, 8, 10, 13, 14, 21, 23, 24, 25, 26, 29, 31, 32, 35, 36, 38, 39, 40, 41,45, 46, 48, 49, 50, 51, 52, 53, 54, 58, 59, 60, 61, 64, 71, 74, 79.

Double Star (by Astronomical League numbers):
5, 8, 11, 14, 16, 17, 18, 20, 23, 25, 27, 28, 29, 32, 34, 35, 39, 40, 42, 43, 45, 51, 52, 53, 54, 55, 56, 57, 59, 61, 65, 67, 68, 69, 70, 71, 73, 74, 75, 76, 78, 79, 80, 81, 82, 83, 85, 92, 95, 98, 99, 100.

Other Clubs (of the Solar System)

Planetary – These are the tasks that can be done this month:
Sunset is **21:25** mid-month. The Sun is in **Taurus**. Any clear day is a good time to see sunspots. Venus, Saturn, Uranus, Neptune, and Pluto will not be visible during the evening hours.

Moon: – These are the tasks that can be done this month:
The Maria requirement can be done any time the moon is visible. Look after 7/2, before 7/17 or after 7/31 for the fullest views.
The Highlands requirement can be done at the same time.
The Crater Ages requirement is best done on 7/1, 7/2, 7/30, and 7/31. The Scarps requirement is best done on 7/3.
Occultations occur all the time, the bright ones can be found on the internet. Objects disappear on the East side of the moon.

Venus, Ceres, Jupiter, Saturn, Uranus, and Neptune are not available in the evening sky mid-month.
Mercury is in Cancer and sets at 22:08 mid-month.
Mars is in Leo and sets at 2342 mid-month.
Pluto is in Capricornus and rises at 2207 mid-month.

Asteroids – Course Plotting and Measuring Movement requirements can be done at any time on any asteroid. See above to identify the bright ones this month.

Lunar

Key timings are indicated below:

New, 7/24	4 days, 7/28	7 days, 7/2 & 7/31	10 days, 7/5	14 days, 7/9

Old moon in new moons arms – before 1311 on 7/27. ~10 % illuminated. (72 hr > New) New moon in old moons arms – after 1311 on 7/21, ~10 % illuminated. (72 hr < New) Waxing Crescent – before 1311 on 7/26, ~4 % illuminated. (48 hr > New) Waning Crescent – after 1311 on 7/22, ~4 % illuminated. (48 hr < New)

Major Events in June: (Other)

- 7/3 – Mercury at Greatest Elongation – East
- 7/3 – Earth at Aphelion
- 7/4 – Neptune begins retrograde motion
- 7/5 – Lunar Apogee
- 7/13 – Saturn begins retrograde motion
- 7/18 – Mercury begins retrograde motion
- 7/26 – Venus at highest morning altitude
- 7/30 – Southern Delta Aquariids Meteor Shower
- 7/30 – Alpha Capricornids Meteor Shower
- 7/31 – Mercury at Inferior Conjunction

Although these Observing Programs are detailed in the **"What's Up Doc?"** handout, you can get information on many of their objects of the other AL Observing Programs by using the **"What's Up Tonight, Doc?"** spreadsheet. To get your copy, talk to the Doc, Aaron Clevenson, by sending an email to aaron@clevenson.org.

† - "What's Up Doc?" is used with permission from Warner Bros. Entertainment Inc.

Insperity Observatory, 2505 S. Houston Avenue, Humble, TX: www.humbleisd.net/observatory

Herrett Center for Arts and Science

Upcoming Events
All events are weather permitting.

Event	Place	Date	Time	Admission(s)
Summer Solar Session #6	Centennial Observatory	Wednesday, July 2, 2025	1:30-3:30 p.m.	Free
Summer Solar Session #7	Centennial Observatory	Wednesday, July 9, 2025	1:30-3:30 p.m.	Free
Monthly Free Star Party	Centennial Observatory	Saturday, July 12, 2025	10:00 p.m.-12:00 a.m.	Free
Summer Solar Session #8	Centennial Observatory	Wednesday, July 16, 2025	1:30-3:30 p.m.	Free
Summer Solar Session #9	Centennial Observatory	Wednesday, July 23, 2025	1:30-3:30 p.m.	Free
Peak Pluto in 2025	Centennial Observatory	Thursday, July 24, 2025	1:45-2:15 a.m.	Free
Castle Rocks Star Party	Castle Rocks State Park Lodge Site	Friday, July 25, 2025 & Saturday, July 26, 2025	2:00 p.m.-12:00 a.m.+	Park Entry Fees
Summer Solar Session #10	Centennial Observatory	Wednesday, July 30, 2025	1:30-3:30 p.m.	Free

Faulkner Planetarium
Now Showing

Show times (through September 1st)

Tuesdays at 1:30 p.m., 2:30 p.m., 3:30 p.m., 7:00 p.m., & 8:00 p.m.
Wednesdays at 1:30 p.m., 2:30 p.m., & 3:30 p.m.
Thursdays at 1:30 p.m., 2:30 p.m., & 3:30 p.m.
Fridays at 1:30 p.m., 2:30 p.m., 3:30 p.m., 7:00 p.m. & 8:00 p.m.
Saturdays 1:30 p.m., 2:30 p.m., 3:30 p.m., 6:00 p.m., 7:00 p.m., & 8:00 p.m.

Find Current Shows following the link above. Admission: Adults (ages 18-59): $7.50 Seniors (ages 60+): $6.50 Children (ages 2-17): $5.50 CSI students (w/ activity card): $5.50 Children under age 2: FREE

*50% discount for Planetary Society members and families.

- Assistive listening devices available upon request.
- Open captioning available upon request for some shows.
- No food, drink, or late entry.
- Dark conditions and audio/visual effects may be too intense for younger children.

Websites and Other Helpful Astronomy Links.

Information on passes of the ISS, the USAF's X-37B, the HST, the BlueWalker 3, and other satellites can be found at http://www.heavens-above.com/

Visit https://saberdoesthe...does-the-stars/ for tips on spotting extreme crescent Moons and https://curtrenz.com/moon.html for Full Moon and other lunar data.

Go to https://skyandtelesc...ads/MoonMap.pdf and https://celestron-si...RReeves-web.pdf and https://nightsky.jpl...ObserveMoon.pdf for simple lunar maps. Click on https://astrostrona.pl/moon-map/ for an excellent online lunar map. Visit http://www.ap-i.net/avl/en/start to download the free Virtual Moon Atlas. Consult http://time.unitariu...moon/where.html for current information on the Moon and https://www.fourmila.../lunarform.html for information on various lunar features. See https://svs.gsfc.nasa.gov/4955 a lunar phase and libration calculator and https://svs.gsfc.nasa.gov/5187/

The Lunar Reconnaissance Orbiter Camera (LROC) quick map. https://www.universa...ise-and-sunset/

For more on the planets and how to locate them, browse http://www.nakedeyeplanets.com/

Summaries on the planets for each month can be found at https://earthsky.org/astronomy-essentials/

The graphic at https://www.timeandd...lanets/distance displays the apparent and comparative sizes of the planets, along with their magnitudes and distances, for a given date and time.

The rise and set times and locations of the planets can be determined by clicking on https://www.timeandd...stronomy/night/

Click on https://www.curtrenz.../asteroids.html for information on asteroid occultations taking place this month.

Visit http://cometchasing.skyhound.com/ and http://www.aerith.ne...t/future-n.html and https://cobs.si/ for additional information on comets visible this month.

A list of the closest approaches of comets to the Earth is posted at http://www.cometogra.../nearcomet.html

A wealth of current information on solar system celestial bodies is posted at http://www.curtrenz.com/astronomy.html and http://nineplanets.org/

Information on the celestial events transpiring each week can be found at https://stardate.org/nightsky and http://astronomy.com/skythisweek and http://www.skyandtel...ky-at-a-glance/

Free star maps for any month may be downloaded at http://www.skymaps.com/downloads.html and https://www.telescop...thly-Star-Chart and http://www.kenpress.com/index.html

Data on current supernovae can be found at http://www.rochester...y.org/snimages/

Finder charts for the Messier objects and other deep-sky objects are posted at https://freestarcharts.com/messier and https://freestarcharts.com/ngc-ic and http://www.cambridge..._april-june.htm

Telrad finder charts for the Messier Catalog are posted at http://www.custerobs...cs/messier2.pdf and http://www.star-shin...ssierTelrad.htm

Telrad finder charts for the SAC's 110 Best of the NGC are available at https://www.saguaroa...k110BestNGC.pdf

Information pertaining to observing some of the more prominent Messier galaxies can be found at http://www.cloudynig...ur-astronomers/

Author Phil Harrington offers an excellent freeware planetarium program for binocular observers known as TUBA (Touring the Universe through Binoculars Atlas), which also includes information on purchasing binoculars, at http://www.philharrington.net/tuba.htm

Stellarium and Cartes du Ciel are two excellent freeware planetarium programs that are available at http://stellarium.org/ and https://www.ap-i.net/skychart/en/start

Deep-sky object list generators can be found at http://www.virtualcolony.com/sac/ and https://telescopius.com/ and http://tonightssky.com/MainPage.php

Freeware sky atlases can be downloaded at http://www.deepskywa...-atlas-full.pdf and https://www.cloudyni...ar-charts-r1021 and https://allans-stuff.com/triatlas/

For current sky charts visit the NASA Night Sky Network https://nightsky.jpl.nasa.gov/news/212/

Magic Valley Astronomical Society
550 Sparks St.
Twin Falls, ID

The Magic Valley Astronomical Society (MVAS) was founded in 1976. The Society is a non-profit [501(c) 3] educational and scientific organization dedicated to bringing together people with an interest in astronomy.

In partnership with the Centennial Observatory, Herrett Center, College of Southern Idaho - Twin Falls; we hold regularly scheduled monthly meetings and observation sessions, at which we share information on current astronomical events, tools and techniques for observation, astrophotography, astronomical computer software, and other topics concerning general astronomy. Members enthusiastically share their telescopes and knowledge of the night sky with all who are interested. In addition to our monthly public star parties we hold members only star parties at various locations throughout the Magic Valley.

MVAS promotes the education of astronomy and the exploration of the night sky along with safe solar observing through our public outreach programs. We provide two types of outreach; public star parties and events open to anyone interested in astronomy, and outreach programs for individual groups and organizations (e.g. schools, churches, scout troops, company events, etc.), setting up at your location. All of our outreach programs are provided by MVAS volunteers at no cost. However, MVAS will gladly accept donations. Donations enable us to continue and improve our public outreach programs.

Membership is not just about personal benefits. Your membership dues support the work that the Magic Valley Astronomical Society does in the community to promote the enjoyment and science of astronomy. Speakers, public star parties, classes and support for astronomy in schoolrooms, and outreach programs just to name a few of the programs that your membership dues support.

Annual Membership dues will be:
$20.00 for individuals, families, and $10.00 for students.
Contact Treasurer Jim Tubbs for dues information via e-mail: jtubbs015@msn.com

Donations to our club are always welcome and are even tax deductible. Please contact a board member for details.
Lending Telescopes: The society currently has three telescopes for loan and would gladly accept others please contact President Robert Mayer, for more information on these and other benefits.

Telescopes are an individual thing and not practical for public use. However, everyone should have the experience of a good look at the Moon for at least 5 minutes in their life time. It is a dimension and feeling that is unexplainable. Pictures or TV can't give this feeling, awareness, or experience of true dimension. A person will not forget seeing our closest neighbor, the Moon.

Norman Herrett in a letter to Dr. J. L. Taylor, president of the College of Southern Idaho