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RETURN TO THE MOON



Artemis II Launch, Earthset from the Far Side of the Moon, and Return to Earth. NASA Images.

On April 1st, 2026 Artemis II launched carrying 4 astronauts to the Moon for the first time since Apollo 17 in December, 1972. Since Apollo, the crew capsule has been enlarged and fitted with additional crew comforts including an enclosed toilet, more and larger windows, and a more advanced life support system based on Shuttle and ISS technology.

Landmarks for this mission include a new distance record for human travel from Earth, and areas of the Moon's far side never visible to human eyes directly before. The trajectory of Artemis II was higher over the Moon than the Apollo mission orbits in low lunar orbit within a few degrees of the Moon's equator. This presented areas of the Moon's far side to the astronauts aboard Artemis II, allowing them to be the first humans to look upon them directly.

The mission was, in effect, a recapitulation of the missions of Apollo 7 and Apollo 8 in one flight, checking out a new space capsule for crew use, and flying a free-return trajectory around the Moon.

This ten day flight is the culmination of 22 years of work to return humanity to deep space, started

in 2004 with the Constellation Program, for which the Orion capsule was created as a Space Shuttle replacement, capable of carrying crew to the ISS and into deep space.

While the Constellation Program was later cancelled, Orion outlived it and became part of the Moon-to-Mars effort, now being redesigned for deep space use as the ISS resupply role was contracted to Russia with Soyuz while U.S. commercial crew vehicles were given the go-ahead to be developed. Constellation's Ares-I launch vehicle was laid aside while the Ares V heavy lift vehicle was retooled as the Space Launch System (SLS), originally intended to launch in 2016.

While the timeline grew along with the budgets year after year, Orion was sent into space in its first test flight aboard a Delta IV Heavy launch vehicle in 2014 while it waited for the SLS to be ready for flight.

SLS experienced multiple problems during development, most caused by new replacement tooling and components replacing proven Shuttle technology--contrary to the program's charter, but justified under the concept of demonstrating new technologies for industry. Issues in program management caused delays, and commercial businesses got ahead of the technology demonstrations NASA had planned.

But finally, SLS took its first flight in November 2022, carrying Orion on Artemis I for an uncrewed flight around the Moon.



Artemis I's Orion Capsule flies by the Moon in November, 2022. NASA Image.

Next up was Artemis II. This mission would combine the objectives of Apollo 7 and Apollo 8 into one mission. Apollo 7 was a test of the Apollo capsule in Earth orbit in October, 1968. Apollo 8 was humanity's first visit to the Moon, sending the Apollo capsule on a loop around the Moon in December, 1968.

Like Apollo 7, Artemis II would first place Orion in a high Earth orbit with a period of about 24 hours. While in this orbit, the crew would check out the functions of the spacecraft before deciding whether to continue on to the Moon. They could remain in this orbit for extra time, if necessary, before committing to the trip to the Moon and back.

The spacecraft checked out well, and "go" was given for Trans-Lunar Injection (TLI), a firing of the European Service Module's engine to send the Orion outbound to the Moon. The engine was a former Orbital Maneuvering Engine that flew on Space Shuttle Atlantis six times before the Orbiter was removed from service.

The TLI burn was very accurate, and the astronauts were able to skip several correction maneuvers on their way to the Moon.



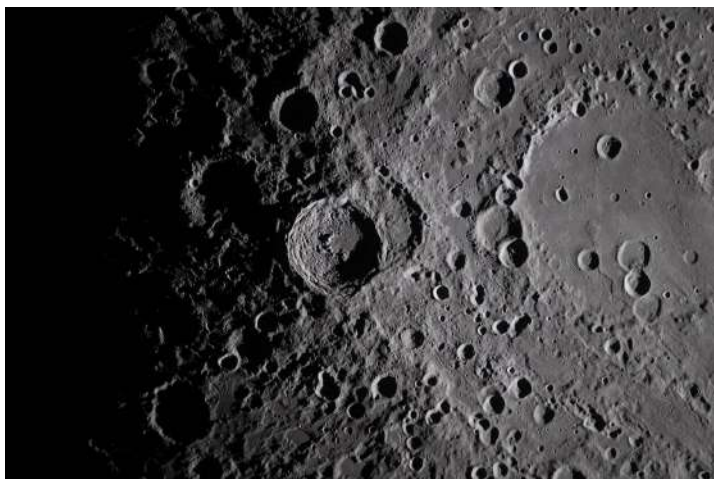
The large impact basin, Orientale Basin, is at lower center of this image of the Moon. This area was closely studied during the Artemis II flight on the far side of the Moon.

NEW VIEWS OF THE MOON

The trajectory around the Moon would differ from Apollo's. It would carry the Artemis

crew farther out into deep space than any of the Apollo missions. It would also carry the crew higher above the surface of the Moon on the far side than any of the Apollo missions had gone. The Apollo trajectories had all be near the equator of the Moon, and at low altitudes throughout the farside flight.

This meant that areas on the far side of the Moon that had never been directly seen by humans were visible on this mission. The Artemis II crew was charged with multiple hours of visual observation and direct photography with handheld cameras to take advantage of this opportunity.



Vavilov Crater, at center, is near the dividing line between day and night on the Moon. An inner ring of mountains lies inside rough terrain inside the crater wall. Handheld camera image with 400mm lens. NASA image.

The flight also allowed for the use of many new pieces of technology developed since Apollo. The Orion capsule features an enclosed toilet, based on designs from Space Shuttle and the ISS. It was an ongoing source of news during the flight, as it experienced some minor issues. In the end, it was returned to service each time, saving the astronauts from having to use back-up measures.

The astronauts were also allowed to bring their personal cellphones aboard. They had to keep them in “airplane” mode to avoid their radio emissions from interfering with the capsule’s own communications, but they were able to use them

to take personal images.

The Orion’s flight control system is also an upgrade from Apollo’s. Not only does it have a more capable and responsive manual control system, but the Orion is capable of maintaining itself with no crew on board. This will be important in later flights. For Artemis IV only two astronauts will visit the surface while two remain in Orion, but in later flights all 4 astronauts are expected to travel to the surface, leaving Orion in autonomous control in lunar orbit. With Apollo, this was not possible, meaning that one of the three astronauts on board had to remain in orbit to manage the capsule while the other two went to the lunar surface.

The return flight to Earth went smoothly, allowing the astronauts to focus on tests of setting up radiation shielding in Orion against solar coronal events, testing rapid donning and removal of the space suits, and exercising the Orion’s various systems in flight.

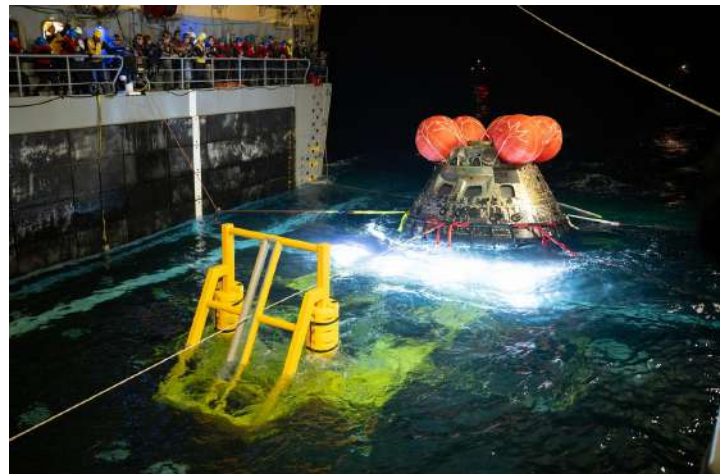
Artemis II was flying with a heat shield manufactured in the same way as the one that had problems on Artemis I, but a change to the re-entry trajectory was expected to prevent recurrence. Initial images seem to indicate that it was successful, and Artemis III and later will have a new heat shield design that will avoid the problem entirely.



Underwater view of the Artemis II heat shield taken by the recovery crew. It shows no damage like that seen on Artemis I. NASA image.



Recovery of the crew from the Orion capsule after splashdown of Artemis II. NASA Image.



The Artemis II Orion capsule is drawn into the well deck of the USS John P. Murtha for return to NASA. NASA image.



Astronauts Victor Glover and Kristina Koch are welcomed aboard the USS John P. Murtha by head of the Astronaut Office, Scott Tingle. NASA.



The crew pauses for a group photo after passing the Moon inside the Orion capsule. NASA.



Commander Reid Wiseman and Mission Specialist Jeremy Hansen after recovery from the Orion craft. NASA image.



**Up Next.
The core stage for Artemis III, due to fly in early 2027, arrives at Kennedy Space Center. NASA image.**

Club Website:

<http://vlgastroclub.org/>



Facebook:

<https://www.facebook.com/groups/vlgastroclub/>

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Space Academy	Toni Graybill
Public Relations	Jeffrey Kahler, Sr.
Directors	Craig Henry, Burt Salk
Newsletter Contact: saundby@gmail.com	

UPCOMING EVENTS

Executive Directors' Meeting, May 1st, 11am-12pm, Fishhawk Rec Center, 2318 Buttonwood Run

All members welcome to our monthly planning meeting. This month we'll be reviewing April's Earth Day at CEMEX, planning our summer outreach activities, and preparing for our fall speaker program.

Space Academy, May 4th, 6:30pm Truman Rec Ctr, 2705 Canal St.

Join us as Space Academy, where Michael Thompson will be discussing the recent Artemis II flight.

Observers Workshop, May 4th, 8pm, Truman Rec Ctr Pavilion, 2705 Canal St.

Join us at our monthly workshop for observers to get assistance with their instruments, learn their way around the sky, and share tips and tricks with their fellow observers, & help with Astronomical League observing programs (see them online at astroleague.org.)

Location & time: Truman Recreation Center Picnic Pavilion, 2705 Canal Street, 6pm-8:30pm. The picnic pavilion is behind the recreation center, behind the pool. In the event of poor weather, we will meet inside after the Space Academy program.



Comet C/2025 R3 PanSTARRS by member Joan Laubmeier. 44 subs of 30s in a SeeStar S30 Pro.

Fruitland Park Astronomy Group, May 16th, 5pm, 300 Shiloh Rd, Fruitland Park

Join us for an evening of observing and astronomy talk with the Fruitland Park Astronomy Group! Come to Cales Soccer Field in Fruitland Park, 300 Shiloh Road (at the corner of Shiloh Road and Dixie Avenue, north of the Fruitland Park water tower.) Enter on Shiloh Road (some GPS's will guide you to the Dixie Avenue entrance.) Gate opens at 5pm. We will stay as late as conditions permit and people are interested in observing. Bring power if required. You can set up off your tailgate.

Public is welcome to this event, no Villages ID required! Bring family and friends to view the evening sky with our astronomers!

General Meeting, May 19th, 6:30pm: Ken Katta, "Exoplanets", Seabreeze Rec Ctr, 2384 Buena Vista Blvd.

NOTE LOCATION CHANGE! We will meet at Seabreeze Recreation Center for May and June while Laurel Manor is undergoing renovations!

Meeting starts at 6:30pm for a presentation by Jim Laurent about Mining the Asteroids. Learn

about what resources could be available, the issues around recovering them and returning them, and the opportunities open to humanity if these problems are solved.

Learn how technology is developing that will allow us to take advantage of this massive untapped natural resource.

Smart Scope Meeting, Homestead Astronomy Park, May 20th, 7:30pm, 6227 Meggison Road

Our Smart Scope meeting is focused on using smart telescopes, telescopes with smart controllers, and astrophotography both traditional and live-stacking. If you want to know more about how smart controllers can put your astronomy in “easy mode”, come and see what current devices can do!

Visual observers are also welcome!

See Calendar at End of Newsletter, before star chart.

Club Calendar Online:

<https://vlgastroclub.org/calendar/>

IN THE SKY THIS MONTH

Also refer to the sky map on the last page.

Lyrid Meteor Shower 2026

The Lyrid meteor shower comes between the New Moon and first quarter of the Moon this year, meaning we'll get a good view of them this year as we will ever get.

Activity for this shower will be high from April 16th through the 22nd, providing about one meteor every 3-4 minutes on average. While the meteor rate of the Lyrids is not very high (especially in our light-polluted high humidity skies), the meteors themselves are fast and bright.

The radiant point is near Vega in Lyra, which will rise above the horizon at about 10pm EDT. It will be at its highest just before sunrise in

the morning. This means that evening observers will be able to see Lyrids starting at about 10pm, with the numbers increasing the later they stay up. Early risers up before the Sun's glow tinges the horizon will see the highest rates of meteors.

The Lyrids come from debris from Comet C/1861 G1 Thatcher. When Earth passes through the dust left behind by the comet's tail, it impacts our atmosphere at high speeds, creating the 'falling stars' that mark the event.

The best tools to observe a meteor shower are a comfortable reclining seat, a clear horizon (east for evening, west for morning) and patience. The field of view of binoculars and telescopes is too small for meteors, though some opera glasses that give very wide fields of view (wider than your eyes alone) can work for the task.

THE MOON

Full Moon, May 1st

Last Quarter, May 9th

New Moon, May 16th

1st Quarter, May 23rd

Full Moon, May 31st

THE PLANETS

May 1, 2026

Planet	Rise	Transit	Set
Mercury	5:45 am	11:35 am	5:25 pm
Venus	9:15 am	4:05 pm	10:55 pm
Mars	5:15 am	11:15 am	5:15 pm
Jupiter	10:25 am	5:25 pm	12:25 am
Saturn	5:15 am	11:15 am	5:15 pm

May 15, 2026

Planet	Rise	Transit	Set
Mercury	5:00 am	10:50 am	4:40 pm
Venus	9:45 am	4:35 pm	11:25 pm
Mars	4:25 am	10:25 am	4:25 pm
Jupiter	9:30 am	4:30 pm	11:30 pm
Saturn	4:25 am	10:25 am	4:25 pm

May 30, 2026

Planet	Rise	Transit	Set
Mercury	4:40 am	10:30 am	4:20 pm
Venus	10:15 am	5:05 pm	11:55 pm
Mars	3:25 am	9:25 am	3:25 pm
Jupiter	8:30 am	3:30 pm	10:30 pm
Saturn	3:25 am	9:25 am	3:25 pm

See the Shoebuckle!

The beautiful star cluster M35 lies at the opposite end of the Gemini constellation from the two bright stars that mark the heads of the Twins. This makes it a bit challenging to locate, but on May 20th it will be less than a degree from the bright planet Venus, making it easier to locate!

Look below and to the left of Venus with binoculars or a telescope on this date to see it. Venus will be near it for several nights, so if you miss catching it on the 20th, it will still be nearby a few days before and a few days after.



M35, the Shoebuckle Cluster with tiny cluster NGC 2158 within its expanse at lower right. Image by Mark Graybill.

The opposite of a “planet train” where six or more planets are in the sky at once is what we will experience in May. **Jupiter** and **Venus** will be our evening planets, while **Mars** and **Saturn** will be visible for a short while in the morning before sunrise.

Mercury, Uranus, and Neptune will be hidden by the Sun this month, with Mercury joining our visible planets in early June.

Jupiter shines bright at magnitude -1.9 in the high southwest at sunset this month. It is 34

minutes in diameter, so it’s still a great object to view through the month, and the best evening show for a planet for May.

Jupiter observing information:

<https://in-the-sky.org//data/object.php?id=P5>

Venus shines low in the west in the dusk sky before sunset, and after. It is magnitude -3.9 and under telescopic magnification will show a gibbous phase, with one edge clipped short of full.

Venus online finder chart:

<https://in-the-sky.org//data/object.php?id=P2>

Mars is in the early morning sky, at magnitude 1.2, rising a little higher each morning. Its apparent diameter, 4.2 arc sec. shows only the largest surface features such as the southern polar cap and Syrtis Major under medium to high powers of magnification (200-350x).

Observing information for Mars:

<https://in-the-sky.org//data/object.php?id=P4>

Saturn is in the pre-dawn sky this month. It rises shortly before the Sun, getting a little higher each day as May progresses.

At about 16 arcsec in apparent size, it is only half its size at opposition, but still large enough for good views even at modest powers (50-100x). The rings are continuing to open toward us to show themselves better at low powers.

Saturn finder chart:

<https://in-the-sky.org//data/object.php?id=P6>



Jupiter by member Bill Hillman.

Club Calendar

Special events by The Villages Astronomy Club

Events not hosted by The Villages Astronomy Club

Notable dates with no event planned.

May 2026

1 Astro Exec Meeting, 11am, Fishhawk Rec Ctr, 2318 Buttonwood Ln.

4 Space Academy, Observing Workshop, Truman Rec. Ctr. 2705 Canal St.

16 Fruitland Park Observing, 5pm, 300 Shiloh St.
Fruitland Park

19 General Meeting, 6:30pm, **SeaBreeze Rec Ctr**, (note site change!) Jim Laurent, *"Can We Mine the Asteroids?"*

20 Smart Scope Meeting, Homestead Astronomy Park, 8pm

June 2026

1 Space Academy, Observing Workshop (Inside after Space Academy), Truman Rec. Ctr. 2705 Canal St.

5 Astro Exec Meeting, 11am, Fishhawk Rec Ctr, 2318 Buttonwood Ln.

6 Camp Geneva, This will be more of a public event - no specific group like we have had in the past. She is happy to have the Fruitland Park group participate as well. Randy Gilbert coordinating with April at Camp Geneva.

TBD Camp Villages

16 General Meeting, **SeaBreeze Rec Ctr**, Mark Graybill, *"The NEW Artemis Moon Program"*

20 Fruitland Park Observing, 5pm, 300 Shiloh St.
Fruitland Park

No EAA Meeting Planned

July 2026

3 Astro Exec Meeting, 11am, Fishhawk Rec Ctr, 2318 Buttonwood Ln.

6 Space Academy, Observing Workshop (Inside after Space Academy), Truman Rec. Ctr. 2705 Canal St.

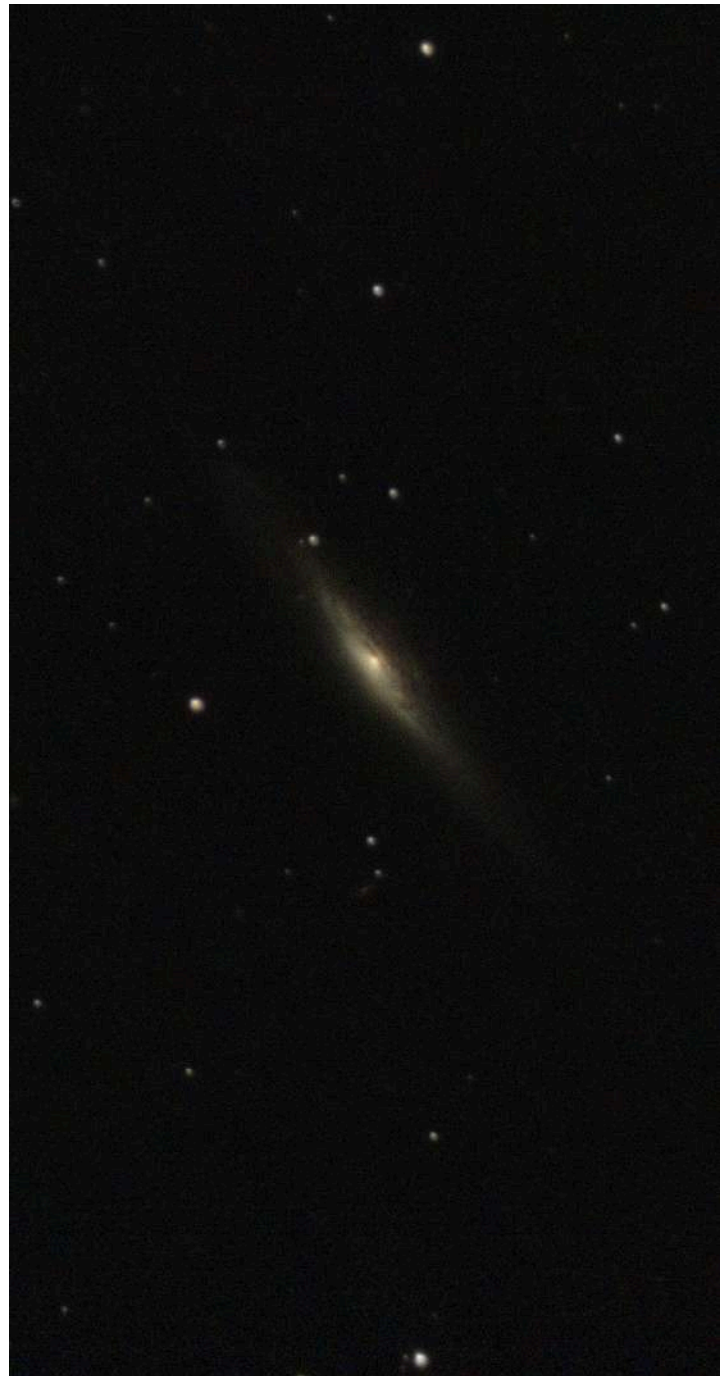
18 Fruitland Park Observing, 5pm, 300 Shiloh St.
Fruitland Park

21 General Meeting: Astronomy Interests Roundtable

No EAA Meeting Planned

Club Calendar on the web:

<https://vlgastroclub.org/calendar/>



Galaxy NGC 268 by member Will Collier. 139 exposures of 10 sec apiece (23m, 10s). Meade LX200 8" Schmidt-Cassegrain telescope. Guiding by ASIAir.

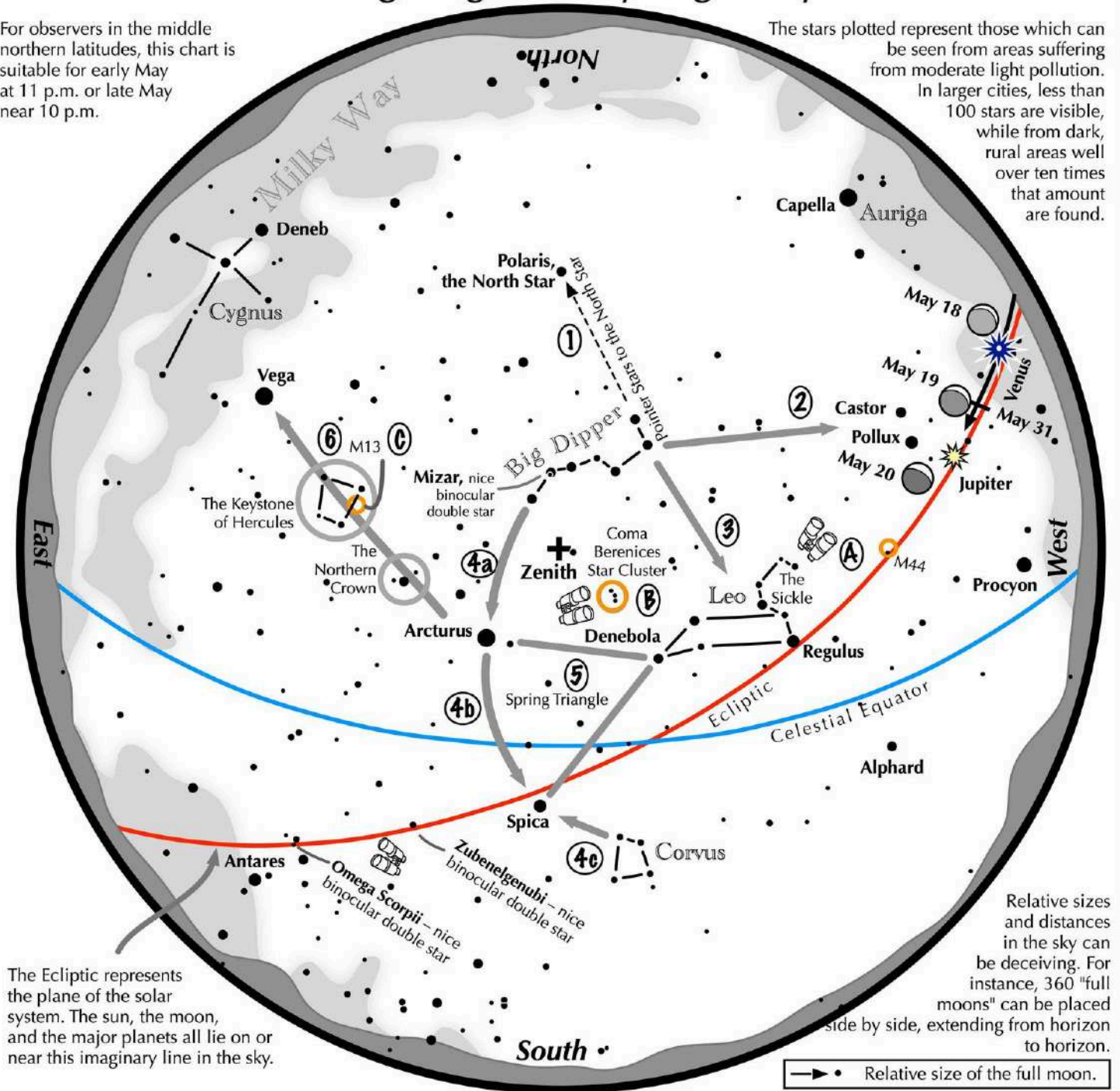
See the monthly star chart on following page:

Navigating the May Night Sky

2026

For observers in the middle northern latitudes, this chart is suitable for early May at 11 p.m. or late May near 10 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→ • Relative size of the full moon.

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

- 1 Extend a line northward from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
- 2 Through the two diagonal stars of the Dipper's bowl, draw a line pointing to the twin stars of Castor and Pollux in Gemini.
- 3 Directly below the Dipper's bowl reclines the constellation Leo with its primary star, Regulus.
- 4 Follow the arc of the Dipper's handle. It first intersects Arcturus, then continues to Spica. Confirm Spica by noting that two moderately bright stars just to its southwest form a straight line with it.
- 5 Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
- 6 Draw a line from Arcturus to Vega. One-third of the way sits "The Northern Crown." Two-thirds of the way hides the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.

Binocular Highlights

A: M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux. **B:** Look near the zenith for the loose star cluster of Coma Berenices. **C:** M13, a round glow from a cluster of over 500,000 stars.



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