



PAStimes

A Publication of the Phoenix Astronomical Society

Stu's Views • Stu Brackney, President PAS

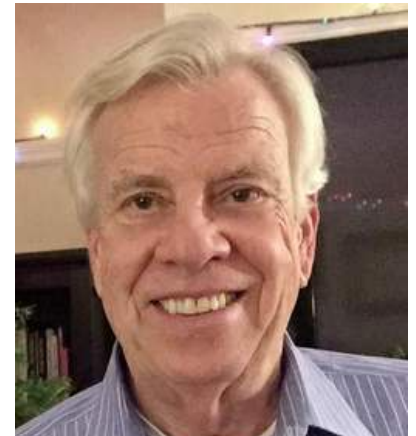
Hi everyone. I am guessing you are all (when the darn clouds leave town), loving our winter night sky. Filled with planets lining up, the Orion constellation boasting his presence in the eastern sky and of course, the moon constantly hogging everyone's attention.

Our last Star party was an enormous success as we had scores of telescopes, of all makes and models. The real fun of these star parties is not just looking up to get a view but listening to people sharing knowledge of the targets and of course the equipment they use. A wonderful learning experience for everyone, even members of your family. So, bring the kids!

Congratulations to one of our leadership team members, Mr. Andrew Stone. Andrew is one busy guy. He, in addition to being on our leadership team as the Star Tours Manager, he is now a NASA Solar System Ambassador <https://science.nasa.gov/engage/solar-system-ambassadors/> Today, the Solar System Ambassadors Program has more than 1,100 dedicated volunteers reaching more than 11 million people (about twice the population of Arizona) through both live and online events in their communities.

From a local library in a small town in Iowa to a military base in Guam, volunteers share professionally designed presentations based on the latest updates from scientists and engineers working at the leading edge of NASA's solar system exploration. Congratulations, Andrew. You make all of us proud of all that you do to promote further understanding of our cosmos.

Finally, a friendly reminder, if you have images, stories or astronomy equipment you want to sell, you can submit all of those to our monthly newsletter editor Mr. Richard Meyers editor@pasaz.org. That reminds me that your board has authorized the sale of five telescopes at phenomenally discounted prices to members. They are listed in this month's publication.



Lecture: March 6th
Vannessa Gressieux
Reopening at Kitt Peak
National Observatory: One
Year In

Now Forming : Astroimaging
group see page 2 for details

Workshop: March 20th
PVCC Main Campus

Star Party : March 1st & 29th

ASIG: March 24th

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Upcoming Events

Don't forget to register—spots fill up fast!



March 2025

1st -Public Star Party- Apache Wash Trailhead Park

6th - Monthly Lecture Series - Reopening at Kitt Peak National Observatory: One Year In

20th - Telescope Workshop-PVCC Main Campus

20th - ASIG- N.I.N.A Class

24th - ASIG -Meetup

29th - Public Star Party- Apache Wash Trailhead Park

31st - ASIG- Zoom PixInsight

April 2025

3rd - Monthly Lecture Series - Members

17th - Telescope Workshop-PVCC Main Campus

For more information and to register for these events, go to the [PAS Event Calendar and Registration Site](#). It is important to register for all events. In case of an event change or cancellation, you will be notified via email.

March Lecture Series

"Reopening at Kitt Peak National Observatory: One Year In"

An Exploration of Kitt Peak National Observatory and public updates on our Science and Outreach

Presented by Vanessa Gressieux

About Vanessa: She is a University of Arizona alumni with over 12 years of astronomy outreach and education experience. As a proud member of the TAAA, Vanessa volunteers annually at the Grand Canyon Star Party. In addition to her role as the Guide and Docent Coordinator at Kitt Peak National Observatory, she serves as a Solar System Ambassador with NASA and JPL. Vanessa is also one of the founders of the Stars Over Sabino Star Party, which is hosted annually at Sabino Canyon in Tucson. Vanessa is passionate about education, outreach, and optical astronomy.

TRENDING NOW

Now Forming: Astroimaging Special Interest Group(ASIG)!

Are you passionate about capturing the beauty of the cosmos? Whether you're a beginner or an experienced astrophotographer, now is the perfect time to join The Phoenix Astronomical Society's Astroimaging Special Interest Group as we launch this exciting new group!

Astroimaging, also known as astrophotography, is the practice of capturing images of celestial objects like stars, planets, galaxies, and nebulae. It combines photography and astronomy, allowing you to create stunning visuals of the universe while exploring its mysteries.

Our mission is to:

✨ Advance the art and science of astroimaging.

📚 Provide educational opportunities, mentorship, and technical q&a.

📸 Inspire growth through shared experiences, monthly challenges, and interactive discussions.

This is your chance to join a collaborative community of like-minded enthusiasts, explore new techniques, and uncover the wonders of the universe through imaging!

Interested? Drop us an email to sign up for notifications of future events!

SIGN UP



Here's a recap of last month's lecture

Lecture by Vincent Ledvina, Topic: "Aurora Chaser"



Vincent Ledvina, often referred to as "The Aurora Guy," is known for his work related to the aurora borealis, also known as the northern lights.

Key Concepts:

- Space Weather: Conditions around the Sun affecting space and ground-based assets and human life. The Aurora is a visible result of space weather, driven by the sun.
- Solar Activity: The sun emits solar wind (charged particles). Solar storms, like coronal mass ejections (CMEs), can intensify this wind.
- Earth's Magnetosphere: Earth's magnetic field shields us from the solar wind, channeling energy towards the poles.
- Aurora Formation: Charged particles collide with atmospheric gases, creating light. Different gases and altitudes produce various colors:
 - Lower altitudes: Purple/pink (nitrogen).
 - Mid altitudes: Green (oxygen).
 - Higher altitudes: Red (oxygen).
 - Blue: Can occur during strong storms.
- Auroral Ovals & Substorms: Auroras appear within ovals around the geomagnetic poles. Substorms are intense bursts of activity.
- Geomagnetic Storms & KP Index: CMEs cause geomagnetic storms, potentially making auroras visible at lower latitudes. The KP index measures geomagnetic activity.

Prediction & Observation

- Prediction: Rely on models and observations of solar activity from sources like NOAA's Space Weather Prediction Center.
- Lower Latitudes: Monitor forecasts and webcams. Strong geomagnetic storms can bring visibility.
- Visual Tips: Seek dark locations, be patient, and look for a red glow.
- Photography: Use cameras with good low-light capabilities and fast lenses.

Key Takeaways

- The Aurora is a dynamic phenomenon, with each display being unique.
- Citizen science plays a role; even casual observers can contribute.
- The speaker's passion lies in understanding and sharing the science of the Aurora, encouraging exploration and appreciation of this natural wonder.

What should you look for?

The aurora can look very different in the sky, from a dull grey glow on the northern horizon to dancing green waves all over the sky!



Fairbanks, Alaska; February 2024



Fairbanks, Alaska; February 2023

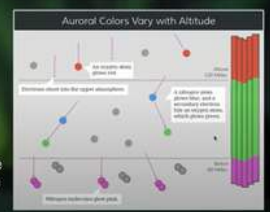


Churchill, Manitoba; September 2022

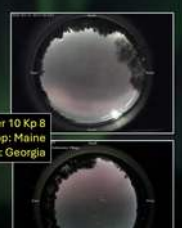
How do auroras form?

Charged particles from space make gas in our atmosphere glow!

- Charged particles rain down on us from outer space, guided by Earth's magnetic field, like surfers riding waves.
- These particles hit our atmosphere and cause gas to become "excited!" The gas releases light which is the aurora.
 - Nitrogen glows red and blue.
 - Oxygen glows red and green.
- Different aurora shapes are due to the different shapes of the "clouds" that "rain down" particles from outer space.



Aurora webcams

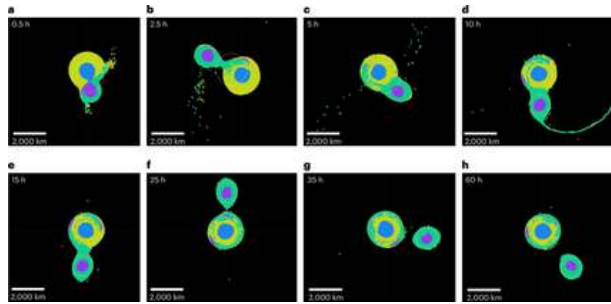


In the NEWS

Kiss and capture

A new study proposes a "kiss and capture" mechanism to explain the formation of Pluto and its largest moon, Charon. Instead of a violent impact like Earth's Moon, Pluto and a proto-Charon likely collided gently, temporarily sticking together before separating into the binary system seen today. This theory accounts for the structural integrity of icy bodies in Pluto's extreme environment and may explain their geological evolution, including possible subsurface oceans.

<https://phys.org/news/2025-01-newly-capture-mechanism-formation-pluto.pdf>



Chance asteroid 2024 YR4 will hit Earth down

Recent observations have significantly reduced the estimated probability of asteroid 2024 YR4 impacting Earth on December 22, 2032, from 3.1% to a mere 0.001%. Consequently, the European Space Agency has lowered the threat level on the Torino Impact Hazard Scale to zero. Despite the minimal risk, the James Webb Space Telescope is scheduled to observe the asteroid in the coming months to gather more data.

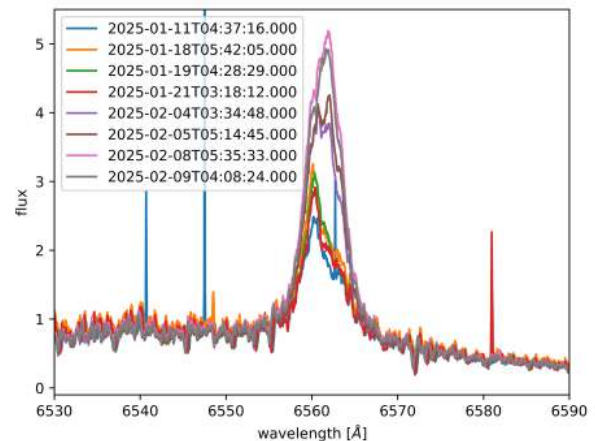
<https://phys.org/news/2025-02-dwarf-galaxy-halo-andromeda.html>



Change in the spectrum of the recurring Nova T CrB

In early February 2025, astronomers at the Thuringian State Observatory observed significant spectral changes in the recurrent nova T Coronae Borealis (T CrB). Over a two-week period, emission lines in the spectrum intensified sharply, indicating a substantial increase in the accretion rate. Additionally, new emission lines corresponding to temperatures of at least 40,000 K have emerged, potentially signaling an impending nova eruption. Despite these spectral changes, the system's brightness has remained constant. Continuous monitoring is underway to detect any forthcoming outburst.

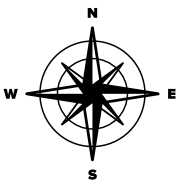
<https://www.aavso.org/news/t-crb-pre-eruption-dip>



New dwarf galaxy discovered in the halo of Andromeda galaxy

Astronomers have discovered Pegasus VII, a faint dwarf galaxy in the Andromeda galaxy's halo, about 2.4 million light-years away. Identified through the UNIONS survey, it is the faintest known satellite of Andromeda and shows signs of past tidal interactions. With a stellar mass of 26,000 suns and an age of 10 billion years, its discovery suggests more undetected dwarf galaxies may exist.

<https://phys.org/news/2025-02-dwarf-galaxy-halo-andromeda.html>



Summary of February Outreach Events

1st-Star Party

4th- Star Tours- Sonoran Sky Elementary School

6th -Lecture

7th- Star Tours- Black Mountain Elementary

11th- Star Tours- Ameriprise

20th- Telescope Workshop

26th- Star Tours- Sonoran Trails Middle School

28th- Star Tours- Phoenix Country Day School

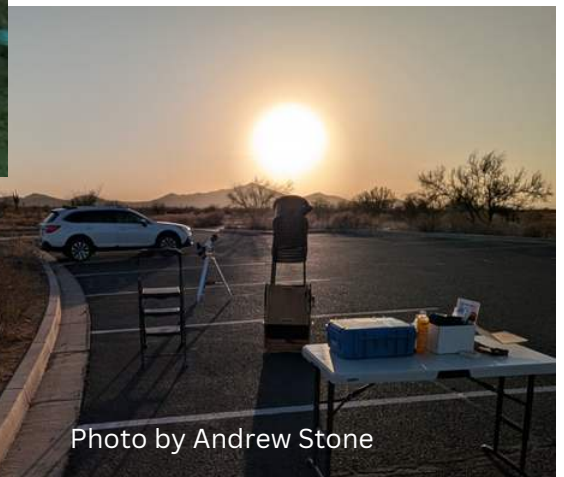
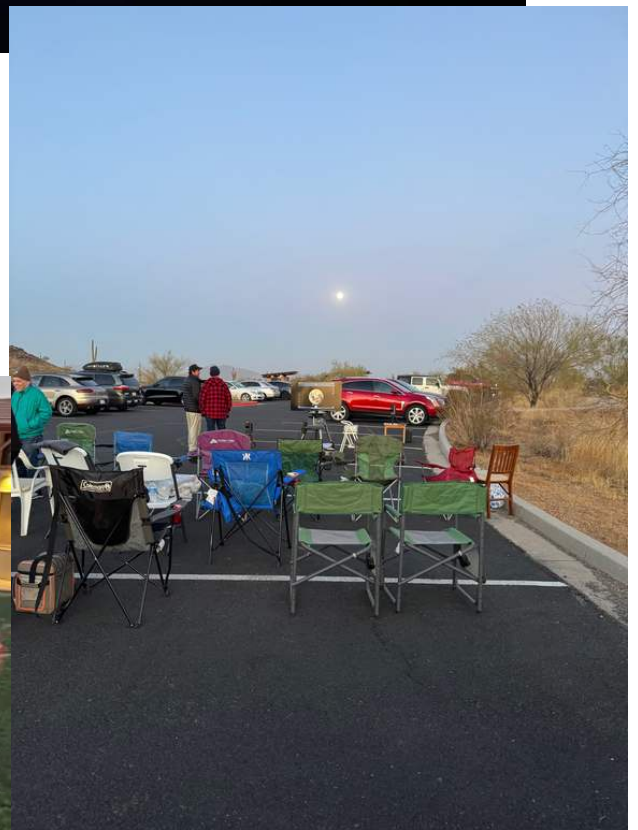


Photo by Andrew Stone



TAKE A TOUR

AstroImaging Special Interest Group(ASIG)

The night sky is calling, and your incredible astroimaging skills are lighting up our group! Whether you're capturing distant galaxies, nebulae, or the moon in stunning detail, every shot you share inspires us all.

For our beginners—welcome aboard! Try starting with a simple setup: a DSLR or phone camera on a tripod can work wonders for bright objects like the moon or constellations. Play with longer exposures (10-30 seconds) to catch more light, and don't shy away from free editing tools like GIMP or apps like Snapseed to enhance your shots. Share your first attempts—we're here to cheer you on!

Check our ASIG calendar for March meetings to connect with the group, learn from each other, and plan some stargazing fun. Keep pushing the boundaries of what's possible—experiment with new techniques, share your tips, and let's keep this community shining as bright as the stars we chase. Can't wait to see your next masterpiece!



March Target Challenge:

Easy: NGC 2244 - Open cluster within the Rosette Nebula in Monoceros; bright and framed by nebulosity.

Easy: M95 - Barred spiral galaxy in Leo; compact and visible with modest gear.

Hard: NGC 3626 - Faint spiral galaxy in Leo with a subtle ring structure.

Hard: NGC 2683 - Edge-on spiral in Lynx; low brightness challenges exposure settings.

Helpful Youtube channels

[AstroBackyard](#) – Excellent for beginner and intermediate astrophotographers, covering gear, imaging techniques, and post-processing.

[Nebula Photos](#) – Focuses on budget astrophotography, including DSLR and smartphone imaging.

[Peter Zelinka](#) – Great for nightscape and deep-sky astrophotography techniques.

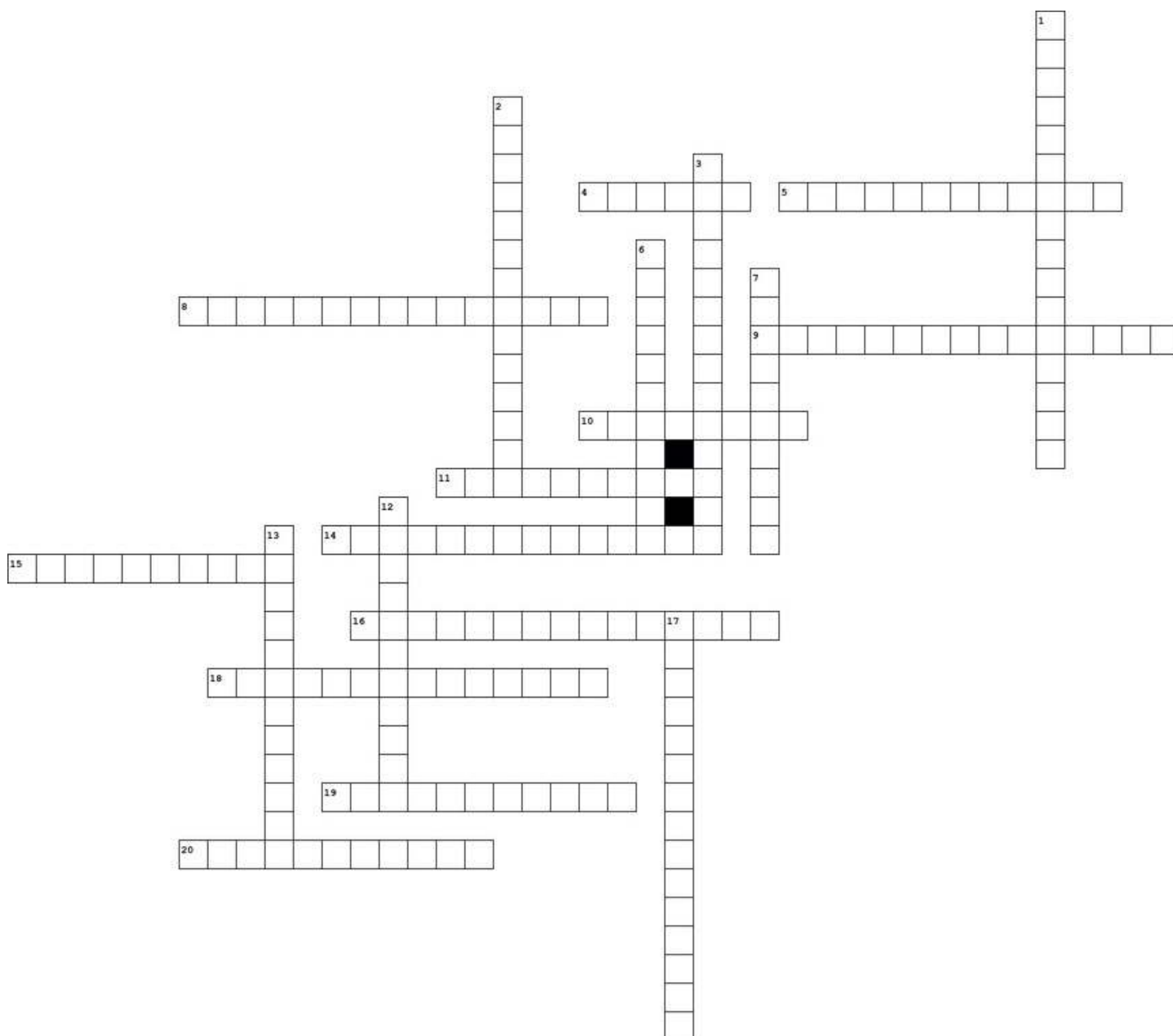
[Chuck's Astrophotography](#) – Covers deep-sky imaging, processing tutorials, and equipment reviews.

[NSN Webinar Series: JWST: Revealing the Invisible Universe](#) - Principal Science Visuals Developer Joseph DePasquale will provide some background on the observatory and the art and science of image processing that reveals the inherent beauty of the infrared universe.

[Masterofpixinsight](#)-Masters of PixInsight is an educational platform dedicated to teaching astrophotographers how to effectively use PixInsight for deep-sky image processing.

Enjoy your coffee with a crossword puzzle

Messier Catalog



Across

4. What is another name for the massive elliptical galaxy in Virgo?
5. What nebula in Sagittarius shows three distinct lobes?
8. Which galaxy is famous for its striking spiral arms?
9. Which spiral galaxy is our closest major neighbor?
10. What bright star cluster in Taurus is visible without a telescope?
11. What is the common name for the supernova remnant in Taurus?
14. What galaxy features a dark dust lane across its core?
15. Which planetary nebula looks like a circular band?
16. What is the popular name for the globular cluster in Hercules?
18. Which face-on spiral galaxy shines in Ursa Major?
19. What small companion orbits the Andromeda Galaxy?
20. What is another name for the star-forming region in Orion?

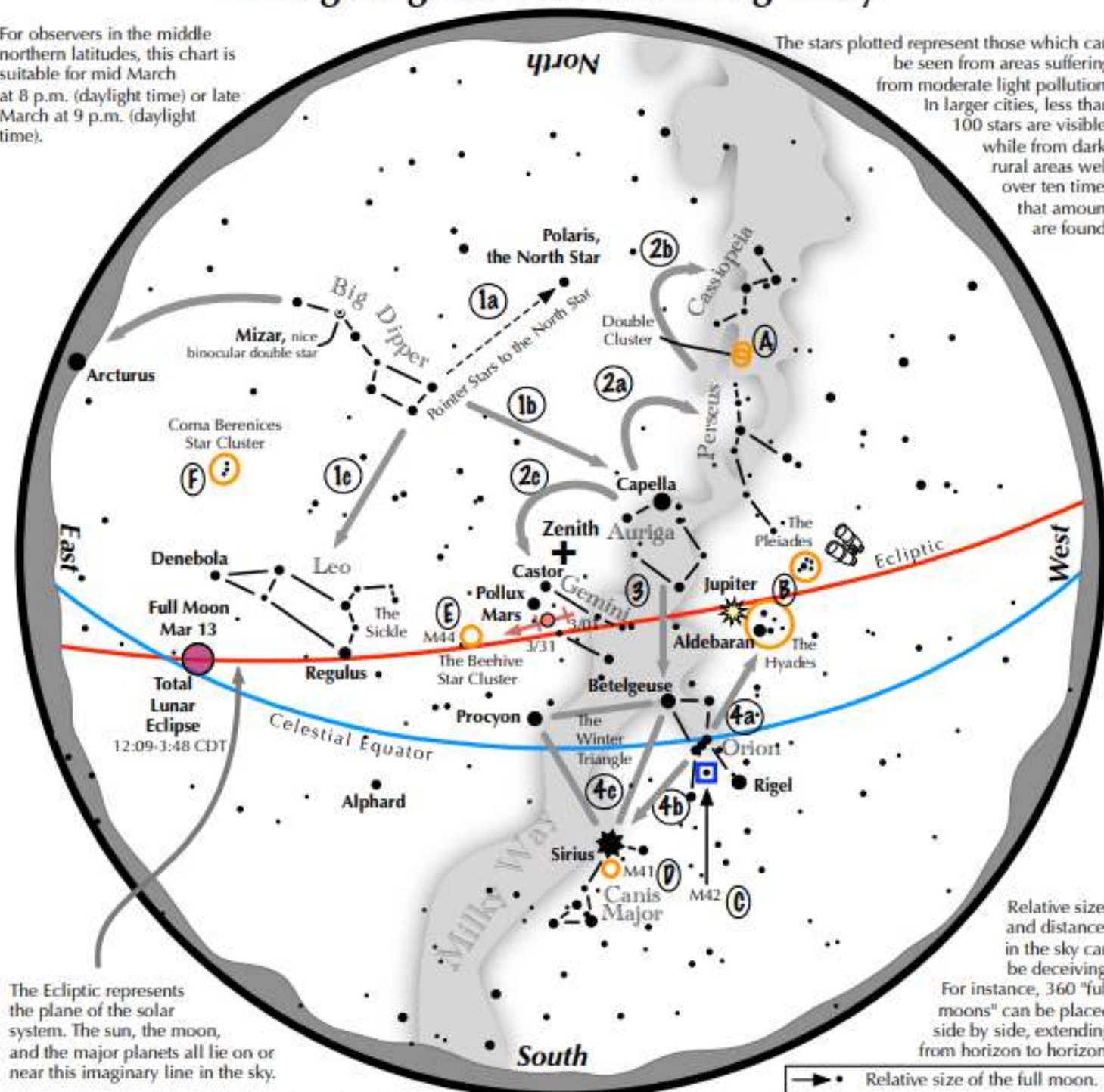
Down

1. Which spiral galaxy lies in the constellation Triangulum?
2. What planetary nebula resembles a barbell shape?
3. Which galaxy has a distinctive hat-like dust lane?
6. Which famous star-forming region is found in Orion?
7. Which nebula in Sagittarius is also called the Omega Nebula?
12. Which nebula contains the Pillars of Creation?
13. What bright emission nebula glows in Sagittarius?
17. What globular cluster is near the star Antares?

Navigating the mid March Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid March at 8 p.m. (daylight time) or late March at 9 p.m. (daylight time).

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.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

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 March night sky: Simply start with what you know or with what you can easily find.

- 1 Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star. Its top bowl stars point west to Capella in Auriga, nearly overhead. Leo reclines below the Dipper's bowl.
- 2 From Capella jump northwestward along the Milky Way to Perseus, then to the "W" of Cassiopeia. Next jump southeastward from Capella to the twin stars of Castor and Pollux in Gemini.
- 3 Directly south of Capella stands the constellation of Orion with its three Belt Stars, its bright red star Betelgeuse, and its bright blue-white star Rigel.
- 4 Use Orion's three Belt stars to point northwest to the red star Aldebaran and the Hyades star cluster, then to the Pleiades star cluster. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius. It is a member of the Winter Triangle.

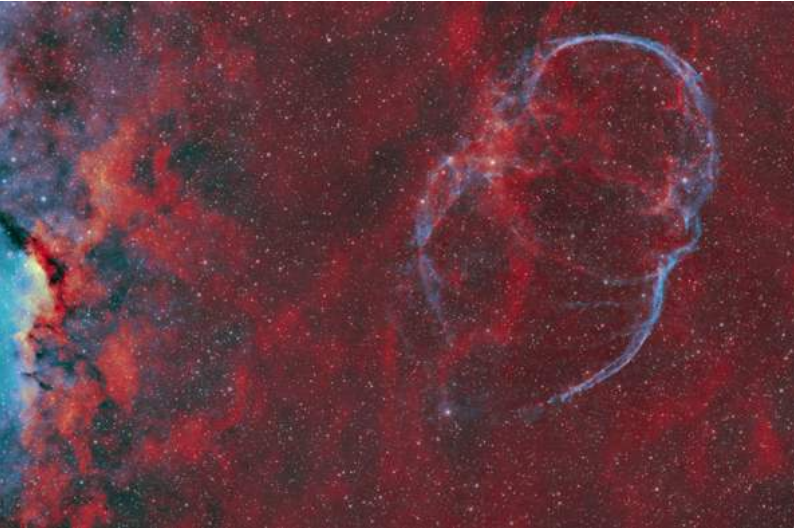
Binocular Highlights

A: Between the "W" of Cassiopeia and Perseus lies the Double Cluster. **B:** Examine the stars of the Pleiades and Hyades, two naked eye star clusters. **C:** M42 in Orion is a star forming nebula. **D:** Look south of Sirius for the star cluster M41. **E:** M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux. **F:** Look high in the east for the loose star cluster of Coma Berenices.



Member Astro Images

**SUPERNOVA REMANTS IN
MONOCERO-KEITH
MOMBOURQUETTE**



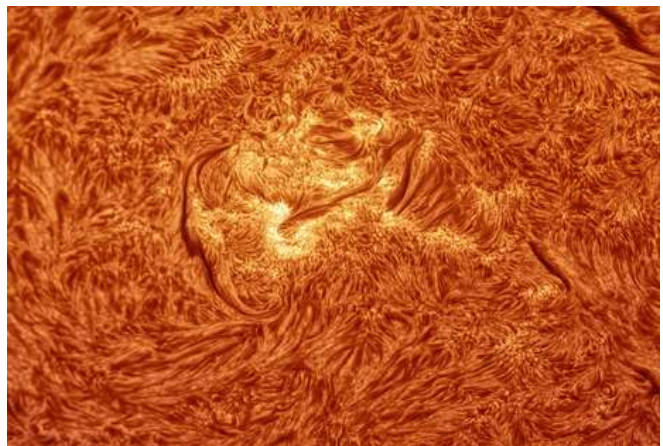
**M42-PHILLIP
HOPPE**



**M42 -RICHARD
SAUERBRUN**



SUN -MARK JOHNSTON



7 Telescope Targets for March

Each month we feature 7 good targets for small telescopes that should be visible in the evening

1. Iota Cancer: Beautiful, easy to split colorful double star
2. M44: the Beehive Large open star cluster in Cancer
3. M68: Globular Cluster Nice glob in Hydra
4. M97: Owl nebula Faint planetary nebula in Ursa Major. Look for M108 galaxy in same field of view
5. Canopus: 2nd brightest star in the sky. Brightest star in the southern constellation Carina, will be low in the south
6. Achird Eta Cassiopeia: is an interesting binary star. The primary is a G2 class exactly like our Sun. The secondary is a red companion.
7. Sirius: The brightest star in the night sky is also a binary. Observing challenge: you'll need excellent seeing and at least a 6" aperture to spot Sirius b

Star Party Targets

- Orion Nebula (M42): One of the brightest nebulae in the sky, located in the constellation Orion. It's a fantastic target for both beginners and experienced astronomers.
- Pleiades (M45): Also known as the Seven Sisters, this open star cluster in the constellation Taurus is easily visible to the naked eye and stunning through a telescope.
- Crab Nebula (M1): A supernova remnant in the constellation Taurus. It's a bit more challenging to observe but rewarding for those with a medium to large telescope.
- Horsehead Nebula (B33): Located in Orion, this dark nebula is a favorite among astrophotographers. It's best observed with a larger telescope and under dark skies.
- Rosette Nebula (Caldwell 49): A large nebula in the constellation Monoceros. It's a beautiful target for those with a small refractor telescope.
- Flame Nebula (NGC 2024): Another target in Orion, this emission nebula is often imaged alongside the Horsehead Nebula.
- Venus: Often called the "Evening Star," Venus will be visible in the western sky just after sunset. It's very bright and easy to spot
- Mars: Look for Mars in the eastern sky after sunset. It will appear as a reddish dot and is quite prominent
- Jupiter: This giant planet will be visible overhead in the evening. It's one of the brightest objects in the night sky
- Saturn: You can find Saturn in the southwestern sky after sunset. Its rings make it a stunning target through a telescope
- Uranus: Located between Jupiter and the western planets, Uranus is not visible to the naked eye but can be seen with binoculars or a small telescope
- Neptune: Also between Jupiter and the western planets, Neptune requires a telescope to be seen
- Mercury: By the end of February, Mercury will join the lineup, making it possible to see seven planets in the night sky

These targets offer a mix of easy and challenging objects, making them perfect for a star party where observers of all skill levels can enjoy the night sky. Happy stargazing! 🌌



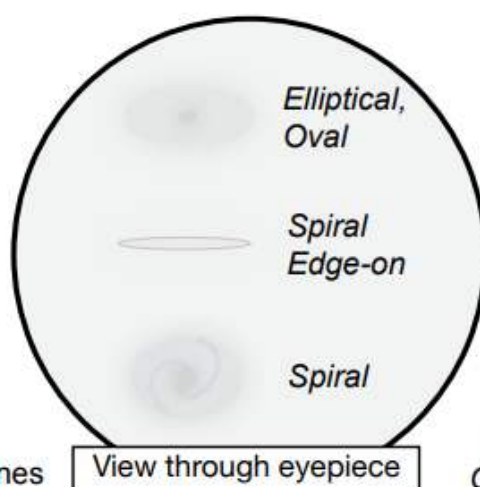
Observing Galaxies

Because galaxies are so very far away, they are typically faint. Therefore, your goals are to increase light collection and to maximize visual contrast whenever possible.

- Clear, dark skies are best.
- The larger the aperture of the telescope, the better. A four inch telescope barely reveals less than a dozen dim, indistinct glows, while an 8 inch scope picks out several dozen under the best conditions. Larger scopes begin to show internal structures such as dark dust lanes and spiral arms.

Consider these factors when observing:

- Note the general shape and apparent size of the galaxy. Is it more round than oval? Is it thin?
- If it is oval, in what direction does its major (long) axis point?
- What does the core look like? Is it star-like, or a round glow? Is it indistinct?
- Are spiral arms visible?
- For edge-on galaxies, are dust lanes visible?
- How quickly do the boundaries fade into blackness?
- Are smaller and dimmer galaxies also visible in the field?



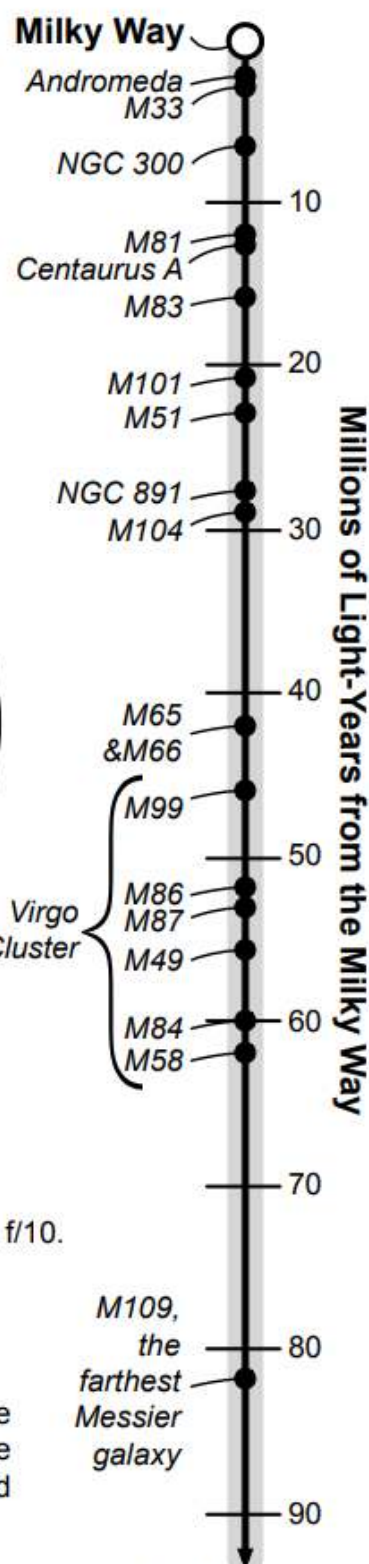
Enhance your view:

- Use averted vision.
- For better perception of small details, increase the magnification.
- To increase contrast, use a smaller focal ratio scope—f/5 is better than f/10.
- Tap the telescope tube to help bring out detail.
- Increase apparent field contrast by covering your head with a hood.

The importance of surface brightness:

The published magnitude of a galaxy refers to its brightness as if it were a point source. A galaxy, however, spreads its light over an appreciable area, making it appear dimmer than its published magnitude would suggest. As a result, it may be surprisingly difficult to discern.

Record your observations! Use a logbook, tablet, laptop, or voice recorder. Your notes are too precious to lose! You will refer to them years later.



Deepen your experience: Appreciate the distance of your target galaxy, and how long its light took to reach your eyes!



Lunar Eclipse

A lunar eclipse occurs when the Earth passes between the Moon and the Sun, casting a shadow on the Moon. This can only happen during a full moon, when the Sun, Earth, and Moon are aligned in a straight line (or very close to it), an arrangement called syzygy. The Earth's shadow has two parts: the umbra (the darker, central portion) and the penumbra (the lighter, outer portion).

Time	Phase	Event	Direction	Altitude
8:57 pm Thu, Mar 13		Penumbral Eclipse begins The Earth's penumbra start touching the Moon's face.	↘ 108°	↗ 30.8°
10:09 pm Thu, Mar 13		Partial Eclipse begins Partial moon eclipse starts - moon is getting red.	↘ 123°	↗ 43.9°
11:26 pm Thu, Mar 13		Total Eclipse begins Total moon eclipse starts - completely red moon.	↘ 147°	↗ 54.6°
11:58 pm Thu, Mar 13		Maximum Eclipse Moon is closest to the center of the shadow.	↘ 161°	↗ 57.4°
12:31 am Fri, Mar 14		Total Eclipse ends Total moon eclipse ends.	↓ 176°	↗ 58.6°
1:47 am Fri, Mar 14		Partial Eclipse ends Partial moon eclipse ends.	↙ 210°	↗ 54.6°
3:00 am Fri, Mar 14		Penumbral Eclipse ends The Earth's penumbra ends.	↙ 232°	↗ 44.4°

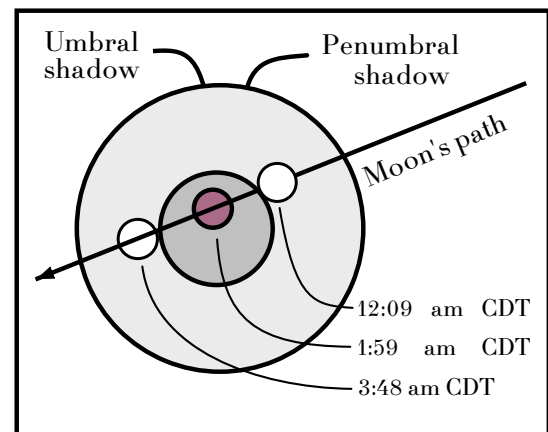
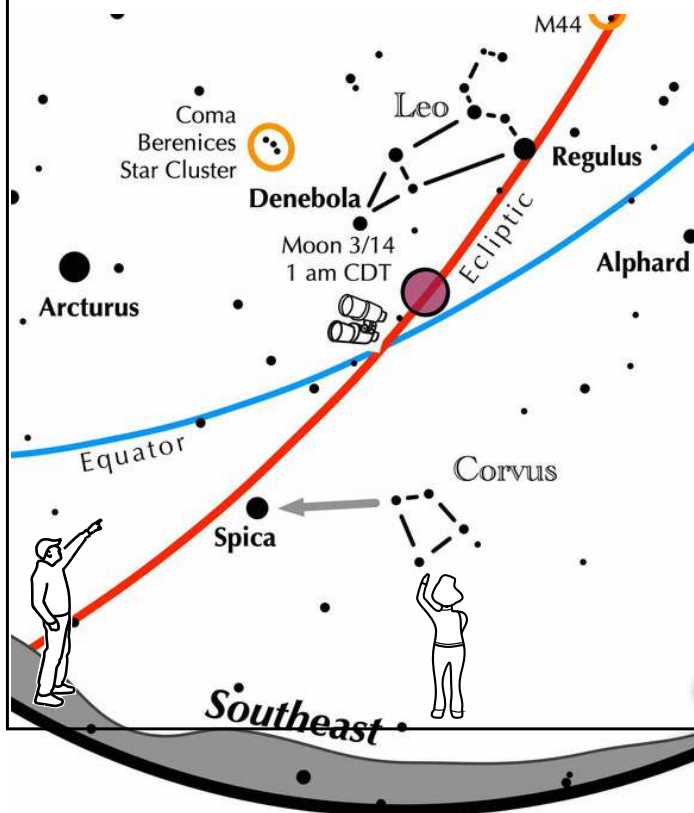
Mar 13, 2025 at 11:58 pm

Max View in Phoenix, Arizona

Global Event: Total Lunar Eclipse
Local Type: Total Lunar Eclipse in Phoenix, Arizona
Begins: Thu, Mar 13, 2025 at 8:57 pm
Maximum: Thu, Mar 13, 2025 at 11:58 pm 1.178 Magnitude
Ends: Fri, Mar 14, 2025 at 3:00 am
Duration: 6 hours, 3 minutes



If you can observe only one celestial event in the evening this March, see this one.



The Moon slides through a total eclipse

In the hours just after midnight on March 14, the brilliant full moon slides into Earth's shadow.

- Even though the partial umbral eclipse begins at 12:09 am CDT, darkening might not be noticed for another 5 minutes.
- When totality is reached, the full moon's brilliance is gone, allowing the stars to appear. Can you see that the moon lies mid-way between Regulus to the upper right and Spica to the lower left?
- At mid eclipse, what color is the moon? How red is it?
- During the partial phases, can you notice that the shadow's edge is not straight, but curved?



**View to the southeast
on March 14
at 1 am CDT**





This article is distributed by NASA's Night Sky Network (NSN).

The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

March's Night Sky Notes: Messier Madness

By Kat Troche

March is the start of spring in the Northern Hemisphere; with that, the hunt for Messier objects can begin!



Showing a large portion of M66, this Hubble photo is a composite of images obtained at visible and infrared wavelengths. The images have been combined to represent the real colors of the galaxy. Credit: NASA, ESA and the Hubble Heritage (STScI/AURA)-ESA/Hubble Collaboration; Acknowledgment: Davide De Martin and Robert Gendler

What Are Messier Objects?

During the 18th century, astronomer and comet hunter [Charles Messier](#) wanted to distinguish the 'faint fuzzies' he observed from any potential new comets. As a result, Messier cataloged 110 objects in the night sky, ranging from star clusters to galaxies to nebulae. These items are designated by the letter 'M' and a number.

For example, the Orion Nebula is [Messier 42](#) or M42, and the Pleiades are [Messier 45](#) or M45. These are among the brightest 'faint fuzzies' we can see with modest backyard telescopes and some even with our eyes.

Stargazers can catalog these items on evenings closest to the new moon. Some even go as far as having "Messier Marathons," setting up their telescopes and binoculars in the darkest skies available to them, from sundown to sunrise, to catch as many as possible. Here are some items to look for this season:

(Continued on next page.)



M44 in Cancer and M65 and 66 in Leo can be seen high in the evening sky 60 minutes after sunset. Credit: Stellarium Web

Messier 44 in Cancer: The Beehive Cluster, also known as Praesepe, is an open star cluster in the heart of the Cancer constellation. Use Pollux in Gemini and Regulus in Leo as guide stars. A pair of binoculars is enough to view this and other open star clusters. If you have a telescope handy, pay a visit two of the three galaxies that form the Leo Triplet - **M65** and **M66**. These items can be seen one hour after sunset in dark skies.



Locate M3 and M87 rising in the east after midnight. Credit: Stellarium Web

Messier 3 Canes Venatici: M3 is a globular cluster of 500,000 stars. Through a telescope, this object looks like a fuzzy sparkly ball. You can resolve this cluster in an 8-inch telescope in moderate dark skies. You can find this star cluster by using the star Arcturus in the Boötes constellation as a guide.

Messier 87 in Virgo: Located just outside of Markarian's Chain, M87 is an elliptical galaxy that can be spotted during the late evening hours. While it is not possible to view the [supermassive black hole](#) at the core of this galaxy, you can see M87 and several other Messier-labeled galaxies in the Virgo Cluster using a medium-sized telescope.



Messier 76 in Perseus: For a challenge, spot the Little Dumbbell Nebula, a planetary nebula between the Perseus and Cassiopeia constellations. With an apparent magnitude of 12.0, you will need a large telescope and dark skies. You can find both M76 and the famous [Andromeda Galaxy \(M31\)](#) one hour after sunset, but only for a limited time, as these objects disappear after April. They will reappear in the late-night sky by September.

Locate M76 and M31 setting in the west, 60 minutes after sunset. Credit: Stellarium Web

Plan Ahead

When gearing up for a long stargazing session, there are several things to remember, such as equipment, location, and provisions:

Do you have enough layers to be outdoors for several hours? You would be surprised how cold it can get when sitting or standing still behind a telescope!

Are your batteries fully charged? If your telescope runs on power, be sure to charge everything before you leave home and pack any additional batteries for your cell phone. Most people use their mobile devices for astronomy apps, so their batteries may deplete faster. Cold weather can also impact battery life.

Determine the **apparent magnitude** of what you are trying to see and the **limiting magnitude** of your night sky. You can learn more about apparent and limiting magnitudes with our [Check Your Sky Quality with Orion](#) article.

When choosing a location to observe from, select an area you are familiar with and bring some friends! You can also [connect with your local astronomy club](#) to see if they are hosting any Messier Marathons. It's always great to share the stars!

You can see all 110 items and their locations with NASA's [Explore the Night Sky interactive map](#) and the [Hubble Messier Catalog](#), objects that have been imaged by the Hubble Space Telescope.

Helpful Astronomy Websites

by Mark Johnston

The following websites are great free resources to help you plan and enjoy your astronomy adventures

Astromart: astromart.com/

This is one of the top two sites for buying and selling used astronomy gear, product reviews, and forums where you can discuss any aspect of astronomy with other enthusiasts. A small fee is required.

Astrometry.net: <https://nova.astrometry.net/>

This site will take any astronomy image you send it (galaxy, starfield, nebula, etc) and then tell you what it is and where it is in the sky.

Astronomy Tools: astronomy.tools/calculators/field_of_view/

This site has a lot of capabilities but I use it primarily to figure out how a target (e.g. the Helix nebula) will look in my eyepiece or astronomy camera. You pick your scope, camera, eyepiece and target and the site does the rest.

Astrospheric: www.astrospheric.com/

Probably the best short term astronomy weather forecasting tool, providing predictions of clouds, transparency and seeing.

Clear Sky Charts: www.cleardarksky.com/

Excellent source of astronomy seeing conditions forecast. Also a great tool for finding observing sites with lower light pollution.

Cloudynights: www.cloudynights.com/

This is one of the top two sites for buying and selling used astronomy gear, product reviews, and forums where you can discuss any aspect of astronomy with other enthusiasts. Free.

Dark site finder: darksitefinder.com/map/

Great website for finding a dark observing location.

Heavens above: heavens-above.com/

Top site for predicting naked eye observations of satellites. See when the ISS is visible in your neighborhood!

Jupiter transits: shallowsky.com/jupiter/

For anyone with a small telescope, this is a great site. You can find out when the Great Red Spot and Jupiter's satellite transits are visible.

Solar Dynamic Observatory (SDO): <https://sdo.gsfc.nasa.gov/data/>

Find out how the Sun looks right now, at various wavelengths. If you own a solar telescope, this site coupled with Astrospheric is all you need to plan fabulous solar observing!

Starzonia: <https://starizona.com/>

Astronomy store located in Tucson, Arizona. They specialize in a wide range of astronomy equipment and accessories, catering to both amateur and professional astronomers. Their offerings include telescopes, cameras, filters, and eyepieces, among other products. Knowledgeable staff and passion for astronomy.

Telescopius: telescopius.com/

This site is very helpful in planning an observing evening. It will tell you when any particular target is rising and setting and when is the best time to observe it. This allows you to sequence your observing in a planned manner.

Used equipment for sale

Duration: Ads run for 3 months and may be renewed if submitted by the deadline and space permits.

Cost: Ads are FREE for members only. Equipment Requirements: All items must be in good working order.

Acceptable items include books, star charts, telescopes, eyepieces, finder scopes, binoculars, lasers, and other astronomy-related gear. Submission Details: Email the following information to editor@pasaz.org:

**Make *Model *Description (Under 100 words-include a link to the manufacturer's site if available) *Price *Contact Information *Preferred Contact Method(Email or phone) *Approximate Location*

PAS is not responsible for the ads and does not guarantee the quality of the items for sale. PAS reminds everyone, you purchase at your own risk, so do your research beforehand.



PAS offer: This is a first come, first served offer. Review the list. Decide what you want. Email stuartbrackney@pasaz.org what you want. He will set up a day/time for you to come to his location to purchase.

Bring your check payable to Phoenix Astronomical Society or cash ... no credit cards please.



Explore Scientific AR102 with Tripod

- 102mm Doublet Refractor
- 2" Eyepiece adapter
- Alt-Az manual mount

Member Price: \$400



Celestron 6" AstroMaster

- 6" Newtonian Telescope – OTA only

Member Price: \$50



Meade ETX-70

- 70mm Refracting Go-To Telescope
- 1.25" Eyepiece adapter
- Battery operated motorized mount
- With carry case

Member Price: \$70



Celestron Powerseeker 127

- 127mm Newtonian Telescope
- 2" Eyepiece adapter
- German equatorial mount
- With tripod

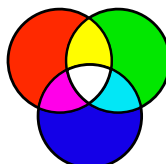
Member Price: \$50



Celestron 8" Schmidt-Cassegrain

- 8" Telescope (classic Orange Tube)
- Alt-Az mount

Member Price: \$50



Celestron 6" F/4 Newtonian Astrograph Telescope

- Fast 6"-aperture reflector lets you take short exposures with bright, high-resolution results
- Precise 2" dual-speed (10:1) linear-bearing Crayford focuser lies 7" back in the optical tube to block stray light and boost contrast
- Compact 22.5" length and light 12.7 lb. assembled weight doesn't require an enormous mount
- Includes two heavy-duty hinged tube rings, 8x50 finder scope, dovetail mounting bar, and more

Member Price: \$250

Various Filters – 1.25"

Red, Yellow, Blue, Green, Multiple O3 filters

Member Price: \$100

Telescope Loan Program

The PAS Telescope Loan Program provides PAS active members access to various donated telescopes and accessories to enhance their learning of visual astronomy as well as astrophotography.

Check-out Process: The entire PAS inventory of telescopes is available for active members to use. Some telescopes require completion of a training program, others do not. Several of the loaner telescopes represent a significant dollar value. In certain cases, the PAS member will be asked to provide credit card information as insurance against potential damage or loss.

A kit of eyepieces and accessories is available for all loaner telescopes if needed. There is also a special kit of advanced 2" eyepieces available for loan as well as advanced finder scopes. Laser collimation tools are also available for loan if needed.

Loan periods are for a maximum of one month. However, longer periods may be granted in special cases.

All telescope equipment and accessories must be picked up at the PAS storage facility and delivered back to the facility by the end of the loaner period. If you wish to check out one of PAS's telescopes, send an email to telescope@pasaz.org with the following information:

- Full Name
- Email Address
- Desired Telescope and/or accessory kit
- Check out date
- Check in date
- Additional information as needed

ZWO SeeStar S50

Coronado Personal Solar Telescope (PST)

Orion SkyQuest XT-10 - 10" Dobsonian

Orion Skyquest XT-8 – 8" Dobsonian

Meade ETX-70 Go-To Refractor

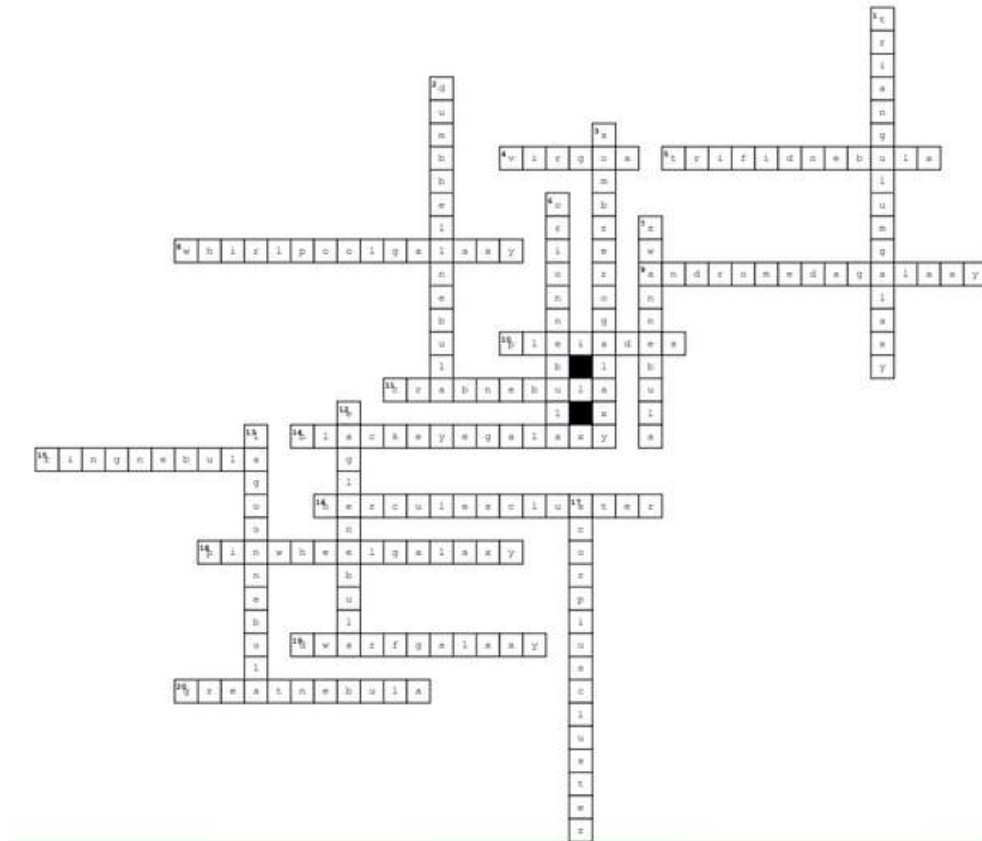
Sky-Watcher – 10" Collapsible Motorized Dobsonian

Accessory Kit #4 - Advanced Observing

Accessory Kit #5 – 1.25" Eyepieces & filters

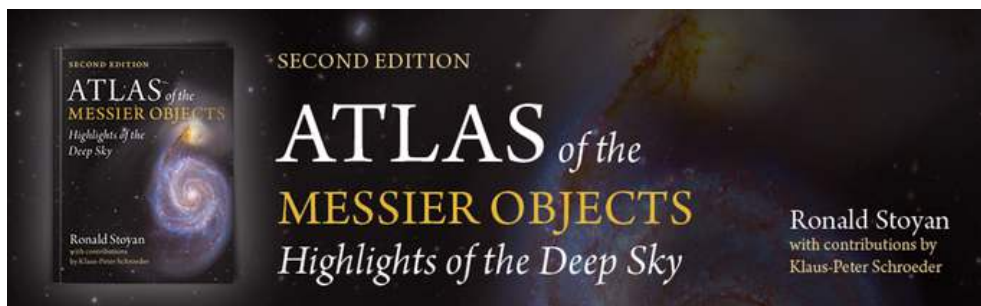


Messier Catalog



Book Review: Atlas of the Messier Objects by Ronald Stoyan

Ronald Stoyan's *Atlas of the Messier Objects* is a stunning and comprehensive guide to Charles Messier's 110 deep-sky objects. Featuring detailed star charts, breathtaking astrophotography, and insightful historical context, this book is perfect for amateur astronomers and astrophotographers alike. It balances scientific depth with accessibility, making it an essential resource for observing and understanding nebulae, star clusters, and galaxies.

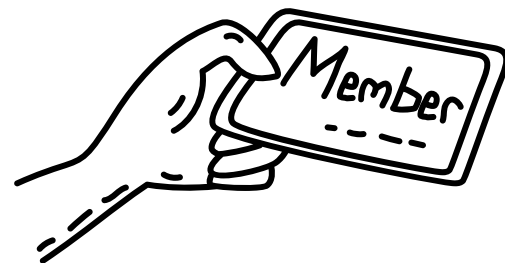




Sign Up

Are you fascinated by the stars and eager to explore the wonders of the universe? Do you want to connect with like-minded individuals who share your passion for astronomy?

Hi everyone. Great news, your Board of Directors decided not to keep up with inflation. They did not raise your annual dues! More good news is, you can easily renew your membership by going to our public website www.pasaz.org, look on the left index column for the link "Join Our Society," click on that and there ya go. Your membership runs from 1 January to 31 December or the date you sign up to the end of the year. Our new Membership Manager, Mr. Richard Pipkin will assist you with any questions you may have: richardpipkin@pasaz.org



Benefits of PAS Membership

- Helping the Society accomplish its mission of astronomy outreach and education
- Contributing toward the Society's ability to provide college scholarships to astronomy students
- Participation on the Society's email distribution list
- Email receipt of the Society's monthly newsletter
- Participation in the Society's telescope loaner program
- Ability to serve as a teacher at the Society's telescope workshops
- Ability to serve as a mentor at the Society's star parties
- Ability to participate in the Astro Imaging Special Interest Group (ASIG)
- Ability to serve as a paid presenter in the Society's Star Tours program
- Opportunity to purchase used astronomical equipment at 50% off current value
- Access to club trips to the darkest Arizona sites and top observatories
- Connections with professional astronomers and researchers through guest lectures or workshops.
- Opportunities to hold leadership positions within the club, such as committee chairs or officers.

By becoming a member of the Phoenix Astronomical Society, you not only enhance your own astronomical journey but also contribute to a vibrant community that shares your passion. Together, let's explore the universe and inspire others to do the same.

Sign Up Now and Start Exploring the Cosmos with Us!

Join Our Society

 pasaz.org



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Star Tours Team 2025

These individuals have successfully met the qualifications to participate in Star Tours Events and receive compensation for their services. ★

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Ted Blank
Mark Savan
Andrew Stone-Star Tours Manager
Richard Sauerbrun
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Roger Anzini
Peter Turner
Chris Ford
Scott Adams
Ryder David
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