



# EPHEMERIS

**The official newsletter of the Prescott Astronomy Club (PAC)**  
*e-phem-er-is*: a time-based listing of future positions of solar system objects

## July 2022

### UPCOMING EVENTS



Wednesday, July 6 - Regular PAC meeting @ 6:30 PM at Prescott Public Library Founder's Suite hosted by Art Arnold-Roksandich. This will be a hybrid meeting with both in-person and Zoom.

Registration is not necessary. The URL link for Zoom is on the new website and included in the email reminder sent to the membership.

Thursday, July 21 - Third Thursday Presentation @ 5:30 PM in the Founder's Suite, Prescott Public Library. Carl Hergenrother, staff scientist at the University of Arizona Lunar and Planetary Lab and member of the OSIRIS-REx science and operations team, will talk about observing comets and asteroids with small telescopes. Carl's work has included helping Steve and Tim Spahr conduct a photographic survey for new asteroids and comets called the Bigelow Sky Survey, which was the precursor to the highly productive, and still active, CCD-based Catalina Sky Survey. Carl's current research also includes telescopic measurements of the activity level of comets and rotation and color photometry of near-Earth asteroids.

Thursday - Saturday, July 28-30 - 2022 Astronomical League Convention (ALCON 2022) Albuquerque, New Mexico.

### ANNUAL PAC PICNIC

Susanne Vaughan, PAC Treasurer, Roland Albers, PAC Secretary

Our annual Prescott Astronomy Club picnic is coming up on Saturday, August 27th at the Watson Lake Pavilion (tentatively from 12:00 to 3:00 PM). Please help us plan for it by replying to the address below and telling us if you will be attending (and if a spouse or significant other is coming with you). Also, tell us if you prefer a hamburger or brats, and if you will require a parking pass. Everyone will bring their own drinks and a side dish or dessert. It is such a fun social event!! RSVP by August 1st to: [susanne.vaughan@gmail.com](mailto:susanne.vaughan@gmail.com)

## EDITOR FOR PAC NEWSLETTER (EPHEMERIS) NEEDED

David Viscio, Editor

After almost 13 years as the newsletter editor, I have decided it is time to pass this responsibility on to someone else. I encourage a newer, younger member to take on this task as a means to contribute to the club. Preparing the newsletter takes only a few hours at the end of each month in the comfort of your own home. I will gladly sit with the new editor and show them all my information sources and ‘tricks’ for preparing the newsletter. PLEASE NOTE: The December 2022 edition of the newsletter will definitely be the last one I will prepare. If you are interested in volunteering, contact the president, Art Arnold-Roksandich ([p@prescottastronomyclub.org](mailto:p@prescottastronomyclub.org)) and me ([pkmist@gmail.com](mailto:pkmist@gmail.com)).

## FIND HERCULES AND HIS MIGHTY GLOBULAR CLUSTERS

David Prosper

Hercules is one of the standout heroes of Greek mythology, but his namesake constellation can be surprisingly hard to find - despite being one of the largest star patterns in our night skies! Once you find the stars of Hercules, look deeper; barely hidden in the space around his massive limbs and “Keystone” asterism are two beautiful globular star clusters: M13 and M92!



Since the constellation itself is relatively dim but bordered by brighter constellations, you can find the stars of Hercules by looking between the bright stars Vega and Arcturus. They are fairly easy to identify, and we have tips on how to do so in previous articles. Vega is the brightest star in the constellation Lyra and one of the three stars that make up the Summer Triangle (*June 2020: Summer Triangle Corner: Vega*). Arcturus is the brightest star in the constellation Boötes, and can be found by “arcing to Arcturus” from the handle of the Big Dipper (*May 2021: Virgo’s Galactic Harvest*). You may be able to Hercules’s “Keystone” asterism first; this distinct pattern of four stars is traditionally shown as the torso of the great hero, though some illustrators prefer marking the Keystone as the head of Hercules. What pattern do *you* see in the stars of Hercules?

Globular star clusters appear “fluffy,” round, and dense with stars, similar to a dandelion gone to seed, in contrast to the more scattered and decentralized patterns of open clusters. Open clusters are generally made up of young stars that are gradually spreading apart and found inside our Milky Way galaxy, while globular clusters are ancient clusters of stars that are compact, billions of years old, bound to each other and orbit around our galaxy. Due to their considerable distance, globular clusters are usually only visible in telescopes, but one notable exception is M13, also known as the Great Cluster or Hercules Cluster. During very clear dark nights, skilled observers *may* be able to spot M13 without optical aid along the border of the Keystone, in between the

stars Zeta and Eta Herculis - and a bit closer to Eta. Readily visible as a fuzzy “star” in binoculars, in telescopes M13 explodes with stars and can fill up an eyepiece view with its sparkling stars, measuring a little over half the diameter of a full Moon in appearance! When viewed through small telescopes, globular clusters can appear orblike and without discernable member stars, similar in appearance to the fuzzy comae of distant comets. That’s why comet hunters Edmund Halley and Charles Messier discovered and then catalogued M13, in 1714 and 1764 respectively, marking this faint fuzzy as a “not-comet” so as to avoid future confusion.

While enjoying your view of M13, don’t forget to also look for M92! This is another bright and bold globular cluster, and if M13 wasn’t so spectacular, M92 would be known as the top celestial sight in Hercules. M92 also lies on the edge of naked-eye visibility, but again, binoculars and especially a telescope are needed to really make it “pop.” Even though M92 and M13 appear fairly close together in the sky, in actuality they are rather far apart: M13’s distance is estimated at about 25,000 light years from Earth, and M92’s at approximately 27,000 light years distant. Since M13 and M92 appear so close together in our skies and relatively easy to spot, switching between these two clusters in your scope makes for excellent star-hopping practice. Can you observe any differences between these two ancient clusters of stars?

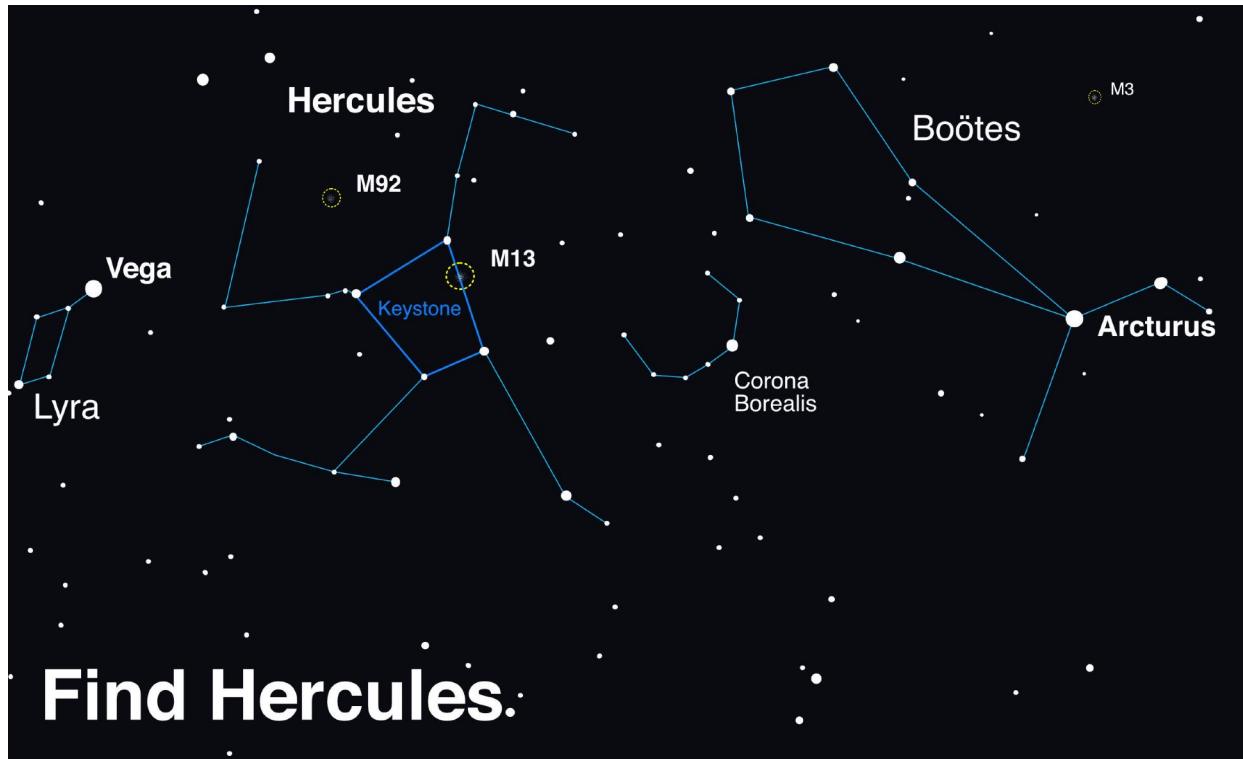
Globular clusters are closely studied by astronomers for hints about the formation of stars and galaxies. The clusters of Hercules have even been studied by NASA’s space telescopes to reveal the secrets of their dense cores of hundreds of thousands of stars. Find their latest observations of globular clusters - and the universe - at [nasa.gov](http://nasa.gov).



*Composite image of the dense starry core of M92 imaged in multiple wavelengths. While your own views of these globular clusters won’t be nearly as crisp and detailed, you might be able to count some of its*

member stars. How far into their dense cores can you count individual stars? Credits: ESA/Hubble & NASA; Source: <https://www.nasa.gov/feature/goddard/2017/messier-92>

Acknowledgment: Gilles Chapdelaine.



*Look up after sunset during summer months to find Hercules! Scan between Vega and Arcturus, near the distinct pattern of Corona Borealis. Once you find its stars, use binoculars or a telescope to hunt down the globular clusters M13 and M92. If you enjoy your views of these globular clusters, you're in luck - look for another great globular, M3, in the nearby constellation of Boötes. Image created with assistance from Stellarium: [stellarium.org](http://stellarium.org)*

## WHAT'S HAPPENING IN JULY 2022

This calendar from In-The-Sky.org shows the objects and events visible during July 2022.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 M22 is well placed	2 IC4756 is well placed
3	4 The Earth at aphelion	5	6 Moon at First Quarter	7	8	9
10 Mercury at perihelion NGC 6752 is well placed	11	12	13 The Moon at perigee The Moon at aphelion Full Moon	14	15 Conjunction of the Moon and Saturn Close approach of the Moon and Saturn	16 Mercury at superior solar conjunction
17 M55 is well placed	18 Conjunction of the Moon and Jupiter Close approach of the Moon and Jupiter	19	20 134340 Pluto at opposition Asteroid 9 Metis at opposition Moon at Last Quarter	21 Close approach of the Moon and Mars Lunar occultation of Mars Conjunction of the Moon and Mars Close approach of the Moon and Uranus Lunar occultation of Uranus 1 Ceres at solar conjunction	22 Asteroid 192 Nausikaa at opposition	23
24	25	26 The Moon at apogee Conjunction of the Moon and Venus	27	28 New Moon Jupiter enters retrograde motion	29 Piscis Austrinid meteor shower 2022 The Moon at perihelion Conjunction of the Moon and Mercury	30 Southern $\delta$ -Aquiriid meteor shower 2022 C/2021 P4 (ATLAS) at perihelion $\alpha$ -Capricornid meteor shower 2022
31						

For additional information and details, see: <https://in-the-sky.org/newscal.php> and [www.telescopius.com](http://www.telescopius.com) . Observing lists of monthly ‘Binocular’ and ‘Telescope’ Showpieces can be found on the club website.

## ALCON 2022

The 2022 Astronomical League Convention (ALCON 2022) will be held in Albuquerque, New Mexico on 28 to 30, July 2022. If you would like to attend the convention, please contact Jim Fordice at [President@taas.org](mailto:President@taas.org). If you have a question about ALCON 2022, send an email to [2022alcon\\_info@taas.org](mailto:2022alcon_info@taas.org). Additional information can be found in newsletter appendix.

## CALL FOR ASTRO-IMAGES

David Viscio, editor

I request all astrophotographer members of the club submit examples of their astro-images to share with club members by inclusion in the Ephemeris. Images can be sent to me at [pkmist@gmail.com](mailto:pkmist@gmail.com). Please include description of equipment, cameras, image capture parameters and processing.

## NEED TO KNOW - ASK A MEMBER

A 15-minute segment is being added to the regular general meetings where members can have their ‘burning’ questions answered by other knowledgeable members. If you have an astronomy related question you would like explained, submit the question to Art Arnold-Roksandich [p@prescottastronomyclub.org](mailto:p@prescottastronomyclub.org). You can also bring up the question at the meeting.

## FOR SALE

As a member of PAC, you may use the [groups.io/g/pacinfo](https://groups.io/g/pacinfo) message board to post notices of items for sale. It is easy to signup. Go to [groups.io/g/pacinfo](https://groups.io/g/pacinfo). Click on "Apply for Membership to This Group". Fill in your email address and click on "Confirm Email Address". You should get a return email by the next day. You can update your profile for a daily digest or no email notices at all. You can go anytime to [groups.io/g/pacinfo](https://groups.io/g/pacinfo) to check out what other people are doing.



New items are added now and then, so don't miss out on something that you would like to get for yourself...or a friend.

## PAC MENTORS

If you need advice on the purchase of astronomy equipment, setting up equipment, astrophotography, etc., contact a PAC mentor.



Open - Astrophotography

David Viscio - General & Astrophotography - (928) 775-2918

Greg Lutes - Visual Observing - (928) 445-4430

Joel Cohen - Beginner's Astronomy: Selecting & Using a Telescope - (856) 889-6496

## OBSERVING LISTS

Observing lists are available in PDF format on the PAC website to provide guidance and goals for visual and astrophotography programs.



Astroleague Lunar 100

Bright Nebulae

Dunlop 100

Globular Clusters

Herschel II

Messier

Planet Maps

Royal Astronomical Society of Canada Finest NGC

Saguaro Astronomy Club Best NGC

Telescope Showpieces

Binocular Showpieces

Caldwell

Face-On Spiral Galaxies

Herschel 400

Hidden Treasures

Open Clusters

Planetary Nebulae

S&T Lunar 100

The Secret Deep

## PAC WEBSITE

Website: <http://www.prescottastronomyclub.org>

E-mail: [pacinfo@prescottastronomyclub.org](mailto:pacinfo@prescottastronomyclub.org)



## BOARD OF DIRECTORS

President: Art Arnold-Roksandich

Vice President: Brian Blau

Secretary: Roland Albers

Treasurer: Susanne Vaughan

At Large: EJ Van Horne

At Large: Dave Covey

At Large: Ken Olson

At Large: Pat Bledsoe



## PAC COORDINATORS

Astronomical League Coordinator: Open

Facebook: Open

Membership: Susanne Vaughan

METASIG: John Dwan

Newsletter: David Viscio

Night Sky Network: Open

PAC Affiliate Partner w/ NAU Space Grant Program – Cory Shaw

PAC Store Sales - Open

Property Records: Open

Public Relations: Open

Refreshments: Open

Schools & Camps Outreach: Joel Cohen

Starry Nights Coordinator: David Viscio

Third Thursday Coordinator: Dave Covey

Webmaster: EJ Van Horne





## **BLOOD MOON ECLIPSE MAY 15, 2022**

*Image Credit: Joel Cohen*



*Joel Cohen captured an image of the blood moon eclipse through clouds on May 15, 2022.*

*Stellarvue SVQ-100 APO refractor f/5.8*

*Mallincam SkyRaider DZ24c 24MP CMOS BSI*

*Celestron AVX GEM*

*1.23 second exposure*



# ALCON 2022

July 28 – 30

## EMBASSY SUITES HOTEL

1000 Woodward Pl. NE

Albuquerque, New Mexico 87102

<https://alcon2022.astroleague.org/>

(Website available by January 14, 2022)



Hosted by:

**The Albuquerque Astronomical Society**

[www.TAAS.org](http://www.TAAS.org)