



Roanoke Valley Astronomical Society

Amateur Astronomy News and Views
In Southwestern Virginia



Volume 40—Number 8

August 2023

RVAS July Meeting Notes

Investigating the Habitability of Ancient Mars

By Erin Elliott, Secretary

The Celestial Café was opened at 7:00 pm by **President Mike Hutkin**. The Celestial Café is always a fun and engaging time where members and officers can catch up and tonight was no different. Members and officers spoke about various topics within astronomy, astrophotography, and big updates in their personal lives.

At 7:30, the Café closed and Mike, along with our Membership Coordinator, **Frank Baratta**, welcomed members and guests to the July meeting. To begin, Mike presented the evening's agenda and went straight into the election of 2023-2024 officers.

Attendance: There were 38 members and 3 guests in attendance at this month's meeting. 18 were in person and 23 attended virtually.

Elections: Having no self-nominations, Mike presented the slate of officers for the 2023 - 2024 year. A vote was taken by all members present at the meeting in person and via zoom, which concluded with a passing vote on the slate of officers, as follows:

- President - Mike Hutkin (current President)
- Vice President - John Wenskovitch (current Vice President)



In-person attendees - Mike Hutkin photo

- Secretary - Erin Elliott
- Treasurer - Frank Baratta (current Treasurer)
- Executive Committee Member at Large - Nancy Vogelaar (current EC MaL)

Astrophotography: We thank **Tom Cerul**, **Ed Dixon**, **Michael Good**, **Harry Kessler** and **Dave Thomas** for providing their work this month. We had a variety of images focusing on the Cocoon

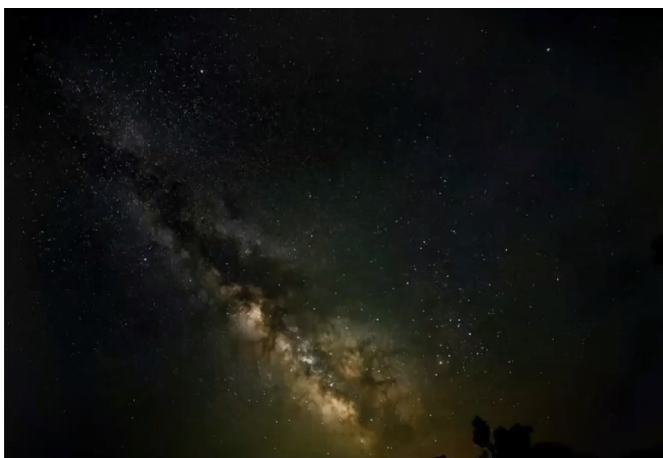
(Meeting Continued on page 2)

(Meeting Continued from page 1)

Nebula, the sun, galaxies, the moon, and even fire-works.

To provide each image with the focus it deserves, we are sharing the submissions in a separate article in this newsletter. Don't miss checking out the rest of these images on pages-5-7.

Member Observation Reports: Bill Krause and Mike Hutkin went to the Cahas parkway overlook on July 11th and shared information from their night of clear skies. They saw open clusters, globular clusters, galaxies, Venus, Mars and a meteor zip through the sky. They used an 8" Schmidt-Cassegrain scope with *Celestron StarSense Auto align*, along with self-stabilizing binoculars. The time together was a good reminder of how enjoyable it can be to get to know fellow club members on outings like this one.



Milky Way - Ed Dixon photo

Outreach: Bill Krause went to the Star Party at Green Bank Observatory. It rained during the 3 days there, but everyone had a good time even without setting up telescopes. The presentations were spectacular, and Bill's highlight was going to the control room for the big radio telescope. Even without stargazing, it was worth the experience to learn about the technology involved.

John Wenskovitch journeyed to Krakow, Poland for the annual European Astronomical Society meeting. For a list of presentation highlights, you can check them out on the Google Group. Here are some highlights from presentations he attended:

- Data from Gaia shows that the star HD 7977 passed only 2300 AU from the Sun 2.47 million years ago (the flyby was previously known, but the distance wasn't known to that precision). HD 7977 is 1.1 times the mass of the Sun and is currently 247 light years away.
- Gaia also provided a new distance estimate for the flyby of Gliese 710 in 1.3 million years: 10500 AU.
- Based upon continued observations of the stars orbiting the center of the galaxy, new estimates for the supermassive black hole are a mass of 4,297,000 +/- 8,000 times the size of the Sun and a distance from the solar system of 8,278 +/- 7 parsecs. (These numbers were presented by 2020 Nobel Prize winner Reinhard Genzel.)

(Meeting Continued on page 3)

The Roanoke Valley Astronomical Society is a membership organization of amateur astronomers dedicated to the pursuit of observational and photographic astronomical activities. **Meetings are held at 7:30 p.m. on the third Monday of each month. See calendar on last page of newsletter for location. Meetings are open to the public.** Observing sessions are held one or two weekends a month at a dark-sky site. For information regarding joining RVAS, including annual dues, [click here](#). Articles, quotes, etc. published in the newsletter do not necessarily reflect the views of the RVAS or its editor.

Officers/Executive Committee/Editor/Webmaster

Mike Hutkin, President (president@rvasclub.org)
John Wenskovitch, Vice President (vicepresident@rvasclub.org)
Sasha Mintz, Secretary (secretary@rvasclub.org)
Frank Baratta, Treasurer (treasurer@rvasclub.org)
Nancy Vogelaar, Member at Large (memberatlarge@rvasclub.org)
John Goss, Immediate Past President (immediatepastpresident@rvasclub.org)
Michael Martin, Past President (pastpresident@rvasclub.org)
David E. Thomas, RVAS Newsletter Editor (editor@rvasclub.org)

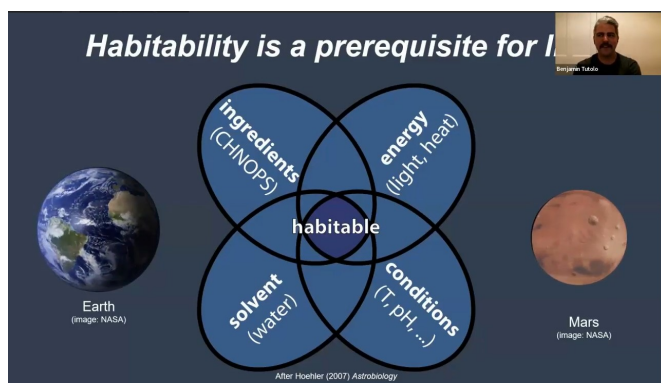
(Meeting Continued from page 2)

- Despite the precision of those numbers above, we still have no idea if the black hole has spin.
- Astrochemistry is undergoing a discovery surge. More than 300 new molecules have been identified in interstellar gas clouds since 2020. Fewer than 250 molecules were identified prior to 2020.

How To: John Goss gave a presentation on how to use a hydrogen alpha solar telescope. It is a telescope that is available for club members to borrow and use. He demonstrated how to adjust the focusing tube extender and focusing ring. It is safe and easy to use, and available for club members!

What's Up?: Before turning to our featured speaker for the evening, Mike asked **Frank Baratta** for his "What's Up?" program on what the skies of August have in store for us. Frank's "What's Up? Highlights" in this issue provides a summary of the program. His PowerPoint can be viewed by clicking [here](#). The recording of the program is available by clicking [here](#)

Program: Dr. Benjamin Tutolo is a geochemist working to understand how interactions between rocks, water, and gases affect climate, habitability, and life on Earth and Mars. He received his PhD from the University of Minnesota, performed post-doctoral work at the University of Oxford, and has been a professor at the University of Calgary since 2017. He is also on the Mars Science Curiosity Team.



Habitability Diagram - Zoom Screenshot

His presentation was titled Investigating the habitability of ancient Mars, and below you will find highlights of topics that he covered:

- Celebrating *Curiosity's* Ten Years on Mars!
- *Curiosity's* primary scientific goal
- Habitability is a prerequisite for life
- "Follow the water" - Lakes on Mars
- An overview of *Curiosity's* appearance and build
- How *Curiosity's* Communicates
- Exploration of Mount Sharp
- *Curiosity* launched in November 2011 and landed on Mars in August 2012
- *Curiosity* proved Gale Crater was habitable just after landing!
- Possible lake deposits at the base of Mount Sharp
- An Ancient Habitable Environment at Yellowknife Bay
- An artistic replica of the very habitable ancient Gale Crater Lake, Mars



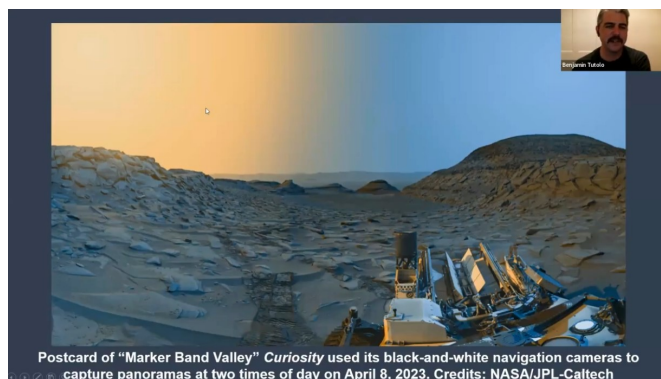
Artistic replica of Gale Crater Lake, Mars by Kevin Gill - Zoom Screenshot

- Mars used to be warm and wet. The early Martian atmosphere needed an "extra kick"
- An overview of serpentinization

(Meeting Continued on page 4)

(Meeting Continued from page 3)

- How do Martian Olivine materials compare to terrestrial mantle olivine?
- Role of serpentinization on ancient Mars
- *Curiosity* also found a diverse set of organic (carbon-based) molecules at multiple sites, but their origins are not yet known
- Serpentinization-driven H₂ production warmed the Mars surface, but rapidly escaped to space
- H loss is known to happen here on Earth
- Mud cracks record occasional dry periods between wetter periods when lakes were present
- As of recently, *Curiosity* has driven over 30.049 km and climbed over 640 m in elevation
- The ocean is made up of 3.5% salt
- *Curiosity* analyses suggest Gale Lake waters were near the gypsum chemical divide
- *Curiosity* recorded a decrease in clay minerals and an increase in sulfates through the clay-sulfate transition
- Exploring the "Sulfate-bearing Unit" to understand how Mars' Habitability Changed
- Postcard of "Marker Band Valley" *Curiosity* used its black and white navigation cameras to capture panoramas at two times of day on April 8, 2023
- In the spring of 2023, NASA's *Curiosity's* Mars Rover got a major software upgrade
- Salty lakes in British Columbia can help us unlock secrets of habitability on a drying Mars. Evaporative conditions are required to originate life, but life may struggle if the water is too salty.
- Teamwork makes the dreamwork
- "Dust devils" form on Mars as a result of strong atmospheric convection. The spinning columns of air pick up dust as they move along the surface



Postcard of "Marker Band Valley," taken by *Curiosity* -
Zoom Screenshot

He concluded by answering questions from people attending the meeting.

Dr. Tutolo's talk can be viewed [here](#).

Next month: We will be treated to a Member's Potpourri group presentation. This gives members a chance to showcase knowledge or share tips with only 5-10 minute presentations. The lineup is listed below:

- *Galileo and You*, by **John Goss/Genevieve Goss/Michael Martin**
- *Astro Hopper*, by **Mark Hodges**
- *Asteroid Occultation Research Project - Introduction*, by **Carson Ray**
- *AstroSense*, by **Bill Krause**
- *Community School - Outreach Project*, by **Erin Elliott**
- *Finding M51 and other deep sky objects*, by **Mike Hutkin**

The meeting was adjourned at 9:14 pm

The RVAS Astro-photographers

JULY 2023

There is a table with pertinent information after the pictures

TOM CERUL – 1



ED DIXON – 2



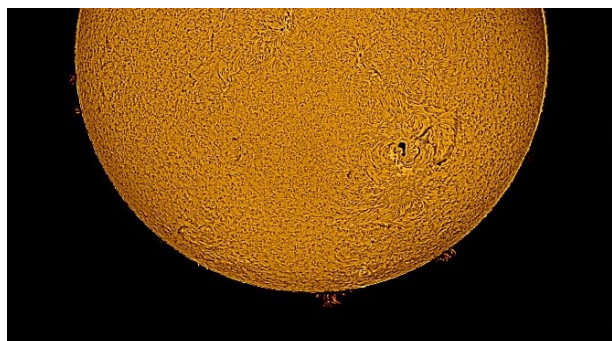
ED DIXON – 3



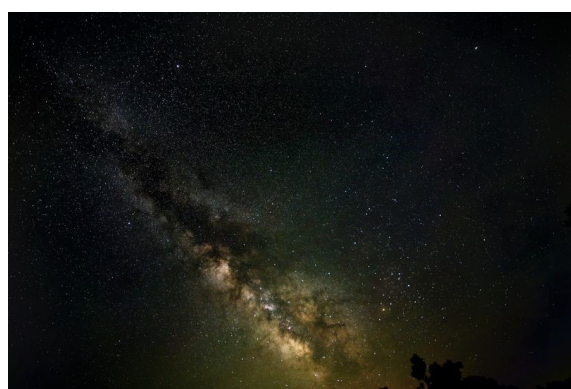
ED DIXON – 4



ED DIXON – 5



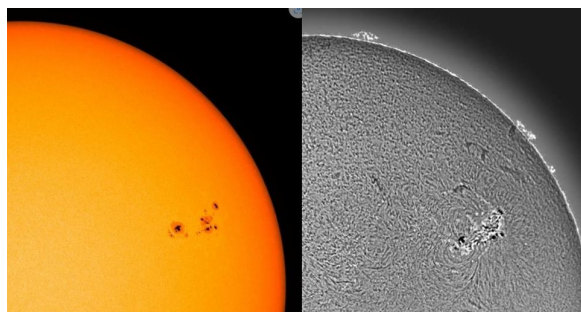
ED DIXON – 6



MICHAEL GOOD – 7



MICHAEL GOOD – 8



HARRY KESSLER – 9



DAVE THOMAS – 10



DAVE THOMAS – 11



LEGEND	
1	TOM CERUL: IC5146 Cocoon Nebula. Been working on removing stars, processing the nebula separately and then adding back size reduced stars. StarXTerminator and Bill Blanchan's star reduction Pixelmath did the work In Pix-Insight.
2	ED DIXON: Fireworks from Roanoke on 7/2/23. Taken with a Nikon Zfc camera and a 18-140mm lens on a fixed tripod. This image is a composite of a number of exposures, each with a 1 second exposure, f/4.8, at 47mm, and ISO 100. Processed with GIMP and Windows edit.
3	ED DIXON: Basic image of the Moon from last night (6/28/23) with a Nikon Zfc, 50-250mm zoom lens, and a regular tripod. Taken at 9:06PM as a series of 20 exposures, each at ISO 100, f/11, 250mm and 1/125 sec. Stacked and processed with PIPP, AutoStakkert, Registax 6, and Windows edit.
4	ED DIXON: First cut at an image of the Sun (7/10/23 around 2:56 PM) with a Daystar Quark eyepiece attachment. This was taken with a William Optics Z61 riding on a iOptron HEM27 mount and a ZWO ASI2600MC Pro camera. This is from a single image. Exposure was 50ms and a gain of 0. Resulting image was processed with Autostakkert, GIMP, Pixinsight, and Windows and Apple edit.
5	ED DIXON: Second image from the same time frame but with ASI174MM camera. Best 15% of 4521 frames and 5.7ms exposure and gain of 0. Processed with RegiStax, GiMP, and Windows and Apple edit.
6	ED DIXON: First cut at an image of the Milky Way, taken 6/18/23 at 1:06 AM, at the Cahas Mountain Overlook on the Blue Ridge Parkway. Taken with a Nikon D780 and a Rokinon 14mm lens with a two minute exposure, an ISO of 200 and F/2.8. This is from a single exposure from a set of 90 taken last night. Camera was mounted on an iOptron SkyGuider Pro rotator mount. Processed with Pixinsight, and Windows and Apple Edit.
7	MICHAEL GOOD: Got a clear night on June 13, and finally processed my own image of the supernova in M101.
8	MICHAEL GOOD: I love Dave's video of sunspot group 3354, below. Here is a comparison I got today between the SOHO white-light image and a portion of my full-solar-disk image showing 3354
9	HARRY KESSLER: NGC 6946 The Fireworks Galaxy Celestron C8 XLT Schmidt-Cassegrain, Canon 60D DSLR, 50mm guide scope with ZWO ASI224MC camera, Celestron AVX GEM mount. Software: APT to capture images, PHD2 for guiding, SharpCap for initial polar alignment, Celestron CPWI for mount control, Stellarium for planetarium GoTo. Dell Latitude laptop computer at scope to manage it all. See more info on Facebook
10	DAVE THOMAS: The Buck Moon thru thin clouds and haze at 5 am, July 4, 2023
11	DAVE THOMAS: See video at https://www.facebook.com/100005207021993/videos/206322489057250/

Lucas Arthur Snipes

November 15, 1949 - June 19, 2023



It is with deep sadness that the Society reports the passing of its friend and member Lucas Snipes, 73, of Troutville, Virginia, on June 19, 2023. Known for their generosity, Lucas and his wife, Judie, who passed away on January 18, 2023, became members of the Society in July 2016. Born in Greenville, SC, Lucas graduated from the College of William & Mary with a Bachelor of Science Degree in Economics and Trinity University in Texas with a Master's in Healthcare Administration. His career encompassed hospital administration at Roanoke Memorial Hospital, Gill Memorial Hospital and Russell County Medical Center, and was furthered at Carrington Place in Daleville and Brandon Oaks in Roanoke. He also served on many boards around the region.

Lucas was a leader of Boy Scouts Pack 1 and Troop 210, and was a kid at heart helping to teach his grandchildren all aspects of scouting, science, golf, and life skills.

There will be no formal services. Online condolences may be made at www.Oakeys.com.

RVAS Member Anniversaries

Congratulations to the following members who reach the indicated number of consecutive years with the RVAS since joining or re-joining during the month of August:

Bill and Janice Dillon (2004) - 19 years
Josh and Robin Jones (2010) - 13 years
George Blonar (2014) - 9 years
John Wenskovitch (2016) - 7 years
Keith Wimmer (2016) - 7 years *
Karen and Tim Shelton (2020) - 3 years
James and Michelle Humble (2021) - 2 years
Olive, Katy, Tom and Finley Eagan (2022) - 1 year

* Keith was also a member from October 1984 to June 1989.

Thanks to all of you for being RVAS members!

What's Up? Highlights

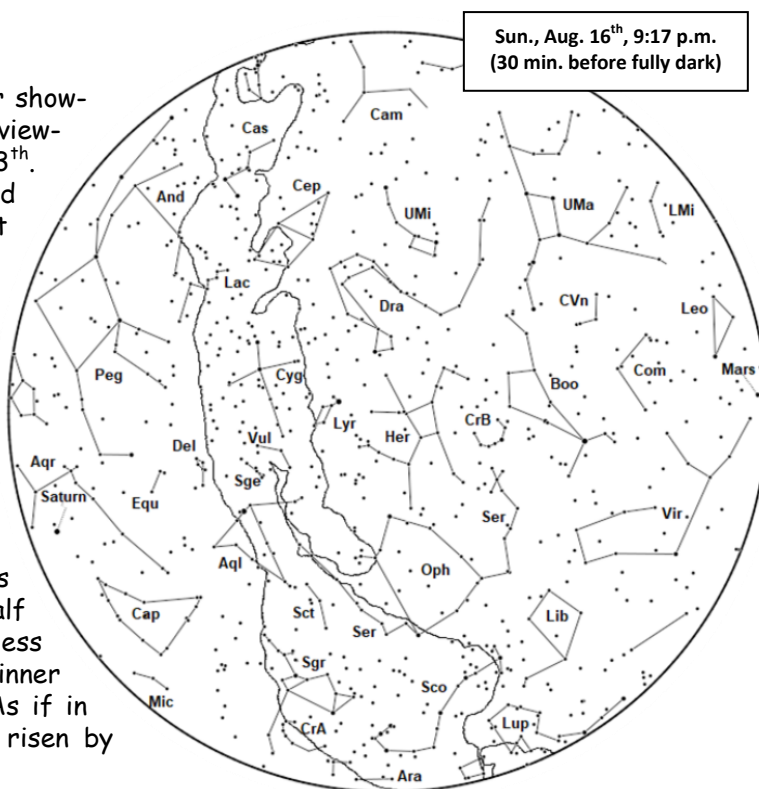
August 1 to 31, 2023

Including, but not limited to, information presented at the July 17th meeting.

To review the PowerPoint, click [here](#). To watch the recording of this meeting segment, click [here](#).

This Month:

August is known for the annual Perseid meteor shower, and this year conditions are favorable for viewing. They're best seen after midnight on the 13th. In addition, the Southern delta Aquariid and alpha Carpicornid meteors will still be active at the time and could add a few to the show. The waning crescent moon, rising at 3:40 a.m.—about an hour and 20 minutes before the start of morning twilight—won't be too much of a factor. Early August's planet-watching menu is a little on the slim side. Venus sets shortly after the Sun does. Mercury is low in the west, but might be glimpsed for a short while from a site with a clear horizon. Meanwhile, Mars sets before it's fully dark. Jupiter and Uranus rise after midnight. So, center stage is left for Saturn, which rises an hour and a half after sunset. Neptune clears the horizon a bit less than an hour later. Later in the month, all the inner planets will be setting before twilight ends. As if in compensation, all the outer planets will have risen by shortly after 11:00 p.m.



Celestial Events:

- Wed., 9th - The eastern pre-dawn sky rewards early risers with a crescent Moon less than 3° from the Pleiades, accompanied by Jupiter, Uranus and most of the brilliant luminaries of Orion and the Winter Hexagon. Use binoculars for viewing the Moon and the Pleiades.
- Sat./Sun., 12th/13th - The Perseid meteor shower peaks overnight. As many as 90 or more per hour. Most fireballs (mag -3 or brighter) of all the showers. Thin crescent Moon rises at 3:40 a.m. on the 13th.
- Fri., 18th - Last chance to spot Mars before lost in solar glare and emerges in the March 2024 morning sky. Use binoculars and thin crescent Moon as guide.
- Thu., 24th - The Moon occults Antares (a Sco) when they are about 12° high above the SW horizon. Disappearance is about 10:48 p.m. EDT. Watch for the "blink out"! Reappearance occurs after both have set.

Sunset and Twilight:

| Sunset Range: 8:27 p.m. (August 1st) to 7:50 p.m. (August 31st)
Twilight Ends: 10:09 p.m. (August 1st) to 9:21 p.m. (August 31st)

Weekend Observing Opportunities:

(Dark of the Moon Weekends)

August 11th/12th
August 18th/19th

Moon Phases:

Tue., 1st - Full Moon
Tue., 8th - Last Quarter
Wed., 16th - New Moon
Thu., 24th - First Quarter
Wed., 30th - Full Moon

SOLAR OBSERVING

The sun is in a new active cycle. Do your own observing to see sunspots and solar flares with your own eyes.

Check out the RVAS club's Coronado SolarMax 40 w/ Orion Explorer 17mm and Meade MA 25mm eyepieces and have a look at the sun.

To make borrowing arrangements, contact John Goss at immediatepastpresident@rvasclub.org

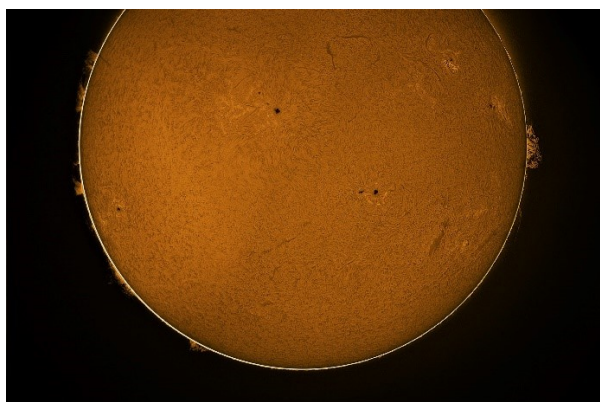


Photo by Ed Dixon



Photo by John Goss

Renew Your RVAS Membership!

If you have not yet renewed your membership, please do so as soon as possible. Since it's past June 30th, the "Early Bird" discount has expired and regular rates now apply. The regular twelve-month rates are:

- Family -- \$25.00
- Senior Family (65 or older) -- \$22.00
- Individual -- \$20.00
- Senior Individual (65 or older) -- \$18.00
- Student* -- \$5.00

* Must be full-time, 18 or older; parental approval is needed if under 18

To use a personal PayPal account, click the following link, then click "Send". You may be asked to log in:
<https://www.paypal.com/paypalme/rvaspmts>

To use PayPal with a debit or credit card, click the following link and enter amount, then click on "Pay with a debit or credit card": https://www.paypal.com/cgi-bin/webscr?cmd=_s-xclick&hosted_button_id=JD53QXZPF59GU

To pay by check or money order: Make your payment to "RVAS" and mail to RVAS Treasurer, 2607 Oregon Ave. SW, Roanoke, VA 24015.

See the roster attached to the email renewal notices you have received for your current membership type. Any questions, please email treasurer@rvasclub.org or call 540-774-5651.

Observing at Blue Ridge Park

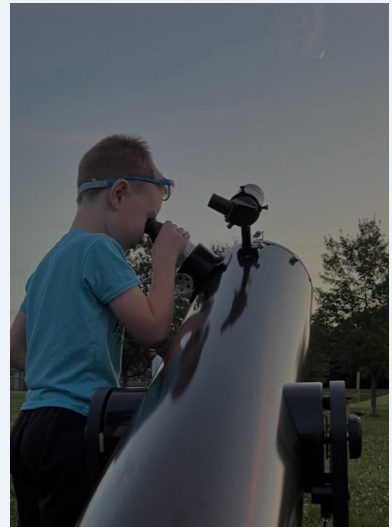
Clouds or smoke or both have been all too common this spring and summer, preventing RVAS members from sharing their views of the sky with the public. This trend was broken on Friday night July 21 when five society members brought their telescopes to Botetourt's Blue Ridge Park near Bonsack. Organized by Botetourt Libraries, at least 21 folks were

treated to views of the beautiful crescent moon, the thin crescent of Venus, the colorful double star Albireo, and the multiple star Epsilon Lyrae.

Thank you, John Goss, Mike Hutkin, Harry Kessler, Michael Martin, and Vince St. Angelo for whetting the appetites of the astronomy hungry public!



Mike Hutkin



Michael Martin



Harry Kessler



Vince StAngelo



RVAS PICNIC
SEPTEMBER 23
APPLE RIDGE FARM



Use Our Message Line!

Want to check whether anyone is getting out on a scheduled observing session night or share that you're planning to do so? Have questions about the club or need its assistance? Call the RVAS Message Line, 540-774-5651, and leave a message or listen for any information available.

Wanted

Astro photos for publication on the RVAS Web page, or in the RVAS Newsletter. Send the photos to editor@rvasclub.org. Observing reports and articles are also welcome.

RVAS August 21st Monthly Meeting In-Person and Zoom

Members and guests may attend in-person or via Zoom. Our informal "Celestial Café" chat session begins at 7:00 p.m., with the regular meeting to follow at 7:30 p.m. Mask wearing is optional for both in-person gatherings. The evening features a "Member Potpourri" of topics including (1) Carson Ray introducing his Asteroid Occultation Project; (2) Erin Elliott discussing the Outreach Project at the Hollins Community School; (3) hearing from John and Genevieve Goss and Michael Martin about the Astronomical League's *Galileo* observing programs; (4) Mike Hutkin's thoughts on finding M51 and other deep-sky objects; and (5) Mark Hodges' review of the free web application *AstroHopper* and (6) Bill Krause on the Celestron StarSense for auto-alignment.

Our meeting place is Virginia Western Community College's Natural Science Center. It's located on the south side of Colonial Avenue, above the Community Arboretum, and is accessed via the roundabout at Winding Way. The Natural Science Center (marked "N" and circled in red) and adjacent parking (also circled in red) are indicated on the map below. Our thanks to VWCC and RVAS member Dr. Mallory White, Assistant Professor at VWCC, for the use of these facilities.



We are very lucky to have an International Dark Sky Park so close to us – Natural Bridge State Park!

**You have asked,
"What can I do to help protect our wonderful dark skies?"
Here is one important way ...**

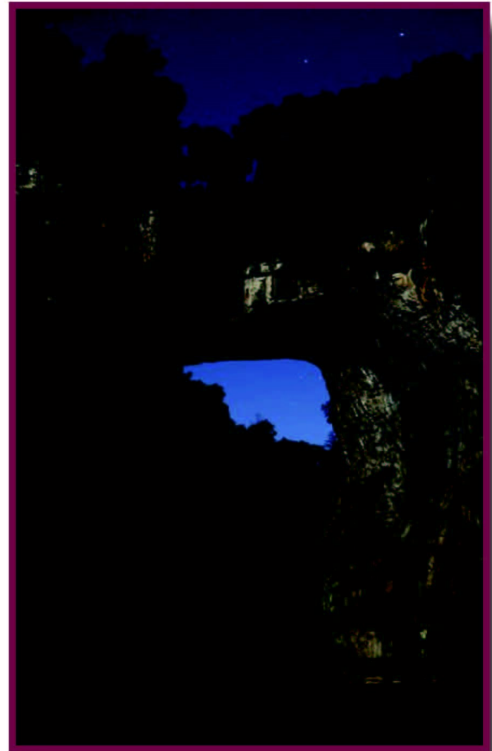
The Friends of Natural Bridge State Park has launched a campaign to replace the outdoor bulbs at the neighboring *Natural Bridge Hotel and Cabins* with **special dark sky friendly LED bulbs**. These bulbs are ...

- 600 lumens (i.e., 60 watt incandescent equivalent),
- dimmable,
- and half mirrored.
- Perhaps most importantly, though, they reduce refracted glare through their 2700K correlated color temperature.

They ask our help to cover the cost of these special bulbs.

Join this important effort by donating only \$5 through either of these easy ways ...

1. Mail Check: Friends of Natural Bridge State Park, PO Box 96, Natural Bridge, VA 24578
2. By Square: "friends-of-natural-bridge-state-park.square.site." Sorry, no \$5 option. \$10 is the lowest.
3. By Square via Facebook: Friends of Natural Bridge State Park



Thank you for your donation. It benefits us all!





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!

Super Blue Sturgeon Moon

Vivian White

On August 1st, catch a **full Moon** rising in the east just 30 minutes after sunset. We are seeing the entire sunlit side of the Moon as it is nearly (but not quite) in line with the Sun and Earth. The *Farmers' Almanac* calls this month's Moon the "Sturgeon Moon", for the time of year when this giant fish was once abundant in the Great Lakes. Cultures around the world give full Moons special names, often related to growing seasons or celebrations.

As the Moon rises later and later each night, the bright sunlit part appears to get smaller or "wane" - we call this a waning **gibbous Moon**. About a week later, on August 8th, we see only one half of the Moon alight. At this phase, the Moon rises around midnight and sets around noon. Have you ever seen the Moon in the daytime? You may notice this phase towards the southwest in the morning sky. Hold up a ball or egg beside it and see how the Sun lights up the same part.

By August 16th, the Moon has gone through its crescent phase and is now only showing its dark side towards the Earth. Did you know the **dark side** and the **far side** of the Moon are different? The Moon always shows the same face towards Earth due to the gravitational pull of Earth, so the far side of the Moon was only viewed by humans for the first time in 1968 with the Apollo 8 mission. However, the dark side is pointed at us almost all the time. As the Moon orbits the Earth, the sunlit side changes slowly until the full dark side is facing us during a **new Moon**. When the Moon is just a small crescent, you can sometimes even see the light of an **Earthshine** reflecting off Earth and lighting up the dark side of the Moon faintly.

Then as the Moon reappears, making a waxing (or growing) **crescent Moon**, best seen in the afternoons. By the time it reaches the first quarter on August 24th, we see the other half of the Moon lit up. At this point, the Moon passes through Earth's orbit and marks the spot where the Earth was just 3 hours prior. It takes the Earth about 3 hours to move the distance between the Moon and Earth.

The Moon on August 30th is referred to as a blue moon. **Blue moons** are not actually blue in color of course; it refers to the second full Moon in any month. Since it takes 29.5 days to complete the cycle from full to new and back to full, most months will see only one. But occasionally, you'll fit two into one month, hence the phrase "once in a blue moon." We see a blue moon about once every 3 years on average - next in May 2026. In addition, this full Moon appears larger in the sky than any other full Moon this year - an unofficial **supermoon**. A supermoon appears larger than average because it is closer in its slightly elliptical orbit. The difference in apparent size between the smallest and largest full Moon is about the size difference between a quarter and a nickel. Even at its largest, you can always cover the whole Moon with your pinky extended at arm's length.

Follow the Moon with us this month and keep a Moon journal if you like - you may be surprised what you discover! moon.nasa.gov/moon-observation



Image of waning crescent Moon shown next to a ball on a stick that is lit by the Sun on the same side as the Moon, with trees and a blue sky in the background. Try this with an egg or any round object when you see the Moon during the day! Credit: Vivian White



[Earthshine as seen from the International Space Station](#) with the sun just set - Astronaut Photograph IS-S028-E-20073 was taken on July 31, 2011, and is provided by the ISS Crew Earth Observations Facility and the Earth Science and Remote Sensing Unit, Johnson Space Center

Monthly Calendar

RVAS Monthly Meeting: Monday, August 21st, 7:30 p.m. (Informal “Celestial Café” chat session begins at 7:00 p.m.) Natural Science Center, Virginia Western Community College, Colonial Avenue, Roanoke, VA. Apart from all being RVAS members, what do Erin Elliott, John and Genevieve Goss, Mark Hodges, Mike Hutkin, Bill Krause, Michael Martin and Carson Ray have in common? Answer: They are all presenters in a “Member Potpourri” that is our featured program for the August gathering. Topics will range from Carson introducing his Asteroid Occultation Project to Erin discussing the Outreach Project at the Hollins Community School to hearing from John, Genevieve and Michael about the Astronomical League’s *Galileo* observing programs and Mike on finding M51 and other deep-sky objects to reviews of the free web applications *AstroHopper* and *StarSense* by Mark and Bill, respectively. Complementing these presentations, we’ll offer up our astrophotography, observing reports, in the news and What’s Up? segments. It’s a jam-packed evening ahead for the August meeting. So, watch for the additional information and Zoom invitation, and make plans to attend!

RVAS Annual Picnic and Star Party, 4:00 p.m. Saturday September 23rd (Rain Date: September 30th), Apple Ridge Farm, Copper Hill, VA. The Society’s annual event for members and their families. Tailgate-style dinner. Door prizes and give-aways. Stargazing that evening at the ARF observatory. Watch for emails with additional details.

WEEKEND OBSERVING OPPORTUNITIES: The following information on Fridays and Saturdays that may be suitable for observing is provided as a courtesy to RVAS members and other readers. The RVAS assumes no responsibility for the health and safety of anyone venturing out to stargaze, and cautions all who may do so to observe appropriate COVID-19 health and safety precautions.

Friday and Saturday, August 11th & 12th. Sunset is at 8:18 p.m. Astronomical twilight ends at 9:54 p.m. The Moon sets at 5:31 and 6:23 p.m., respectively.

Friday and Saturday, August 18th & 19th. Sunset is at 8:10 p.m. Astronomical twilight ends at 9:43 p.m. The Moon sets at 9:30 and 9:52 p.m., respectively.

Future Weekend Observing Opportunities: September 8th & 9th; 15th & 16th.

Astro-Quiz

Most of our solar system’s major planets have orbits inclined less than 2.5° to the ecliptic, the plane of Earth’s orbit. Which planets’ orbits exceed this and what (in degrees) is their inclination?

Answer to Last Month’s Quiz: Last month we asked where the Sun would be in the sky at solar noon as seen from San Jose del Cabo, Baja California, during the third week of June. Solar noon is defined as when the Sun is on the local meridian and highest in the sky. The local meridian is the arc passing through the zenith that connects the north and south horizon points. The third week of June places the time of year near the summer solstice. Lastly, San Jose del Cabo is located at 23.06° North, very close to the Tropic of Cancer (23.44° North), the most northerly point at which the Sun can appear overhead on the June solstice. So, at the time, date and place described, the Sun would appear nearly directly overhead. Have an answer to this month’s quiz (or a future quiz question and answer to suggest)? E-mail it to astroquiz@rvasclub.org!