

# The Eyepiece



SW FL Astronomical Society, Inc.  
PO Box 100127  
Cape Coral FL 33910



Photo From NASA Website



**Mike Jensen - Editor**

Hi Everyone! I hope you've had a chance

to get out and either observe or

photograph some of the amazing objects in the night sky!

So, am I the only one who is constantly checking Astrospheric and Clear Outside? And guess what? Sometimes neither of them are right! Sometimes you actually have to get out of your Lazy Boy chair and go outside and physically look at the sky! I'm constantly amazed at how the real weather is messing with my plans! But, that's the nature of this hobby, sometimes you drop everything when it's clear (and it's not supposed to be) and sometimes you set up all your gear only to scramble when it starts raining, ugh! But, we love every minute of it! It's no biggie! I mean what else do we have to do with our time, huh? At least we don't

have to deal with sub-freezing weather and shoveling the snow out of the way of our set up area!

So, now a question for everyone. And I want to hear from you! From my observations last Summer (I didn't have my full rig yet), almost every evening included a chance of a thunderstorm, so do you set up or not? Is the Summer just a wash (excuse the pun), or are there some chances for imaging? Let me know your thoughts. [Shoot me an email](#) and let me know your experience.

## In this issue:

Please read the post from our AL representative John MacLean on the Astronomical League (page 4). The AL is one of our BEST resources for astronomy info and programs there is! Also, the Dark Sky Network always has a great post on some really cool subjects for observing and imaging (page 6). Also, I've included a great article on the Artemis Project on page 8!

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## NOT TO MISS:

- Seahawk Park star parties: 4/9/2022 & 4/30/2022
- Moore Observatory First Fridays April 1st Contact Tom Segur
- Solar Observing 3rd Saturday on 4/16 (Bayshore Drive - Port Charlotte)

## Monthly Meetings

Our monthly meetings are held on the **first Thursday** of each month. The meetings begin at 7:30pm.

***This month's meeting will be a combined live and Zoom meeting! Masks should be worn if attending in person at the Calusa Planetarium.***

Each meeting will have its own link/meeting ID (see below).

So, mark your calendar for:

April 7th, 2022  
 May 5, 2022  
 June 3, 2022  
 July 1, 2022

How to use Zoom.

1. Download the software for smartphone, tablet or computer  
 Click the link sent out for the meeting. Here's the link for our meeting  
[Join Zoom Meeting:  
 https://widener.zoom.us/j/92655445471](https://widener.zoom.us/j/92655445471)

[Meeting ID: 926 5544 5471](#)

One tap mobile:

[+16465588656](tel:+16465588656),[92655445471](tel:+13017158592) # US  
 (or)

[+13017158592](tel:+13017158592),[92655445471](tel:+13017158592) # US

2. Click on window that appears, "Join Zoom Meeting".

3. Then "Join Computer Audio"

4. On entering the meeting, audio is going to be "off" by default. Press down and hold your space bar to talk. Both Brian and the presenter will be unmuted by default. This is being done to cut down on background noise, as it seems to accumulate as our numbers increase.

APRIL 2022						
SUN	MON	TUE	WED	THU	FRI	SAT
					1 Night Observing Moore Observatory <b>NEW Moon</b>	2
3	4	5	6	7 Membership Meeting - 7:30pm Calusa Planetarium & Zoom	8	9 Seahawk Park Star Party
10	11	12	13	14	15	16 <b>Full Moon</b>
17	18	19 Astro SIG Meeting 6:30pm Zoom	20	21	22	23
24	25	26	27	28	29	30

Holidays and Observances: 17: Easter Sunday, 18: Easter Monday, 18: Tax Day

## 2022 Dues

If you have not sent in your check for your 2022 dues, please do so upon reading this announcement.

**Dues are an affordable \$25.**

Make check out to:  
 Southwest Florida  
 Astronomical Society  
 PO Box 100127  
 Cape Coral, FL 33910

## Moore Observatory Dates

Observation sessions typically begin about 30-45 minutes after it is dark enough to see the stars and continue as long as stargazers linger. Prior to complete darkness, visitors can not be admitted into the observatory as the equipment needs to be setup and aligned with the stars each time but early arrivers are welcome to enjoy views of the lake and the scenery of the campus from the lakeside picnic tables.

The public sessions are free and held at least once monthly from September through May, weather permitting.

Apr 1, 2022  
 May 6, 2022

Also, the club conducts solar observing on the 3rd Saturday morning of each month. Contact for all observing events is:

Thomas Segur  
[tsegur479@comcast.net](mailto:tsegur479@comcast.net)  
 941-249-8726

## President's Report

### Brian Risley - SWFAS President

Our outreach has really picked up. We had around 4000 people at the Burrowing Owl Festival. The Rotary Park Star Party the next weekend had several hundred show up. Last weekend I visited a small family campout held down at Rookery Bay Research Center down south of Naples. And not to forget, we had a nice article in the News Press Cape Life section. It highlighted our March 26th, April 9th, April 30th, and May 21st SeaHawk Park Star Parties. We really need to make sure that our members come out for these events, even if you don't bring a telescope.

Come out to one of our Solar Observing sessions in Charlotte County, the sun has really become quite active.

Our program this month is on the Artemis Program presented by Joe Dermody. This ties in with the article in this newsletter. If you visit the Cape, you may even get to see the Artemis rocket assembly being checked out on the Launchpad.

It is Dues time. If you are not sure if you have paid for 2022, please check with John MacLean. We have left people on the club email list because of Covid, but we will be cleaning out the lists when we report to the AL in June.

**Please contact me so that you can get details about the event and sign up to help. Most require us to be setup prior to their posted start times and limit vehicle traffic after a certain time.**

**Contact me at: [swfaspres@gmail.com](mailto:swfaspres@gmail.com).**

### Star Parties

These are the dates for the Seahawk Park  
Saturday Night star parties:  
4/9/2022, 4/30/2022, 5/21/2022.



## Club Officers & Positions

President/Equipment  
Brian Risley  
[swfaspres@gmail.com](mailto:swfaspres@gmail.com)  
239-464-0366

Vice President/Programs  
Mike McCauley  
[mmccauley13@comcast.net](mailto:mmccauley13@comcast.net)  
860-982-5022

Secretary  
Don Palmer  
[swfas.sec@gmail.com](mailto:swfas.sec@gmail.com)  
239-334-3471

Treasurer/AL Coordinator  
John MacLean  
[john.maclean@comcast.net](mailto:john.maclean@comcast.net)  
239-707-3365

Charlotte Event Coordinators  
Tony Heiner  
[verahei@aol.com](mailto:verahei@aol.com)  
941-457-9700

Thomas Segur  
[tsegur479@comcast.net](mailto:tsegur479@comcast.net)  
941-249-8726

Big Cypress Viewing Coordinator  
Mike Jensen  
[info@jensenone.com](mailto:info@jensenone.com)  
913-304-0495

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913-304-0495

FSW Punta Gorda Moore Observatory  
Director Thomas Segur  
[tsegur479@comcast.net](mailto:tsegur479@comcast.net)  
941-249-8726

Club Librarian  
Maria Berni  
239-940-2935

Club Historian  
Danny Secary  
[asecary@gmail.com](mailto:asecary@gmail.com)  
239-470-4764

Calusa Nature Center Planetarium Direc-  
tor Heather Preston  
[heather@calusanature.org](mailto:heather@calusanature.org)  
239-275-3435

## The Astronomical League Report

### The Astronomical League

As a member of the Southwest Florida Astronomical Society you are automatically also a member of the Astronomical League, a nationwide affiliation of astronomy clubs. Membership in the AL provides a number of benefits for you including receipt of The Reflector, the AL's quarterly newsletter, use of the Book Service, through which you can buy astronomy related books at a 10% discount. You can also participate in the Astronomical

League's Observing Clubs. The Observing Clubs offer encouragement and certificates of accomplishment for demonstrating observing skills with a variety of instruments and objects. These include the Messier Club, Binocular Messier Club, the Herschel 400 Club, the Deep Sky Binocular Club, and many others. To learn more about the Astronomical League and its benefits for you, visit <http://www.astroleague.org>



### Reflector Magazine

You should have received an email from the Astronomical League linking to your digital copy of the March 2022 Quarterly Reflector magazine on around February 21, You can also directly access copies via the web at <https://www.astroleague.org/reflector>

### ALCON 2022

The Astronomical League has announced that it will hold its National Convention in Albuquerque, New Mexico from July 28 – July 30. Full details are available at the following link: Astronomical League Convention | Hosted by The Albuquerque Astronomical Society ([alcon2022.org](http://alcon2022.org))

The main conference will be held on Thursday, Friday, and Saturday and features speakers and workshops There will be an evening The special events include an evening presentation by Apollo 17 astronaut Harrison Schmitt on July 29 and a tour of the Karl Jansky Very large Array (VLA) on July 31. Discounted rates are available at The Embassy Suites.

### Monthly highlight of the Astronomical League Observing Programs



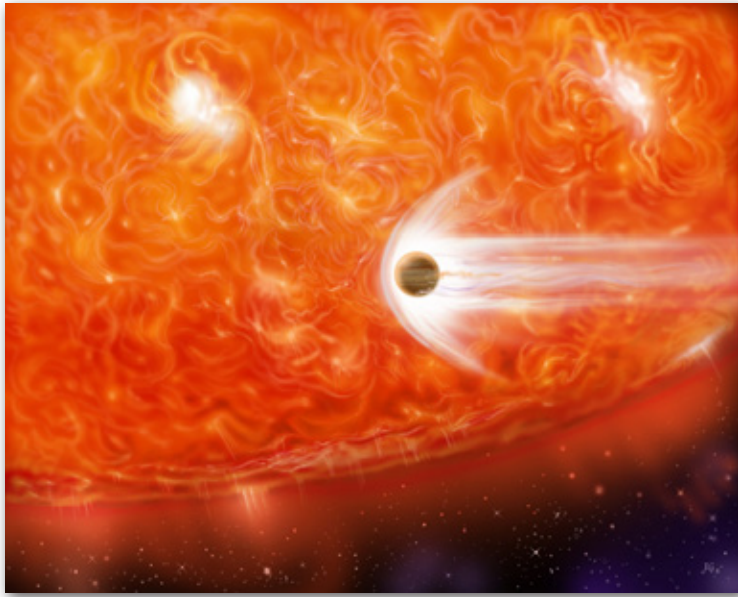
Last month we concluded our survey of the League's Observing Programs with an overview of the new Imaging Observing Program.

We are beginning the cycle anew with a discussion of the Carbon and Binary Star programs.

#### Seeing Red – The AL Carbon Star Program

Almost all carbon stars are red giants that have depleted the hydrogen in their cores. As the core is compressed and heated the helium atoms fuse to form carbon and oxygen. Convective currents are formed which dredge up carbon and oxygen into the star's outer layers and these form additional molecules in the outer atmosphere that scatters blue light enhancing the red appearance of the star. All carbon stars are variable with periods ranging from a few months to well over a year.

The Carbon Star Observing Program lists 100 targets that are visible throughout the year. Most of these are great targets even from heavily light polluted city backyards. Colors may range from yellow or orange to deep reds at minimum. The use of Go-To scopes is allowed but not encouraged as there is a good learning process in



finding one's way around via star-hopping. The recommended minimum aperture is 8 inches although very many of these are easily accessible with much smaller aperture. If participating in the formal program, the transparency and seeing conditions must be documented along with a description of the star's color. A sketch showing other field stars must also be submitted. The AL publishes a special "Guide to the Carbon Star Observing Program" which can be purchased from their online bookstore. Star charts are a must to locate the stars manually. The AAVSO site for variable star observing is invaluable and you will be able to use the AAVSO Variable Star Plotter (VSP) to print out detailed charts for any of the objects.

### Seeing Double – The AL Double Star Programs

Double Stars are also inviting targets for less than pristine observing conditions. Separate programs are provided for Binoculars and Telescopes.

#### Binocular Double Star Observing Program

This program complements concurrent observations for the Messier Binocular and Deep Sky Binocular programs. Wide double star pairs are targeted and span the entire night sky and were chosen to enable the observer to enjoy some of the most interesting and spectacular night sky regions. A list of 120 of the finest binocular double and multiple star systems is provided from which any 50 may be chosen to qualify for the certificate and pin. The program is suitable for any binocular aperture 20 mm and above. Seeing and Transparency conditions must be documented along with a description. No sketch is required.

#### Double Star (Telescopic) Observing Program

This program is designed to introduce observers to 100 of the finest double and multiple star systems in the heavens. Small telescopes are fine for this program with a suggested minimum aperture of 3 inches. For formal submission, the Seeing and Transparency conditions must be documented and a simple sketch is required with the stars represented as dots. The dot size is used to represent magnitude and the distance between dots is used to represent separation. As is the case with carbon stars, the AL prefers star hopping to be used for object location but is fine with use of Go-To scopes as long as the observing requirements are fully met and documented.



#### Double Star Resources.

The AL suggests the following resources for more information on double stars:

Bright Star Atlas 2000.0 (Tirion)

The Cambridge Double Star Atlas (Mullaney, Tirion)

Double and Multiple Stars and How to Observe Them (Springer, 2005)

Observing and Measuring Visual Double Stars (Argyle)

## The Night Sky Network



This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit [nightsky.jpl.nasa.gov](https://nightsky.jpl.nasa.gov) to find local clubs, events, and more!

### Springtime Catspotting: Lynx and Leo Minor David Prosper

Many constellations are bright, big, and fairly easy to spot. Others can be surprisingly small and faint, but with practice even these challenging star patterns become easier to discern. A couple of fun fainter constellations can be found in between the brighter stars of Ursa Major, Leo, and Gemini: **Lynx and Leo Minor**, two wild cats hunting among the menagerie of animal-themed northern star patterns!

**Lynx**, named for the species of wild cat, is seen as a faint zigzag pattern found between Ursa Major, Gemini, and Auriga. Grab a telescope and try to spot the remote starry orb of globular cluster NGC 2419. As it is so distant compared to other globular clusters - 300,000 light years from both our solar system and the center of the Milky Way - it was thought that this cluster may be the remnants of a dwarf galaxy consumed by our own. Additional studies have muddied the waters concerning its possible origins, revealing two distinct populations of stars residing in NGC 2419, which is unusual for normally-homogenous globular clusters and marks it as a fascinating object for further research.

**Leo Minor** is a faint and diminutive set of stars. Its “triangle” is most noticeable, tucked in between Leo and Ursa Major. Leo Minor is the cub of Leo the Lion, similar to Ursa Minor being the cub to the Great Bear of Ursa Major. While home to some interesting galaxies that can be observed from large amateur scopes under dark skies, perhaps the most intriguing object found within Leo Minor’s borders is Hanny’s Voorwerp. This unusual deep-space object is thought to be a possible “light echo” of a quasar in neighboring galaxy IC 2497 that has recently “switched off.” It was found by Hanny van Arkel, a Dutch school-teacher, via her participation in the Galaxy Zoo citizen science project. Since then a few more intriguing objects similar to Hanny’s discovery have been found, called “Voorwerpjes.”

Lynx and Leo Minor are relatively “new” constellations, as they were both created by the legendarily sharp-eyed European astronomer Johannes Hevelius in the late 1600s. A few other constellations originated by Hevelius are still in official use: Canes Venatici, Lacerta, Scutum, Sextans, and Vulpecula. What if your eyes aren’t quite as sharp as Johannes Hevelius – or if your weather and light pollution make searching for fainter stars more difficult than enjoyable? See if you can spot the next Voorwerp by participating in one of the many citizen science programs offered by NASA at [science.nasa.gov/citizenscience](https://science.nasa.gov/citizenscience)! And of course, you can find the latest updates and observations of even more dim and distant objects at [nasa.gov](https://nasa.gov).

At Right: Hanny’s Voorwerp and the neighboring galaxy IC 2497, as imaged by Hubble. Credits: NASA, ESA, W. Keel (University of Alabama), and the Galaxy Zoo Team Source: [hubblesite.org/contents/news-releases/2011/news-2011-01.html](https://hubblesite.org/contents/news-releases/2011/news-2011-01.html)





*Map of the sky around Lynx and Leo Minor. Notice the prevalence of animal-themed constellations in this area, making it a sort of celestial menagerie. If you are having difficulty locating the fainter stars of Leo Minor and Lynx, don't fret; they are indeed a challenge. Hevelius even named the constellation as reference to the quality of eyesight one needs in order to discern these faint stars, since supposedly one would need eyes as sharp as a Lynx to see it! Darker skies will indeed make your search easier; light pollution, even a relatively bright Moon, will overwhelm the faint stars for both of these celestial wildcats. While you will be able to see NGC 2419 with a backyard telescope, Hanny's Voorwerp is far too faint, but its location is still marked. A few fainter constellation labels and diagrams in this region have been omitted for clarity.*

*Image created with assistance from Stellarium.*

## The Artemis Program

From NASA Sources

America has entered a new era of exploration. NASA's Artemis program will lead humanity forward to the Moon and prepare us for the next giant leap, the exploration of Mars. It has been almost 50 years since astronauts last walked on the lunar surface during the Apollo program, and since then the robotic exploration of deep space has seen decades of technological advancement and scientific discoveries. For the last 20 years, humans have continuously lived and worked aboard the International Space Station 250 miles above Earth, preparing for the day we move farther into the solar system.

Sending human explorers 250,000 miles to the Moon, then 140 million miles to Mars, requires a bold vision, effective program management, funding for modern systems development and mission operations, and support from all corners of our great nation as well as our partners across the globe.

NASA has been fine-tuning the plan to achieve that bold vision since the president called on the agency in December 2017 to lead a human return to the Moon and beyond with commercial and international partners. Two years later, he challenged us yet again, this time to send the first woman and next man to the Moon within five years. NASA is implementing the Artemis program to achieve those goals, and this document lays out the agency's Moon to Mars exploration approach explaining how we will do it.



***The Moon plan is twofold: it's focused on achieving the goal of an initial human landing by 2024 with acceptable technical risks, while simultaneously working toward sustainable lunar exploration in the mid- to late 2020s.***

2024 is not an arbitrary date. It is the most ambitious date possible, and our success at the Moon, and later, at Mars, will be grounded in our national goals and robust capabilities. The United States leads in space exploration now; however, as more countries and companies take aim at the Moon, America needs the earliest possible landing to maintain and build on that leadership, as well as to prepare for a historic first human mission to Mars.

Landing astronauts on the Moon within four years will better focus this global initiative on the engineering, technology development, and process improvements necessary to safely and successfully carry out sustained human exploration of

the Moon. It also paves the way for U.S. commercial companies and international partners to further contribute to the exploration and development of the Moon.

We need several years in orbit and on the surface of the Moon to build operational confidence for conducting long-term work and supporting life away from Earth before we can embark on the first multi-year human mission to Mars. The sooner we get to the Moon, the sooner we get American astronauts to Mars.

We need to act fast to make this vision a reality, and a crewed lunar landing by 2024 is the key to a successful Moon to Mars exploration approach. Our next lunar landing paves the way for a new and sustainable lunar economy—one where U.S. companies and international partners will benefit from and build on what we learn.

### Early Artemis Missions

With the powerful Space Launch System (SLS) rocket and Orion spacecraft nearing the end of



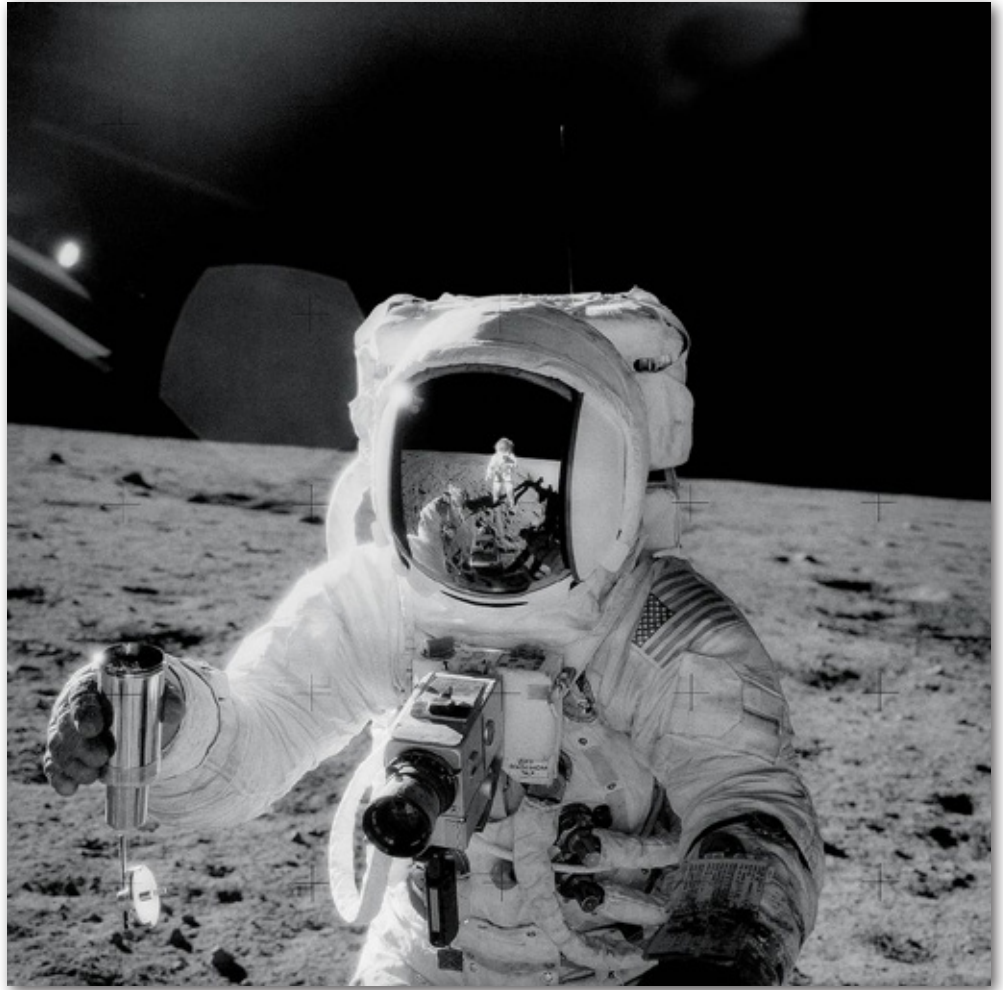
testing and development, the agency has the foundation needed to send humans back to lunar orbit. In preparation for the safest earliest possible lunar landing, NASA seeks to make full use of early Artemis missions through additional testing for Orion and the Human Landing System (HLS) when possible.

The Gateway is a critical component of the agency's sustainable lunar operations. NASA will integrate the first two pieces on Earth, launching the Power and Propulsion Element (PPE) and the Habitation and Logistics Outpost (HALO) together in 2023 on a single rocket, followed by a commercial logistics supply launch.

In 2024, Orion will deliver its crew to lunar orbit. The commercially developed lander that will take the crew to the lunar surface will be capable of docking directly to Orion for crew transfer for early Artemis missions, but NASA is maintaining flexibility for optional docking to the Gateway. On the surface, the crew will wear the new exploration extravehicular mobility unit or xEMU spacesuit as they explore the surface for about a week before returning to Orion for the trip home to Earth.

### **Sustainable Artemis Missions**

On later Artemis missions crew will arrive at the Gateway aboard Orion. On the Gateway, they will be able to conduct research and take trips down to the surface. NASA will work with Artemis providers to ensure spacecraft are built to international interoperability standards with as many reusable components as possible



for long-term sustainability at the Moon.

Long-standing International Space Station partners are eager to join NASA in lunar orbit. The Canadian Space Agency (CSA) has committed to providing advanced robotics for the Gateway, and ESA (European Space Agency) plans to provide the International Habitat (IHab) and the ESPRIT module, which will deliver additional communications capabilities, a science airlock for deploying science payloads and CubeSats, and refueling of the Gateway. The Japan Aerospace Exploration Agency (JAXA) plans to contribute habitation components and logistics resupply. The Russian Space Agency (Roscosmos) has expressed interest in cooperation on Gateway as well.

At the lunar South Pole, NASA and its partners will develop an Artemis Base Camp to support longer expeditions on the lunar surface. Planned Base Camp elements include a lunar terrain vehicle (LTV, or unpressurized rover), a habitable mobility platform (pressurized rover), a lunar foundation habitation module, power systems, and in-situ resource utilization systems.

This incremental build-up of capabilities on and around the Moon is essential to establishing long-term exploration of Earth's nearest neighbor and preparing for human exploration of Mars.

## *Astrophotography (SIG)*

### *Special Interest Group*

Join Our Astrophotography Special Interest Group (SIG)  
– Mike Jensen, Group Lead

#### **REGULAR MEETINGS**

**Regular meetings have been set for the  
3rd Tuesday of each month at 6:30 on Zoom  
The next meeting is Tuesday March 16th at 6:30.**

<https://us02web.zoom.us/j/81077794455?pwd=MHJVL2VvZGZRK3JyM-1d5QVJiZE1TUT09>

Meeting ID: 810 7779 4455  
Passcode: Phot@SIG



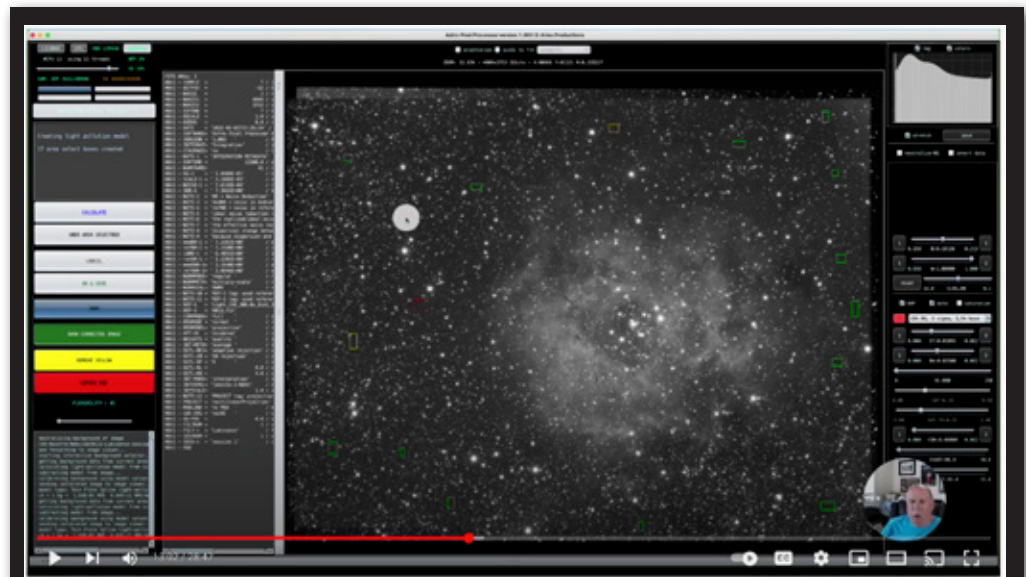
*Every month we get together on a Zoom call with a pretty loose agenda and manage to have an absolute blast talking about Astrophotography. I hope you'll join us if you're interested in Astrophotography.*

We have a nice, diverse group with a wide range of skill sets and interests. Some DSLR/Mirrorless shooters mixed in with telescope shooters. Some use Star Trackers, some use goto mounts, some use laptops and some use a fun little unit called the ASIAIR (a small little computer inside a box about the size of a cell phone that connects to a tablet or smart phone).

On any given day or moment we can shoot an email out to the group and get suggestions and answers, how cool is that?

Now, the REALLY cool thing is that it looks like the pandemic is FINALLY starting to ease off so that means we can finally start getting together and be safe! That means

## **Processing Astro Photos in APP**



Check out [Mike's tutorial on Astro Pixel Processor](#). Click on the image above. This video is about 30 minutes and is pretty much a "soup to nuts" instruction on how to load your shots, process, stretch and finish your image.

more helping each other, more show and tell, more mentorship which is exactly why we created the Astro SIG.

So, if you want to learn Astrophotography (like Astro 101) with a LOT of fun people, join us. As of

this writing my intention is to be at the membership meeting in person on April 7th. Hope to see you there.

## Mike's Target of the Month

Below is an image I created in early March. The two big galaxies are M81(center) and M82(left), plus a WHOLE bunch of other galaxies. If you look at this image on my Astrobin page, you'll see a lot more detail. <https://www.astrobin.com/full/lelsyh/0/>

It's comprised of about 22 hours (over 5 nights) of exposure time in L,R,G,B and Ha. I used a 127mm ES Refractor and a Sky Watcher EQ6-R Pro GoTo mount, a ZWO ASI 1600mm camera, 5 Filter Wheel, ZWO ASI290 Guiding camera. It was processed in Astro Pixel Processor, Photoshop and

Topaz.

April brings us in to what we call "Galaxy Season". For us in SW Florida we have (hopefully) another two months before rainy season begins to settle in. As it is we get about two weeks of nights we can image IF we get clear nights. Last month I got 11 nights and I thought that was pretty good!

So, what's up next? There's a couple of cool looking galaxies out there I've got my eye on. M51 (The Whirlpool Galaxy) and M101 (The Pinwheel Galaxy). Now, I don't know the difference between a

whirlpool and a pinwheel as they both look a bit the same, except M51 is colliding with another galaxy.

Also, these galaxies are not limited to just photographers with telescopes. I shot M51 last year with my Sony A7Riii (below). Enjoy!





Comet 19P Borrelly - Ray Bratton  
Fort Myers, Florida 3/17/2022  
ES127 FCD Triplet, ASI294MC,  
ASIAIR Plus, G120, 0 deg, 40 10s  
APP & PS RAW



**Rosette Nebula NGC2244**  
Ray Bratton - Fort Myers, Florida  
ES127 FCD Triplet, 161 120sec exposures (5 hours),  
120G, ASIAIR Plus, ASI294MC Pro, APP & PS Raw

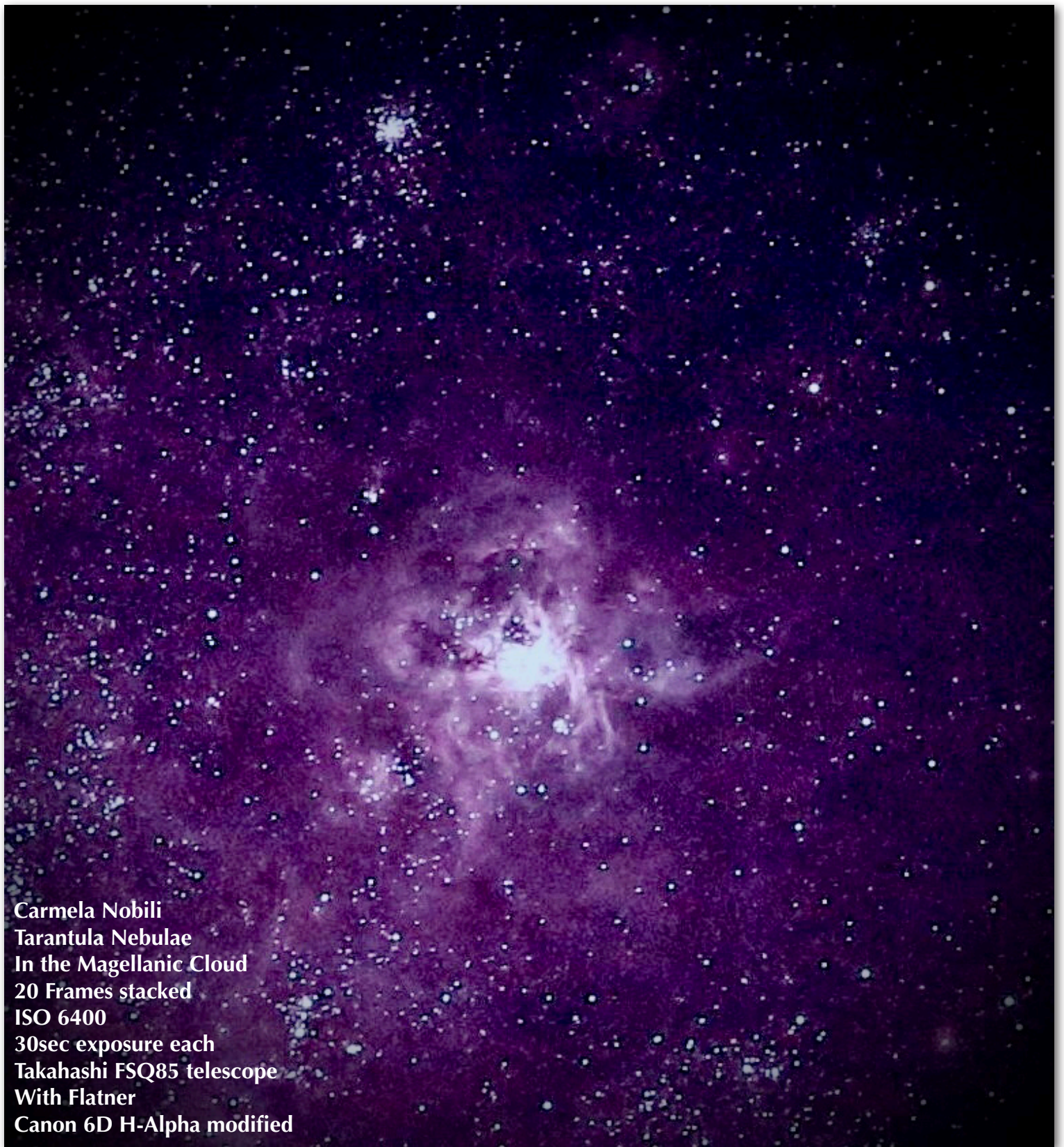




Carmela Nobili  
Rosetta Nebulae  
Stack of 20 frames  
ISO 3200  
30 sec exposure each  
Takahashi FSQ85 telescope  
With Flatner  
Canon 6D H-Alpha modified



Carmela Nobili  
Omega Centauri  
10 frames stacked  
ISO 6400  
30 sec exposure each  
Takahashi FSQ85 telescope  
With Flatner  
Canon 6D H-Alpha modified



Carmela Nobili  
Tarantula Nebulae  
In the Magellanic Cloud  
20 Frames stacked  
ISO 6400  
30sec exposure each  
Takahashi FSQ85 telescope  
With Flatner  
Canon 6D H-Alpha modified

[Click here for more descriptions and better images of these targets.](#)



# The 10 Best Things To See In The Spring Night Sky



## M44

M44, the Praesepe or Beehive cluster, has been known since antiquity and is visible to the naked eye under clear, dark skies. Unusually, its magnitude (3.9) is greater than almost all of the stars within the constellation that hosts it (in this case, Cancer, the Crab.)



## M81 AND M82

Telescopically, you can fit both targets within the same field of view if you keep the magnification to below 50x. M81, a spiral galaxy, is the brighter and larger of the pair. You'll see it as a small oval with a bright central core.



## ALGIEBA

Even with low powered binoculars you'll see a bright, golden star with a blue-white companion that appears about twice as faint. Point your telescope toward it and the bright primary star can be split in half. You'll probably need a magnification of at least 75x.



## COR CAROLI

A magnification of about 30x provides a fine view, with the primary star appearing white and about three times brighter than its pale gold companion.



## M65 AND M66

A low magnification of less than 60x is required to fit both targets within the same field of view. You should see two faint, misty oval patches. M66 is slightly brighter and more oval, whereas M65 may appear more elongated and spindle shaped.



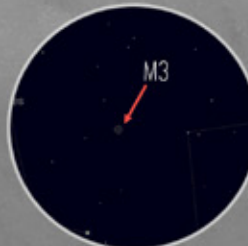
## LA SUPERBA

One of the reddest stars known and has been variously described as deep orange and blood red. As with so many things in astronomy, it's a subjective experience that impacts different observers in different ways. What color does it appear to you?



## MIZAR AND ALCOR

A telescope and a low magnification of only 25x is all you'll need to split Mizar in two. The brighter, primary star shines with a brilliant, white light, while its companion appears about twice as faint and slightly bluish.



## M3

At about 35x, you'll notice a slightly oval, misty grey patch with a bright core. This is one cluster where increasing the magnification will definitely reap rewards.



## M97

Found close to Beta Ursae Majoris (Merak), it's quite faint and just beyond the reach of most binoculars. You'll probably also be out of luck if you're observing with a small telescope under suburban skies, but if you possess the skies and the equipment, you could get lucky.



## COMA BERENICES

At a distance of 280 light-years, this is one of the closest star clusters. In comparison, M44, the Praesepe (or Beehive cluster) is some 577 light-years away, while the Owl Nebula is over 2,000.



## Nightwatch



With a new year comes new Globe at Night dates! Every year, this community-science campaign raises awareness about the impact of light pollution by inviting community scientists to measure and submit night sky brightness observations. It's a fantastic opportunity to get more involved in the dark sky movement.

Also, we hope you'll join us in welcoming a group of new members to our Board of Directors for 2022. We are really excited to introduce you to Nalayini Brito-Davies (New Zealand), Paulina Villalobos (Chile), Ken Walczak (U.S.), and Charles Mudd (U.S.).

Whether to spark a child's imagination or educate and inspire an adult to take action against light pollution, books are a fantastic tool in the fight to protect the night. So earlier this month, we shared a blog post with three newly released books about dark skies. You're going to want to check them out.

Plus, we have an exclusive deal to share with you from acclaimed photographer and conservationist Art Wolfe. His team has generously set up a special for IDA members and supporters in his store. For \$99 (normally \$150), you can receive a copy of "Night on Earth" + 8x10 print of the Milky Way over Mount Rainier by using the code IDA2022. A portion of the proceeds goes to help support IDA.

Last but not least is our January Monthly Star-IDA Delegate Carol Redford from Western Australia. We recently sat down with her for a chat. We discussed how she got started in the dark sky movement, how she has found success working with her local government, all about her "Astrotourism Towns" project, and why dark skies are important to the local culture where she lives.

Until next time,

Susan Ciarniello  
Membership Director

## Globe At Night 2022

Every year, the Globe at Night international community science campaign raises awareness about the impact of light pollution by inviting community scientists to measure and submit night sky brightness observations. All you need is a computer, tablet, or smartphone! And their webapp is now available in 28 languages!

Community science plays an important role in the fight against light pollution. It is both contributive and collaborative, allowing for experiments, explorations, and inquiries to run on a large-scale, ongoing basis. This provides scientists with much larger and more diverse data sets that might have otherwise been unachievable. In 2021, community scientists from around the world contributed more than 24,000 observations from over 90 countries to Globe at Night!

Globe at Night will be collecting observations for all twelve months of the year. This large set of measurements will be compared to measurements from prior years in the same month to provide a comprehensive view of the changes to the night sky quality worldwide. See all of the dates below:

**Globe at Night 2022**

[WWW.GLOBEATNIGHT.ORG](http://WWW.GLOBEATNIGHT.ORG)

Get Out and Observe the Night Sky!

Engage people worldwide in observing the nighttime sky.

Encourage students and families to participate in citizen-science with a hands-on learning activity.

Gather light pollution data from an international perspective to monitor sky brightness and its effects.

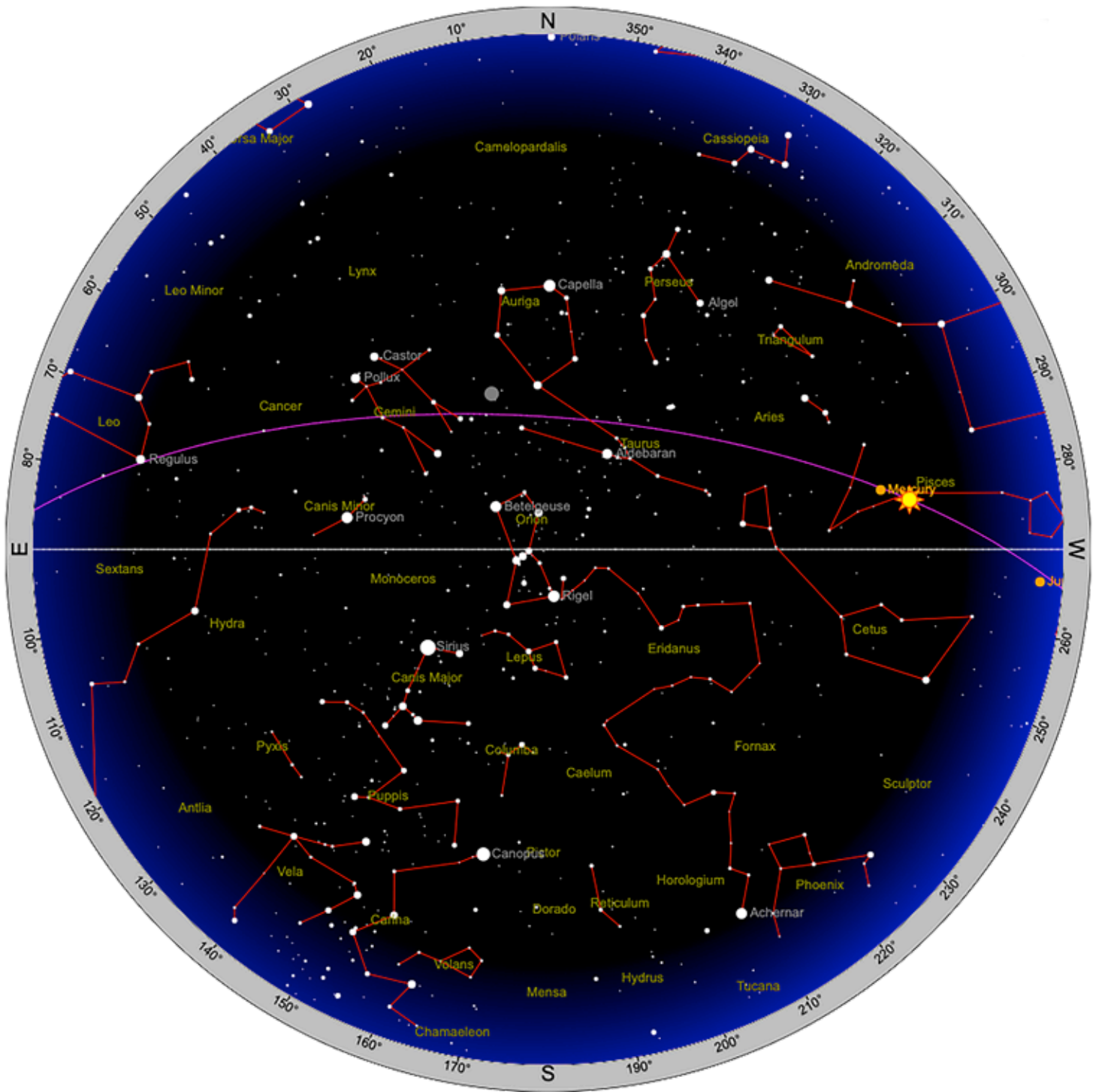
Can you see the stars?

Dec. 25 (2021) — Jan. 3	Jun. 19 — 28
Jan. 24 — Feb. 2	Jul. 19 — 28
Feb. 22 — Mar. 3	Aug. 18 — 27
Mar. 23 — Apr. 1	Sept. 17 — 26
Apr. 22 — May 1	Oct. 17 — 26
May 21 — 30	Nov. 16 — 25
	Dec. 15 — 24

NSF | NOIR Lab | IDA | INTERNATIONAL DARK SKY ASSOCIATION | AURA

[For more info and how to participate, click here.](http://www.globeatnight.org)

# April 2022 Sky Chart



## Planet Positions

Click on the graphic above to go to Time and Date for a great simulation of the rotation of the constellations and the rising/setting of the planets. The chart below is set for April 7th but can be programmed for any date and time. The chart can also be found at [this link on Heavens Above](#).

	Mercury	Venus	Mars	Jupiter	Saturn	Uranus	Neptune	Pluto
Right ascension	1 <sup>h</sup> 24 <sup>m</sup> 9.3 <sup>s</sup>	22 <sup>h</sup> 15 <sup>m</sup> 10.4 <sup>s</sup>	21 <sup>h</sup> 47 <sup>m</sup> 16.3 <sup>s</sup>	23 <sup>h</sup> 34 <sup>m</sup> 14.9 <sup>s</sup>	21 <sup>h</sup> 40 <sup>m</sup> 1.3 <sup>s</sup>	2 <sup>h</sup> 42 <sup>m</sup> 24.4 <sup>s</sup>	23 <sup>h</sup> 37 <sup>m</sup> 56.2 <sup>s</sup>	20 <sup>h</sup> 2 <sup>m</sup> 45.7 <sup>s</sup>
Declination	8° 32' 24"	-10° 33' 4"	-14° 42' 52"	-3° 53' 34"	-14° 58' 37"	15° 22' 16"	-3° 36' 46"	-22° 23' 39"
Range (AU)	1.304	0.821	1.765	5.864	10.436	20.609	30.830	34.669
Elongation from Sun	5.1°	45.6°	53.5°	25.0°	55.2°	25.4°	24.0°	79.4°
Brightness	-1.7	-4.1	1.0	-1.9	0.9	5.9	8.0	14.4
Equatorial Diameter	5.16"	20.33"	5.31"	33.62"	15.93"	3.42"	2.22"	0.09"
Phase Angle	16.2°	80.4°	34.5°	4.9°	4.8°	1.2°	0.8°	1.6°
Constellation	Pisces	Aquarius	Capricornus	Aquarius	Capricornus	Aries	Aquarius	Sagittarius
Meridian transit	12:20	09:11	08:44	10:31	08:37	13:39	10:36	07:01
Rises	06:19	03:11	02:44	04:32	02:38	07:40	04:36	01:02
Sets	18:21	15:11	14:44	16:31	14:37	19:38	16:34	13:00
Altitude	30.5°	-16.1°	-22.5°	3.4°	-24.2°	48.0°	4.3°	-44.6°
Azimuth	279.9°	259.0°	254.0°	266.1°	253.5°	293.4°	266.4°	237.6°
Inferior Conjunction	2022-Jan-23 2022-May-21	2022-Jan-09 2023-Aug-13	-	-	-	-	-	-
Opposition	-	-	2020-Oct-13 2022-Dec-08	2021-Aug-20 2022-Sep-26	2021-Aug-02 2022-Aug-14	2021-Nov-04 2022-Nov-09	2021-Sep-14 2022-Sep-16	2021-Jul-17 2022-Jul-20
Superior Conjunction	2022-Apr-02 2022-Jul-16	2021-Mar-26 2022-Oct-22	2021-Oct-08 2023-Nov-18	2022-Mar-05 2023-Apr-11	2022-Feb-04 2023-Feb-16	2021-Apr-30 2022-May-05	2022-Mar-13 2023-Mar-15	2022-Jan-16 2023-Jan-18
Max. eastern elongation	2022-Jan-07 2022-Apr-29	2021-Oct-29 2023-Jun-04	-	-	-	-	-	-
Max. western elongation	2022-Feb-16 2022-Jun-16	2022-Mar-20 2023-Oct-23	-	-	-	-	-	-
Perihelion	2022-Jan-15 2022-Apr-13	2022-Jan-23 2022-Sep-04	2020-Aug-03 2022-Jun-21	2011-Mar-17 2023-Jan-20	2003-Jul-26 2032-Nov-28	1966-May-22 2050-Aug-17	1876-Aug-26 2042-Sep-03	1989-Sep-05 2237-Sep-15
Aphelion	2022-Feb-28 2022-May-27	2021-Oct-03 2022-May-15	2021-Jul-13 2023-May-30	2017-Feb-17 2028-Dec-28	2018-Apr-17 2047-Jul-15	2009-Feb-27 2092-Nov-23	1959-Jul-17 2125-Dec-01	1866-Jun-04 2114-Feb-19

# Discover the Night

## Discover the Night this April 22–30

It may seem harmless, but light pollution has far-reaching consequences that are detrimental to all living things.

Effective outdoor lighting reduces light pollution, leading to a better quality of life for all. The dark-sky movement is working to bring better lighting to communities around the world so that all life can thrive.

Held April 22–30, International Dark Sky Week 2022 is a week of nighttime events and opportunities to connect over our shared goal to protect the

night from light pollution. Whether you're an International Dark Sky Place, IDA chapter, delegate, supporter, or a casual follower, there are plenty of ways to get involved.

Join us this year for International Dark Sky Week to learn more about the movement, and *discover the night* where you live. Learn more and find an event near you at [idsw.darksky.org](https://idsw.darksky.org). ★



Travel the world virtually for  
International Dark Sky Week

### Globe at Night

April 22–May 1 · Everywhere

### Light Pollution & the Environment

April 25 · Virtual event (on Zoom)

### Cosmic Tribe Presents Exodus CL Sit

April 25 · Virtual event (Cosmic Tribe YouTube channel)

### Dark Sky Pakistan Network

April 26 · Virtual event (Cosmic Tribe YouTube channel)

### Astrophotography Basics

April 26 · Dr. Lawless International Dark Sky Park Michigan, U.S.

More events at [idsw.darksky.org](https://idsw.darksky.org)