



# The Eyepiece

SW FL Astronomical Society, Inc.  
3236 Forum Blvd #1160  
Fort Myers, FL 33905

## The Fishhead Nebula by Scott Cruzen Imaged in Narrowband SHO

## The Fishhead Nebula by Dick Cogswell Imaged in Narrowband HSO



**Editor - Mike Jensen**

Hi Everyone! Happy Holidays! We're winding up 2023 with a bang. Above on the masthead you'll see two amazing images of the Fishhead Nebula. But, wait! They look so different! Why? Well, this exemplifies what photography and astrophotography is all about. Astrophotography is a true art, and our astrophotographers are true artists, as you can see!

Both Scott Cruzen and Dick Cogswell imaged the same nebula, but they processed it differently by assigning different colors to the respective channels. Both were done in "narrowband" which means they

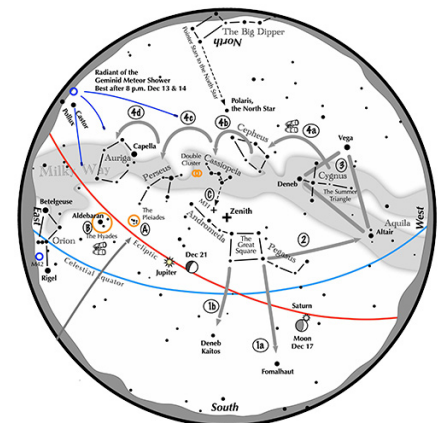
were imaged using filters which record the amount of Hydrogen, Sulphur, and Ionized Oxygen in an image, then in our post processing software, we can assign a different color to each channel (or filter).

Both Scott and Dick use different softwares. And I use a different one than that. In my article on page 10 I talk about some stumbling blocks I have had working through how to do this, and then a big breakthrough in the software I use in mapping the colors.

Also this month, you'll want to read about astrophotographer John Udart's rig. John's also one of our talented photographers.

In other news, we finished out the year executing our election in fine fashion. We were able to get a quorum and approval for a new budget as well as elected officers. This was SO MUCH less painful than prior years! Thanks to everyone!

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## Club Officers & Positions

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## Monthly Meetings

Our monthly meetings are held on the **first Thursday of each month.**  
**The meetings begin at 7:00pm.**

***Each meeting is usually a combined live and Zoom meeting.***

The in person meeting is held at:  
Calusa Nature Center/Planetarium  
3450 Ortiz Ave,  
Fort Myers, FL 33905

Each meeting will have the same  
Zoom link/meeting ID.

Below are the dates for the meet-  
ings of 2023:

Dec. 7, 2023 Annual Bus. Mtg  
Jan. 5, 2024  
Feb. 1, 2024

Link to join Zoom meeting:  
<https://widener.zoom.us/j/98623448643>

Meeting ID: 986 2344 8643

One tap mobile:  
+13052241968,,98623448643#  
US (or)  
+13126266799,,98623448643#  
US

## Port Charlotte/Punta Gorda Observing Dates

Night Sky Observing At Moore Obser-  
vatory & Solar Observing In PG & PC

Our Observatory Team opens up the  
Moore Observatory at FSW Charlotte  
Campus (26000 Airport Road, Punta  
Gorda) on the second Friday of each  
month. Observation sessions typically  
begin about 30-45 minutes after it is  
dark enough to see the stars and con-  
tinue 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 weather permitting.

Here is the schedule for 2023/24:

- Dec 8, 2023
- Jan 12, 2024
- Feb 9, 2024
- Mar 8, 2024
- Apr 12, 2024
- May 10, 2024

Our observing team also sets up solar  
telescopes on the 4th Saturday of the  
month (from 9am - Noon) to look  
at the Sun, looking for solar flares,  
prominences and other solar phenom-  
ena. All events are in Port Charlotte or  
Punta Gorda.

### Solar Observing/Park

Dec 23, 2023 Ponce deLeon  
Jan 27, 2024 Bayshore Live Oak  
Feb 24, 2024 Gilchrist  
Mar 23, 2024 Ponce deLeon  
Apr 27, 2024 Bayshore Live Oak  
May 25, 2024 Gilchrist

## President's Report

Brian Risley - President

I would like to thank all of you who voted on the budget and elections. We met the quorum level and all were approved. The new bylaw changes and budget approval will make future meetings go faster as the regular expenses will no longer need individual approval during the year. I want to thank Mike Jensen for setting up the voting on the website and John MacLean for reaching out and getting you to vote.

The Seahawk Park Star Party on the night of the 11th looked good at first, but clouds followed me there and we ended up cancelling. I do thank those who did come out.

We have additional Seahawk Park Star Party scheduled for December 16th. I am going to be out of town, so I am looking for someone to coordinate it.

The tentative schedule for the Big Cypress Astronomy nights is: 12/9/23, 1/13/24, 2/10/24, 3/9/24. They also have a Swamp Heritage Festival on 12/2/23 (10am – 3pm) that I am planning on going to. I want to thank those that have provided me photos to include on a new club display to replace the one that has been around longer than I have been president.

Other upcoming events: STEMtastic is at Centennial Park/Caloosa Sound on Feb 10th, 2024.

Cape Coral Parks and Rec Rotary Park Star Party is Friday March 8th, 2024. (This follows the Burrowing Owl Festival there on Saturday Feb 24th 2024, so we can really publicize it.)

Our speaker this month is Dr. Olivia Harper Wilkins, Astrochemist at the NASA Goddard Space Flight Center. Dr. Wilkins is visiting the Fort Myers area and will present in person at the planetarium on December 7th. Her talk is entitled "Exploring the Invisible Chemical Universe with Radio Astronomy".

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## GUEST SPEAKER PRESENTATIONS SERIES

We are excited to announce the initiation of the new "SWFAS Guest Speaker Presentations" series of talks. These will cover astronomical science and space exploration along with practical astronomy and astrophotography talks by various subject matter experts. We are lining up prominent scientists and researchers to explain the science and technology behind the exciting discoveries being made in recent years in astronomy.

The following presentations are already scheduled and we will be firming up talks in 2023 on a month-to-month basis.:

Dec. 7, 2023

Dr. Olivia Wilkins -  
**Exploring the Invisible Chemical Universe  
With Radio Astronomy**

NASA Postdoctoral Program Fellow, NASA  
Goddard Space Flight Center.

Jan. 4, 2024

Dr. Mario Motta, Club Member speaking on  
**The Life and Legacy of Russell Porter and the  
early Stellafane years.**

Feb 1, 2024

Joe Dermody - Eclipses

## Dec. 7, 2023



**Dr. Olivia Wilkins, NASA  
Postdoctoral Program Fellow,  
Goddard Space Flight Center  
"Exploring the Invisible  
Chemical Universe with  
Radio Astronomy.  
Presented In Person at the  
Planetarium!  
Dec 7, 2023**

## Upcoming Speakers

### The Life and Legacy of Russell Porter and the early days of Stellafane

Presented by Dr. Mario Motta  
January 4, 2024



2023 marked 100 years since the first gathering of the Springfield Telescope Makers in 1923, on Breezy Hill in Springfield Vermont. The prime mover of the founding of Stellafane was Russell Porter, who was a unique individual with an amazing career ranging from arctic explorer, architect, artist, and engineer on the Mount Palomar 200 Inch Hale telescope. What we remember him fondly for however is his leading role in fostering amateur astronomy and telescope making. Prior to his efforts, if an amateur astronomer wanted a telescope, the choices were to buy a very expensive scope from the Clark or Brashear companies, or import one from England. Thus, only very wealthy individuals such as a Percival Lowell could become amateur astronomers. Porter self-taught himself how to grind and polish telescope mirrors for personal use, and then taught others how to accomplish this. This group eventually became the Springfield Telescope Makers. Being based in Springfield Vermont, it helped that the town had a workforce that excelled in precision gear and mechanical construction aiding in telescope making. This eventually attracted the attention of Ingalls, an editor from Scientific American (SA), who wrote a seminal article in 1925 in SA, that led to a world-wide interest in telescope making. His talk will describe the early Stellafane years, and the amazing career of Russell Porter.

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### Experiences Viewing Eight Solar Eclipses

Presented by Joe Dermody  
Feb. 1, 2024



Joe Dermody divides the year between his home state of Michigan and Florida. His education ranged widely from international broadcasting to physics and mathematics. The high point of Joe's career was building custom hybrid microelectronic circuits by hand under a stereomicroscope in a clean room. A few of those one of a kind circuits continue to orbit the Earth in military communications and surveillance satellites. For the past two years, Joe has been a NASA "Solar System Ambassador" in their volunteer educational outreach program co-sponsored by the Jet Propulsion Laboratory and the California Institute of Technology. An avid amateur astronomer for more than 60 years, Joe has experienced eight total solar eclipses and will share stories and advice based on those unforgettable events.

## 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>

### RASC 2024 Observer's handbooks & Calendars

The Astronomical League announced in late September that the USA Version of the RASC (Royal Astronomical Society of Canada) 2024 Observer's Handbooks and Calendars are available for PRE-ORDER on the League Sales web store at <https://store.astroleague.org/>  
[https://store.astroleague.org/index.php?main\\_page=index&cPath=12](https://store.astroleague.org/index.php?main_page=index&cPath=12)

The Astronomical League sells these items each fall at a fantastic price with their members in mind. Stock will arrive in typically in November and typically ship in December in time for Christmas.

The League suggests ordering early to ensure availability, as stock will be limited once the order comes in. Clubs may place group orders with versions of the RASC Calendar for 6+ units and for the RASC Handbook for 10+ units, both on the League Sales web store. Free shipping and discounted prices apply.

### Reflector Magazine

The latest September 2023 copy of the Reflector magazine was emailed on August 22. It is also available via the web at <https://www.astroleague.org/reflector>



### Monthly highlight of the Astronomical League Observing Programs

(Article prepared by SWFAS Astronomical League Coordinator John MacLean)

### Bright Nebula Observing Program

Bright nebulae include three classes: Reflection nebulae (R), Emission nebulae (E) and Supernova Remnants (SNR.) Some objects are a combination of both E and R types.

Emission nebulae are clouds of dust and glowing hydrogen gas where atoms in the cloud are ionized by nearby hot stars. When the excited electrons fall back to their previous energy states, visible light is emitted. Narrow band nebula filters are frequently very useful. A good example of an Emission nebula is M42, the Orion Nebula.

Reflection nebulae have the same composition but lack stars hot enough to fluoresce the stellar atmospheres. They shine by the dust in the nebula scattering starlight. Because these objects scatter light of all colors, filters are not generally helpful. An example of a Reflection nebula is M78 in Orion.

A Supernova Remnant is the remains of a catastrophic stellar explosion wherein much of a star's mass is ejected, often as a highly structured cloud or shell. These objects have strong emission lines and hence may benefit from the use of nebula filters. A good example is M1, the Crab Nebula.

150 objects covering both the northern and southern hemispheres are included on the Astronomical League's listing and the program offers three levels of accomplishment:

- The Basic level certificate requires successful

observations of any 60 objects on the list.

- The Advanced level certificate is awarded for the attempted observation of 100 objects. At least 95 objects must be successfully observed. However up to 5 “negative” observations may be accepted provided that sufficient evidence is submitted to establish that the proper field was observed on at least two separate attempts.

- The Imaging level certificate is awarded for the successful imaging of 100 objects.

The Astronomical League recommends the following publication for reading and learning more about nebulae: Coe, Steven R, *Nebulae and How to Observe Them*, Springer-Verlag, 2007

Information provided on each deep-sky object includes: Catalog Number, Right Ascension, Declination, Magnitude, Messier Designation (if any), Type of Object, Size, Constellation, and what chart it is located on in both the Uranometria or Sky Atlas 2000. The second list includes 12 Double Stars and the variable star Algol. Observations and magnitude estimates of Algol are required both at a minimum and any non-minimum night. The recommended minimum size scope aperture is 6 inches. Scopes between 6 and 10 inches aperture were used to validate the lists.

Included on the website for this program is a useful and detailed set of Tips for Observing in a Light Polluted area. This covers optimum times (following store closures, etc.), sky and weather conditions, tips for shielding stray light, filters, and so forth. Setting circles are permitted although star-hopping with finders and Telrads is the preferred method for locating objects.

## ***Saturn’s Rings Will Temporarily Disappear From View in 2025***

***From Earth’s perspective, we’ll be looking at the gas giant’s rings edge-on, making them nearly impossible to see***

By Carlyn Kranking

The popular conception of Saturn is virtually inseparable from its majestic rings. But in a little over a year, skywatchers won’t be able to see these iconic structures: In 2025, Saturn’s rings will be invisible from Earth for several months.

Fortunately, this isn’t a sign of a planetary apocalypse. Rather, it’s a matter of simple physics.

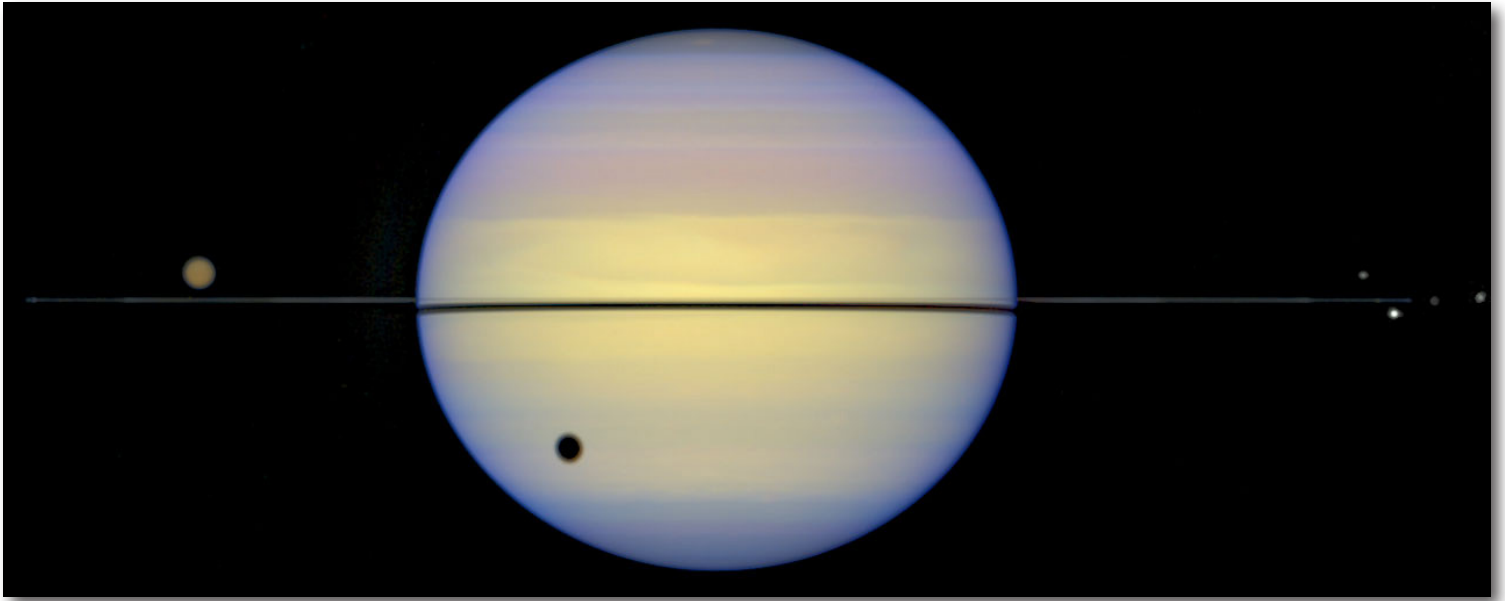
“While it’s true the rings will become almost invisible from Earth in 2025, this is neither a surprise nor reason to panic,” Jonti Horner, an astrophysicist at the University of Southern Queensland in Australia, writes in the Conversation.

### ***Why won’t Saturn’s rings be visible?***

In reality, it all has to do with planetary alignment. Saturn’s rings are so thin that they seemingly vanish when viewed edge-on. And as Earth and Saturn travel around the sun on their respective orbital paths, our planet reaches this particular vantage point like clockwork, roughly every 13 to 16 years.

As Saturn completes its orbit over approximately 29.4 Earth years, it leans at an angle of 26.7 degrees. This means that our view of Saturn toggles between the upper side of its rings when it’s tilted toward us and the lower side when it’s tilted away. We get the special, ringless view of the planet when Earth transitions between each of these perspectives and passes through Saturn’s “ring plane,” essentially, any area of space that’s in line with the edge of its rings.

From that angle, “they reflect very little light and are very difficult to see, making them essentially invisible,” Vahe Perroomian, a physicist and astronomer at the University of Southern California, tells CBS News’ Caitlin O’Kane.



In May 1995, Earth crossed through Saturn's ring plane, and the Hubble Space Telescope captured an image of the gas giant with its rings looking paper-thin. Then, the phenomenon happened again in 2009. This time, the rings will disappear from sight in March 2025. "They'll gradually come back into view as seen through large telescopes, before sliding out of view again in November 2025," writes Horner. "Thereafter, the rings will gradually get more and more obvious."

### ***Opportunities for science***

Getting this rare view of Saturn is a special chance for researchers to learn more about the planet. Astronomers discovered at least 13 moons of Saturn during ring plane crossings in history, including the well-known Titan, Enceladus and Mimas, the "death star" moon. (Now, the planet is known to have 146 moons, the most in the solar system.)

In 1966, scientists spotted Saturn's E ring for the first time during one of these events. This diffuse ring is the outermost of the planet's seven—named alphabetically in the order they were discovered—and it can only be seen at ring plane crossings.

With the upcoming crossing in 2025, however, conditions will be less than favorable for observing the planet. Just as it was in 2009, Saturn will appear, from our perspective, very close to the sun in the sky, largely obscured by the light of the star.

For a truly clear view of Saturn "without" its signature rings, skywatchers and scientists will have to wait until 2038 and 2039, which will have three ring plane crossings.

And for the best view of the planet alongside its most iconic feature, observers can look up in 2032, when Saturn will be tilted 27 degrees away from us, displaying the lower side of its rings at peak visibility.

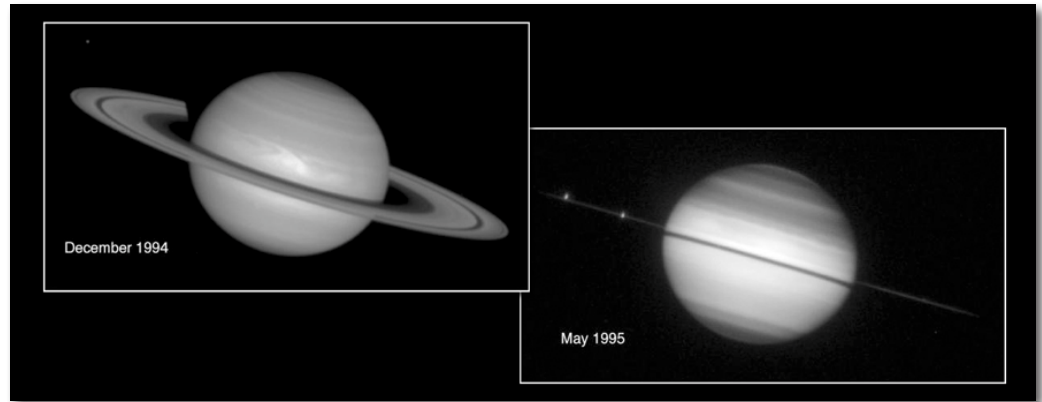
Saturn's real disappearing act

Even though we briefly won't be able to see them, Saturn's rings aren't going anywhere in the immediate future. But on a greater, cosmic timescale, the planet's bands of ice and rock might really be on their way out, according to recent studies.

In May, researchers examining old data collected by the Cassini space probe suggested that Saturn's rings are much younger than thought—they might have materialized in just the last 400 million years. Compared to the 4.5-billion-year history of Saturn, that makes the rings quite new.

But despite their young age, the rings might be more than halfway through their existence—the researchers suggested these structures could be gone in another 15 million to 400 million years.

The driving force of Saturn's ring loss is a phenomenon known as "ring rain." Astronomers first coined this term in the 1980s, but then, for decades, it was largely forgotten. The idea—that suggests bits of the rings are falling into the planet—began to gain traction again in 2013.



This year, researchers suggested that meteoroids play a role in causing this "rain," bombarding the objects orbiting Saturn and eventually sending them down into the planet, where they become snared by its gravity.

Scientists calculated the rings are losing between 952 and 6,327 pounds of water per second—or roughly enough to fill an Olympic-size swimming pool every 30 minutes.

Though we often think of Saturn as the "ringed planet," it is really one of four in our solar system with a celestial halo—Jupiter, Uranus and Neptune are also encircled. But knowing how Saturn's rings are withering away, scientists have suggested that these other planets' rings, which are currently darker and less pronounced, may have one day been as splendid as Saturn's, before the forces of "ring rain" wore them down.

Yes, Saturn's rings will likely be gone in the distant future, but the way many astronomers see it, humans experienced a real stroke of cosmic luck to have evolved during the ephemeral period where we can marvel at them. Even if they disappear from sight every once in a while.

## ***How to observe Jupiter's belts and zones***

A guide to identifying the different regions of Jupiter's stormy atmosphere.

By Pete Lawrence

Taking the time to observe Jupiter's belts and zones is a great way of exploring the planet's stormy atmosphere. As many of us know from our own observations or from images captured by observatories like NASA's Juno spacecraft or the Hubble Space Telescope, Jupiter is a gas giant with a thick, detailed and banded atmosphere. Any textbook typically shows a diagram identifying which bands are which.

However, the view through the eyepiece doesn't always match what you'd expect.

In this guide, we'll show you how to observe Jupiter's belts and zones and pick out as many as you can.

For more advice, read our guide on how to observe Jupiter through a telescope and how to photograph Jupiter.

### ***Identifying Jupiter's belts and zones***

Why doesn't Jupiter's atmosphere always resemble how it's depicted in books?

Well, being a dynamic entity, the visibility of the belts and zones can vary.

Turbulence can create conditions where they become indistinct from one another and sometimes disappear completely.

As a result, it's best to use any diagram as a guide, first identifying the main features and then using these to navigate to the less obvious regions.

### ***Jupiter's equatorial belts and zones***

The best place to start is with the North and South Equatorial Belts (NEB and SEB). These are wide, dark belts



easily seen through a small telescope. They encircle Jupiter's globe parallel to its equator. Between them lies the lighter Equatorial Zone (EZ) often filled with swirling atmospheric detail. At certain times this may show a thin, dark belt running midway between the NEB and SEB: the Equatorial Belt (EB). Although at first glance the NEB and SEB look similar, the SEB is split in two by the SEB Zone (SEBZ), the north and south components identified as the SEB(N) and SEB(S).

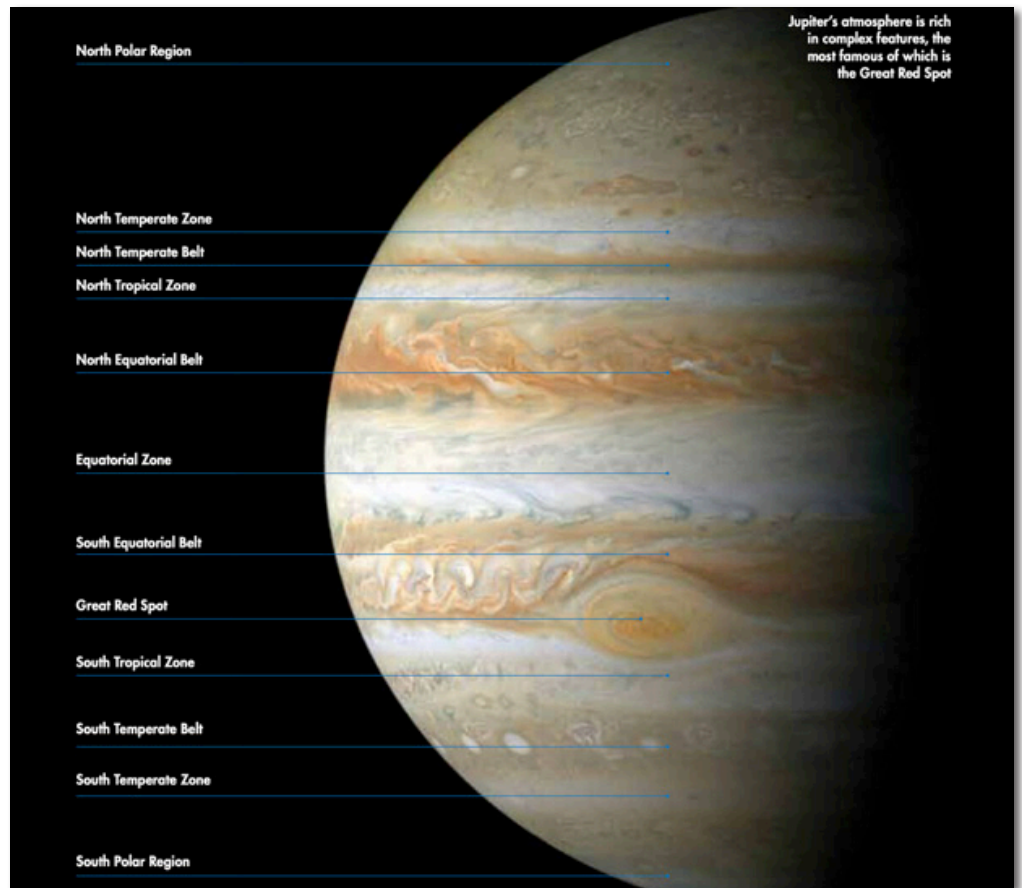
The Great Red Spot (GRS) is embedded in the SEB(S) in a scalloped region called the Great Red Spot Hollow.

Jupiter's tropical zones

Near Jupiter's poles are the dark North and South Polar Regions (NPR and SPR) and it's between a polar region and its nearest equatorial belt that the fun begins. The belts and zones found here can be indistinct and somewhat confusing to identify. North of Jupiter's North Equatorial Belt and south of the South Equatorial Belt are two tropical zones: North Tropical Zone (NTrZ) and South Tropical Zone (STrZ). Then come the temperate belts (TB) and zones (TZ), prefixed by hemisphere identifiers. For example, North Temperate Belt (NTB), North Temperate Zone (NTZ), North North Temperate Belt (NNTB), North North Temperate Zone (NNTZ), and so on. The northern sequence ends with the North North North Temperate Belt and Zone, often labelled N3TB and N3TZ.

The southern hemisphere's sequence ends with the SSTB and SSTZ.

See how many belts and zones you can identify, bearing in mind they may not be distinct and some may not be visible at all.



## ABOUT THE ASTRO 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.*

## IMAGING TRIPS TO BIG CYPRESS

Big Cypress National Park is about a 75 minute drive from Ft. Myers and it is probably one of the darkest areas in the state of Florida. We have a great place to set up and frequently meet astrophotographers and observers from other parts of the state.

The best way to stay tuned in to our impromptu field trips is to get on our Astro SIG Google Groups email list. [Contact Mike Jensen.](#)

## Astro Sig Schedule 2023/24

All Meetings at 6:30pm

December 19th  
January 16th

## *The Astrophotography SIG*

Our Astro SIG group is really growing in strength. From a meeting perspective, we are small, but our email list is about 40 and of those about 10 consistently contribute images for use on our website and in the newsletter. I truly believe that some of our images are unequalled in quality.

Many of our group are out imaging almost every possible night and reporting the results on our email group.

I am especially proud at the way our group shares lessons learned and methods taken to get the best out of their gear and the best images. Please see our images beginning on the next page.

### ASTRO SIG MEETING ZOOM LINK

<https://us02web.zoom.us/j/81077794455?pwd=eGpxalRET1BPckdEcmt-JQ290WU5jdz09>

Meeting ID: 810 7779 4455  
Passcode: Phot@SIG23

## *The Value of the Astro SIG*

By Mike Jensen

When I talk to people about the Astro SIG group I usually tell them that I founded it out of a selfish desire surround myself with astrophotographers so I could learn more from them. BUT, I also formed it so we could help each other and I think it's working.



## Case In Point - It Takes A Village, The Saga of the processing of the North American Nebula, Ugh!

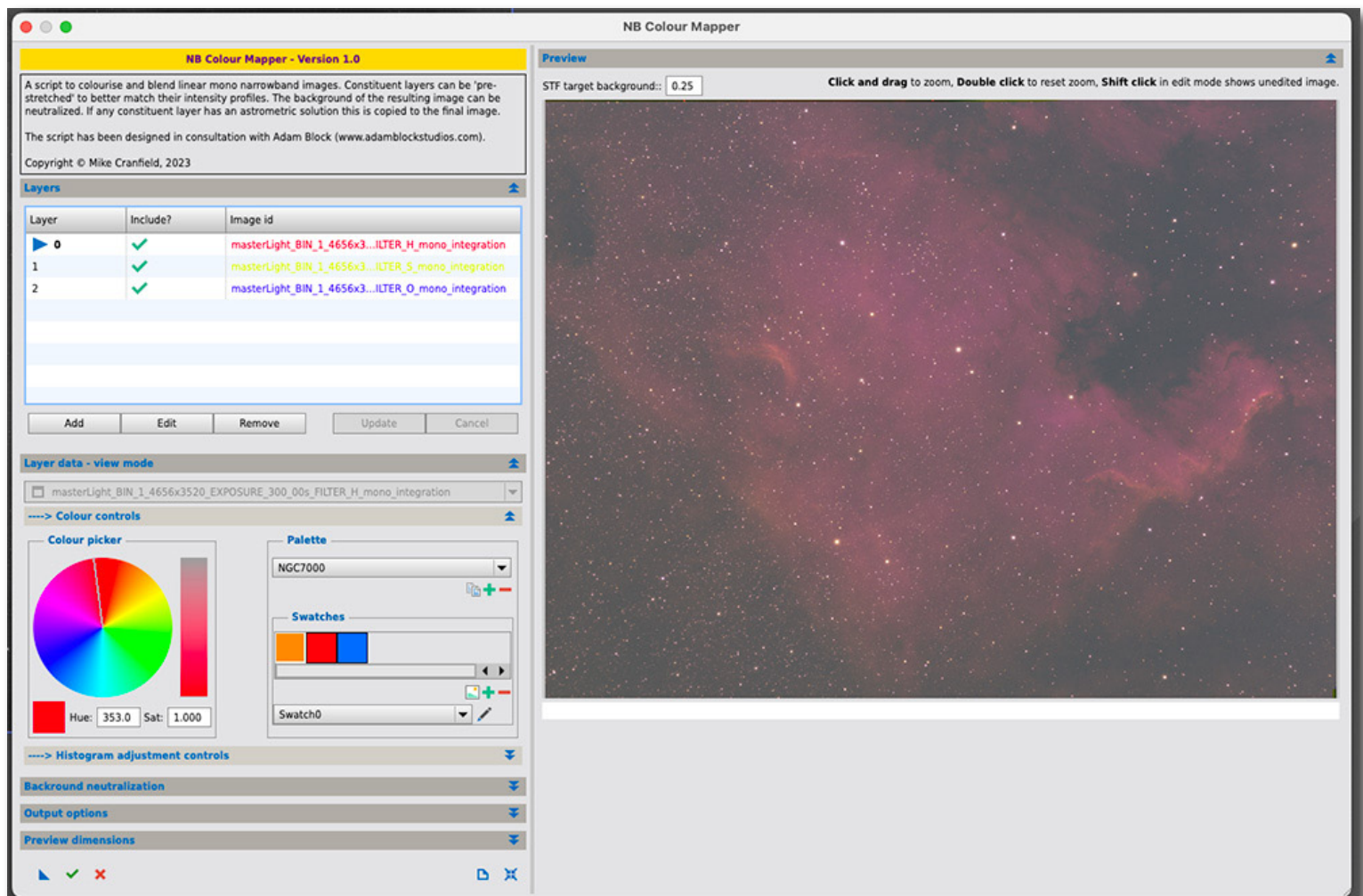
In October, I switched my imaging gear from my Explore Scientific 127 telescope to a more wide field telescope (WO 61) so as to get a bigger and wider view of the night sky. When I do this I usually do a few test runs to make sure everything is working right. When I did this in October I pulled up my sky app, Stellarium and it told me the North American Nebula, NGC 7000 was right over my house. I went through my normal imaging process of getting alignment with the NCP (northern celestial point, Polaris) and then I pick a few random targets and shoot them for

a night or two. This time I chose the North American Nebula, which was right overhead in my back yard. I also wanted to test my system's ability to auto move from target to target (in the middle of the night when I'm asleep), so I chose another target also, once the nebula had set over the top of my house.

I spent two nights collecting both RGB and Narrowband data. Then, life happened and I got busy for a couple of weeks, so it was early November before I found time to process it. I really just wanted to see if there was any fun data there, so I just jamed it through my stacker in PixInsight to take a look. Now, I've been "trying" to learn and become proficient in PixInsight for a year now, absent about 5 months of clouds this Summer. Honestly, I wasn't very good, but I was able to get an image out, and actually a couple of good ones, but I had no confidence in what I was doing.

So, when I plugged the Ha, S, and Oiii channels in to the color blending tool (Color Combination) in PI (PixInsight) I was NOT pleased with the results, but I kept going. I sent my friend John Udart an email and told him I needed help. I'd done this last year with my friend Linwood Ferguson and he was very helpful. I knew John was newer on his path to learning so I wanted his take on things. In the mean time, we had our November Astro SIG meeting and I mentioned that I was feeling a bit frustrated because I'd gone through all the steps to get the image data and I was still having issues despite using some paid tutorial services, and watching a ton of YouTube videos. At that point the SIG members stepped up and said "Let's take a look at it, send us the data, it might be a fun project!" So I put the data out on my Google Drive and the SIG members started working with it. Questions came in, I responded and more work happened. Then, so did Thanksgiving, but not after a handful of SIG members delivered some pretty nice images from my data. So I knew the data wasn't bad.

When I returned from Thanksgiving, I shot John a note and asked to get together. John wanted to make



sure that I was getting through the full process of PI by making sure I was checking the data before I processed it. So we did a walkthrough of the ASI Studio FITS Viewer and the PI Subframe Selector tools (see, you probably didn't know how involved processing an astro image was, did you?). After that John wanted to show me some new tools he'd found in his research for my issue as well as in the thirst of knowledge. These new tools were gamechangers, not only for me, but since they were new, all of the astro field. One tool allowed for three channels of narrowband data to be assigned a specific Hue and Saturation Level, and the other tool helped change approaches based on how you had assigned the color to your channels. The Narrowband Colour Mapper tool was HUGE, and really opens up a new approach to color mapping NB images!

One other tool John showed me that REALLY helped in a big way. The Generalized Hyperbolic Stretch Tool (I know! Where do these names come from?) Compared to previous ways I'd been stretching the histogram of an image, this was easy peasy! Stretching an image is the process of expanding the histogram so it is "stretched" from one end to the other, from dark to light so all the photon data can be viewed.

So, the day after I meet with John, I sat down at my desk and started from square one to completely re-process the image with my new knowledge & presto! The image below! So, the moral of the story here is that the Astro SIG is not just a group of guys interested in photographing the night sky. It's a networking and support group! No matter what skill level you're at, we are there to help you. We currently have about 45 members on the email list, but only about a dozen attend our meetings religiously and participate. So, about 25% of you SIG members are REALLY getting the full benefit of this wonderful group. I can't tell you how grateful I am.



## Astrophotographer's Rig of the Month

Greetings Astrophotographers!

This month we start a new feature we're calling the Astrophotographer's Rig of the Month. It was an idea that John Udart came up with and I asked him to do the first piece. The key here is to highlight our group of amazing astrophotographers. To do that, we need participants. There's no constraints on how to do the article, or present your rig. Please contact [Mike Jensen](#) if you'd like to do an article.

By John Udart

My current rig consists of a William Optics GT-71 Optical Tube Assembly (OTA) mounted to a William Optics 15.7" Losmandy-style dovetail plate. Together, they sit atop a Sky-Watcher EQ6-R Pro Equatorial GoTo Mount. The primary imaging device is the ZWO ASI533MC-Pro camera, paired with a 0.8x William Optics Flat 6A III reducer. This reduces the native focal length from 420mm to 336mm and adjusts the aperture from f/5.9 down to f/4.7.

Camera accessories include the Optolong L-Pro and Optolong L-eXtreme filters, offering both broadband and narrowband ranges depending on the specific astronomical target and prevailing conditions. The guiding system includes an Orion 60mm guide scope with an ASI 120mm guide camera, synchronized through PHD2 software for meticulous celestial tracking. For precise polar alignment, the QHY Polemaster Electronic Polar Alignment Scope is utilized.

Star focus is maintained throughout the imaging session by the ZWO EAF auto-focuser. Dual SVBony dew heater strips combat any atmospheric moisture from getting on the lenses during the humid Florida nights. All the data and most of the electrical components are streamlined through a single source, the Pegasus Astro Power-



box Advance Gen2, which is then cabled into an Acer Enduro N2 laptop for comprehensive equipment control using N.I.N.A. and other software programs.

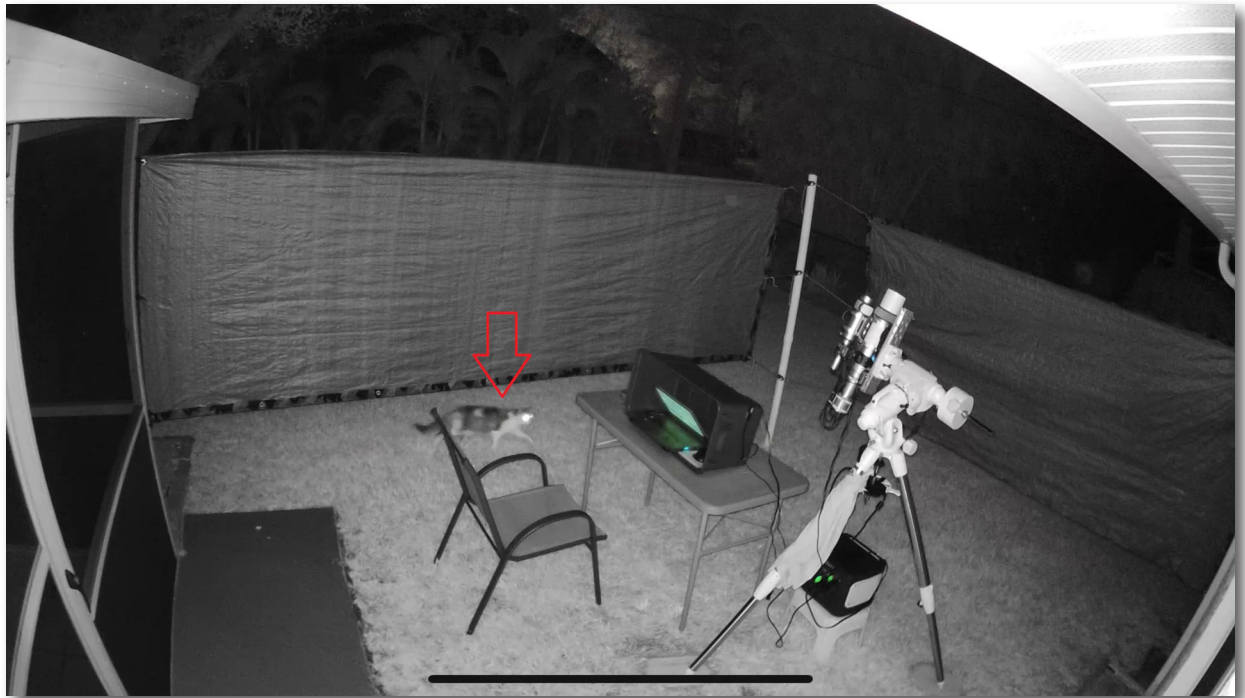


The power to make all this happen is credited to the Jackery Explorer Pro 1000 Portable Power Station. This pure sine wave inverter delivers the stability of 1002Wh, ensuring a full evening of uninterrupted power.

On a typical evening, once the outdoor tasks have been taken care of, I can monitor the progress from inside by using a VPN that connects the laptop to my desktop computer. This allows full access to the laptop with software control. A security camera keeps an eye on the mount and other four-legged creatures that tend to pass by throughout the night.

I've been very happy with the performance of this set up and have taken several incredible images this year. You can see more of my work on Astrobin.

<https://www.astrobin.com/users/JohnU/>



## *Astrophotography Images of the Month*



**IC1795 Fish Head Nebula, emission nebula in Cassiopeia processed SHO by Scott Cruzen**

Brand/Type of Telescope/Lens: AstroTech 130mm F7 EDT Triplet APO with 0.8X FR/FF

Mount: SkyWatcher EQ6-R Pro, ASIAir Plus

Exposures:

811 x 60sec SII

545 x 60sec Ha and OIII

ASI533MC Pro OSC, ZWO EAF

Processing Software: Siril/SiriLic, GIMP, DarkTable, Topaz



### **NGC7293-Helix nebula by Mario Motta**

Brand/Type of Telescope/Lens: 32 inch F6.5 (5600mm), home made

Mount: home made equatorial

Exposures:NB filters, (Ha, O3, S2) 5 minute subs, total 3 hours imaging, ZWO 6200 camera

Processing Software: PixInsight





Dick Cogswell NGC 896

## **The Fishhead Nebula NGC 896 by Dick Cogswell**

Brand/Type of Telescope/Lens: iStar 140 refractor, 910mm f/l

Mount: AP 1100

Exposures: 145 4-minute subs taken with Zwo 2600MM Pro mono camera in HSO

Processing Software: Processed with APP, Bx, DN and PS



## ARP 273 by Dick Cogswell

Brand/Type of Telescope/Lens: Celestron 11 Edge, 2800mm f/l

Mount: AP 1100

Exposures: 410 4-minute subs taken with Zwo 2600MM Pro mono camera in LRGB

Processing Software: Processed with APP, Bx, DN and PS



### **M33 Spiral Galaxy in Triangulum by Scott Cruzen**

Brand/Type of Telescope/Lens: AstroTech 130mm F7 EDT Triplet APO with 0.8XFR/FF

Mount: SkyWatcher EQ6-R Pro, ASIAir Plus

Exposures: 692 x 60sec subs

Optolong UV/IR Filter

ASI533MC Pro OSC Camera

Processing Software: SiriL/SiriLic, GIMP, DarkTable, Topaz



**Monkey Head (NGC 2174) by Linwood Ferguson`**

Brand/Type of Telescope/Lens: SVX152T 1200mm F8

Mount: AP1100AE

Exposures: Mostly SHO with RGB stars, 27.5 hours total

Processing Software: Pixinsight



## **The Medulla Nebula by Dick Cogswell**

Brand/Type of Telescope/Lens: iStar 1400 Phantom f/6.5

Mount: AP1100

Exposures: 658 4-minute exposures in Ha and SII

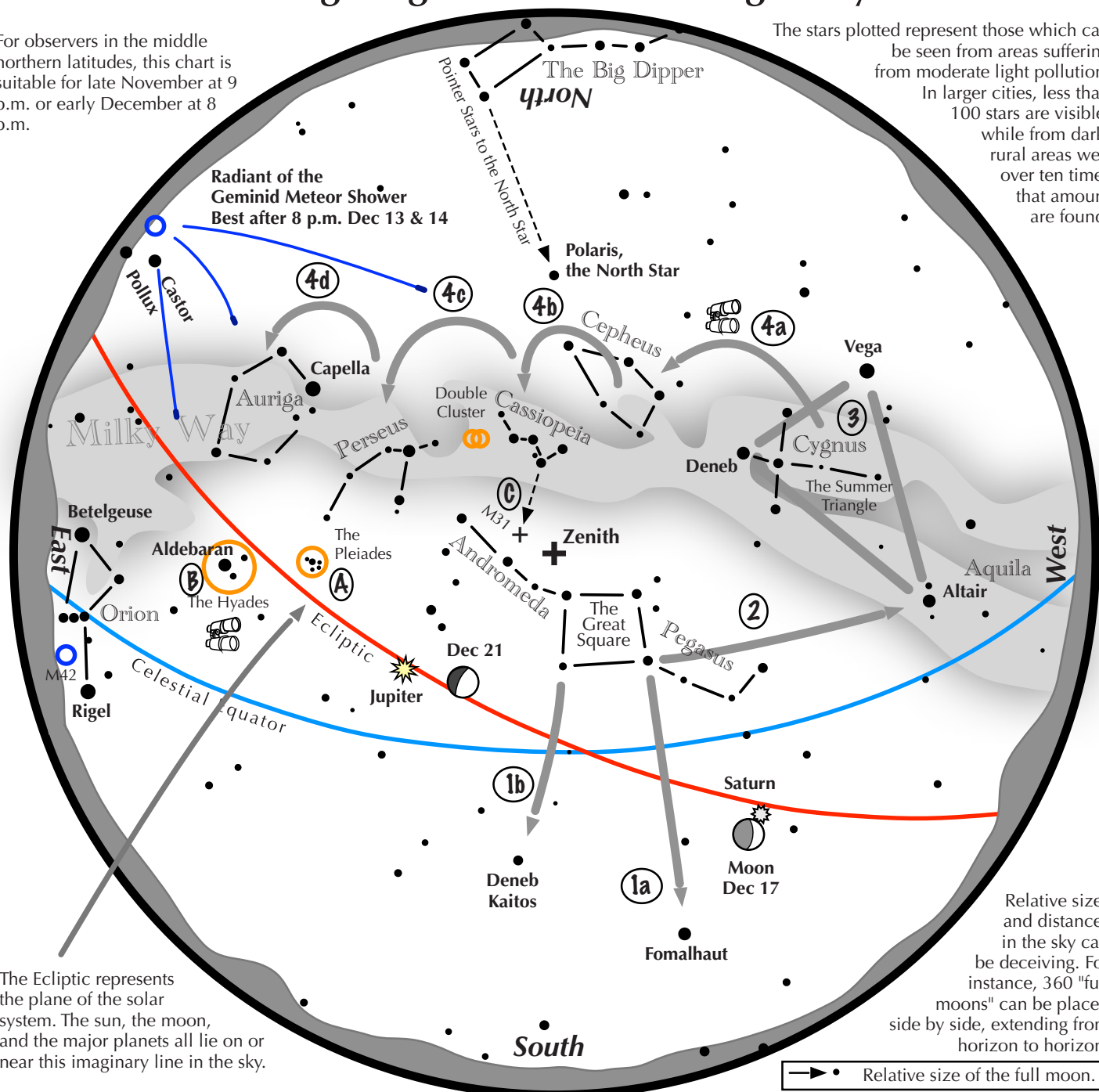
Processing Software: APP, Bx, DN, PS

# Sky Chart

## Navigating the December Night Sky

For observers in the middle northern latitudes, this chart is suitable for late November at 9 p.m. or early December at 8 p.m.

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



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

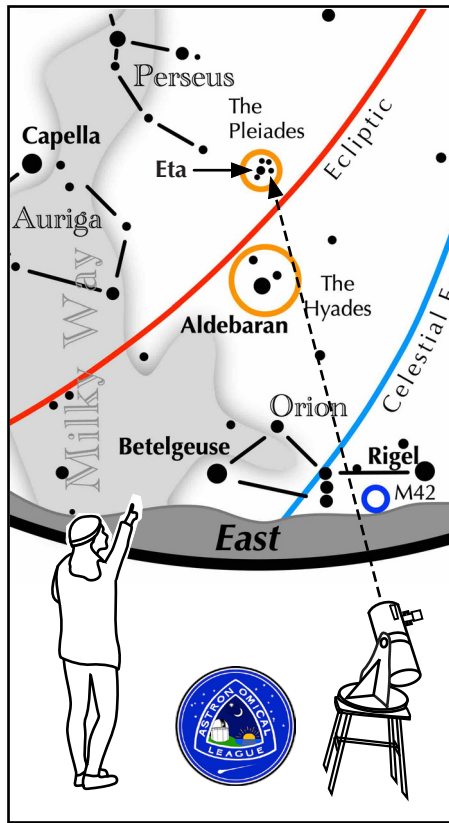
- 1 Face south. Almost overhead is the "Great Square" with four stars about the same brightness as those of the Big Dipper. Extend an imaginary line southward following the Square's two westernmost stars. The line strikes Fomalhaut, the brightest star in the southwest. A line extending southward from the two easternmost stars, passes Deneb Kaitos, the second bright star in the south.
- 2 Draw another line, this time westward following the southern edge of the Square. It strikes Altair, part of the "Summer Triangle."
- 3 Locate Vega and Deneb, the other two stars of the "Summer Triangle." Vega is its brightest member while Deneb sits in the middle of the Milky Way.
- 4 Jump along the Milky Way from Deneb to Cepheus, which resembles the outline of a house. Continue jumping to the "W" of Cassiopeia, to Perseus, and finally to Auriga with its bright star Capella.

#### Binocular Highlights

- A and B:** Examine the stars of the Pleiades and Hyades, two naked eye star clusters.
- C:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.
- D:** Sweep along the Milky Way from Altair, past Deneb, through Cepheus, Cassiopeia and Perseus, then to Auriga for many intriguing star clusters and nebulous areas.



## ASTRONOMICAL LEAGUE Double Star Activity



### Other Suns: Eta Tauri (Alcyone)

#### How to find Eta Tauri on a December evening

Face east. Look for the Pleiades star cluster. Eta Tauri is the cluster's brightest member. It is a quadruple star.

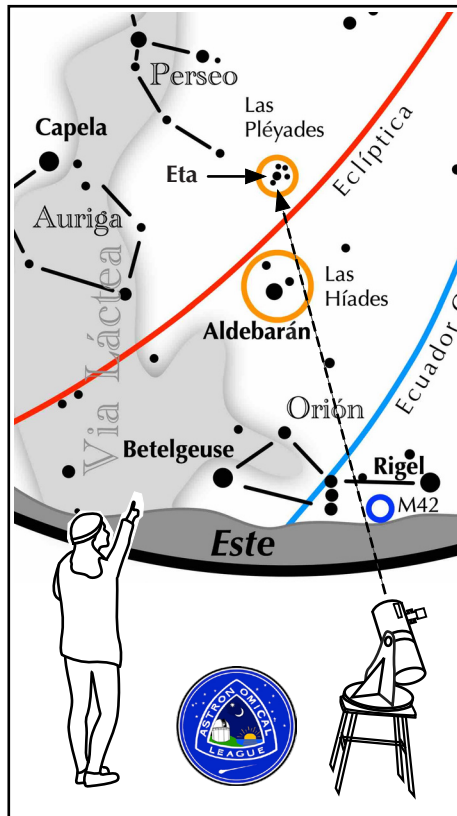
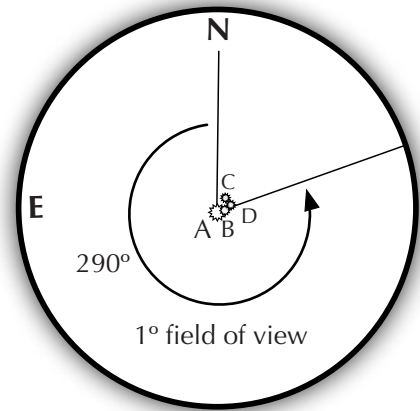
#### Eta Tauri

A-B separation: 118 sec  
 A magnitude: 2.8  
 B magnitude: 6.3  
 Position Angle: 290°

A-C separation: 182 sec  
 C magnitude: 8.2  
 Position Angle: 313°

A-D separation: 192 sec  
 D magnitude: 8.7  
 Position Angle: 296°

Suggested magnification: >20x  
 Suggested aperture: >3 inches



### Otros Soles: Eta Tauri (Alcyone)

#### Cómo encontrar a Eta Tauri en una tarde de Diciembre

Mira al Este. Busque el cúmulo de estrellas de las Pléyades. Eta Tauri es el miembro más brillante del grupo. Es una estrella cuádruple.

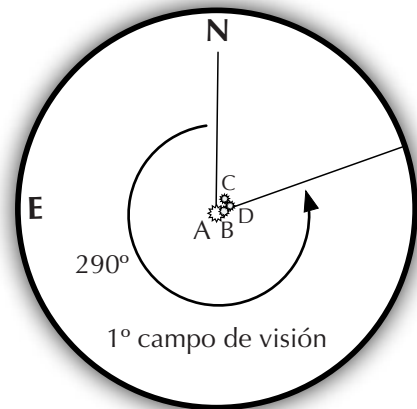
#### Eta Tauri

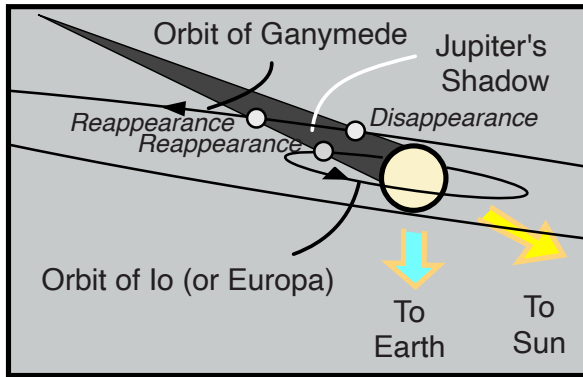
A-B separación: 118 sec  
 A magnitud: 2.8  
 B magnitud: 6.3  
 PA: 290°

A-C separación: 182 sec  
 C magnitud: 8.2  
 PA: 313°

A-D separación: 192 sec  
 D magnitud: 8.7  
 PA: 296°

Ampliación sugerida: >20x,  
 Apertura sugerida: >75 mm





**Galilean moon emergence**

(Elapsed time varies with moon)

Elapsed time: 30 sec.



Elapsed time: 2 min.



Elapsed time: 4 min.



**An "Oh! Wow!" moment through your telescope**

Imagine seeing a world emerge in the darkness, taking several minutes to fully appear. Such a body is Io, Europa, or Ganymede on multiple occasions this December.

Aim a telescope at Jupiter shining in the south a few minutes before the event is predicted to take place. Look away from the planet's bright disk, about one planet diameter from its eastern edge. At the designated time, a faint speck can be discerned. As the seconds pass, that speck grows brighter and brighter.

This is one of the large Galilean moons, slowly leaving Jupiter's shadow while orbiting the giant planet. December is a good month this year to witness an event like this in the evening sky, because Jupiter's shadow angles to the east of the planet, putting the emerging moon relatively far from the planet's glare. Each moon takes a different time to fully emerge, because of its diameter and of its orbital velocity around the planet.

Note: December 12 and 19 have Ganymede disappearing into the shadow and reappearing. December 21 and 28 have Io and Europa both disappearing near the same time.

Make sure that Jupiter is sufficiently above the horizon at your location and that the evening twilight has sufficiently darkened. Begin viewing a few minutes before the listed times.

**Event commencement: (all times CST)**

- Io Dec 5, 11:34 pm
- Io Dec 7, 6:04 pm
- Ganymede Dec 12, disappearance 5:41 pm, reappearance 7:48 pm
- Io Dec 13, 1:30 am
- Europa Dec 14, 6:24 pm
- Io Dec 14, 7:58 pm
- Ganymede Dec 19, disappearance 9:45 pm, reappearance 11:49 pm
- { Europa Dec 21, 9:03 pm
- { Io Dec 21, 9:53 pm
- { Europa Dec 28, 11:42 pm
- { Io Dec 28, 11:48 pm
- Io Dec 30, 6:18 pm

**Use a "high" magnification!**



## Meeting Minutes

### Southwest Florida Astronomical Society, Inc. member minutes November 2, 2023 Calusa Nature Center Planetarium and Zoom

Opening Remarks..... At 7 PM President Risley welcomed everyone and thanked Tom Klein for his assistance on the zoom computer equipment. Brian Risley than asked Program Chairman John MacLean to introduce tonight's guest speaker. John introduced Doctor Matthew Greenhouse, Project Scientist for the J. Webb ST NASA Goddard Space Flight Center.

The creation and operation of JWST.....Doctor Greenhouse presented a thorough creation of the J Webb telescope, the development team, the reasons for JWST and it's current mission. Telescopes are the most powerful tool for analyzing the universe. Looking back in time to see the first galaxies and prove the expansion of the universe. That JWST's infrared capability uniquely enables exploration of the birthplaces of the stars. How planetary systems form and evolve. Doctor Greenhouse described how most of the liquid water in the universe might not only be on earth. Extraterrestrial life can be revealed by spectroscopy of exoplanet atmospheres. He illustrated the manufacturing of JWST mirrors, launch site and concluded with a summary of the mission to date and beyond.

#### Society business happenings:

Member survey.....with only 14 replies, President Risley requested the membership to please complete the survey to assist the officers in future action steps.

Budget voting..... Treasurer MacLean reported that the budget is available for viewing and that a projected \$30 annual dues is included. Tom Klein asked that the dues be increased, but John and Brian stated that the officers had reviewed the survey and implemented the increase to \$30. John gave a detailed explanation.

Officer Elections.....Brian advised that elections will be held at the December meeting and that the new ByLaws call for the Vice President and the Secretary be elected for one year and that the President and Treasurer be elected for two years, thus staggering the terms. Voting can take place on line.

#### Review of past events:

Charlotte events..... reviewed by Tom Segur included the FSW Observatory in Punta Gorda on October 13th ( second Friday of the month) where 30 people were in attendance and the October 14th Annual Eclipse with 150 people in attendance. Weather was good and the solar view glasses were appreciated.

Lee events.....Brian Risley advised that the Seahawk party was held at Centennial Park on October 14th with 50 people in attendance. Brian further advised that the North Fort Myers Fall Festival took place on October 20th at the Lee County Parks and Recreation Center. There were around 1,000 people in attendance and plenty of candy was available.

#### Future Outreach events:

Charlotte events..... Tom Segur advised that the FSW Observatory will hold events on November 10th and December 8th. That on November 25th there will be a Solar Observing event at Gilchrist Park.

Lee Events.... Brian Risley stated that the Seahawk star parties will be held on November 11th and December 16th. That the STEMtastic downtown event will be held on February 10, 2024 at the Caloosa sound Convention Center. Brian also stated that the Cape Coral events of Burrowing Owl on February 24, 2024 and Rotary Park Star Party on March 8, 2024 will take place at Cape Coral Rotary Park.

Group Events..... Brian advised that the Big Cypress Swamp Heritage Festival would take place on December 2nd from 8AM until 3PM. Brian pointed out that the Big Cypress observing nights would be 12/9/23, 1/13/24, 2/10/24, and 3/9/24.

#### Officer and Committee Reports:

Vice President..... Mike Jensen asked that Astrophotographers submit photos to him for his Newsletter.

Secretary Report.... Dan Dannenhauer asked that the minutes be approved.....so moved by John MacLean and seconded by Mike Jensen.

Treasurer Report... John MacLean reported that detailed financial information can be found in the Newsletter and that the beginning balance was \$2,489.01 and ending balance of \$2,494.49

Program Committee Coordinator..... John MacLean advised that he has guest speakers listed through March of 2024.

All other committees had no report. At 8:45 PM, President Risley asked that the meeting be adjourned... so moved by Tom Klein and second by John MacLean.