SPACE

St. Petersburg Astronomy Club Examiner

May 2023 **Editor – Guy Earle**

The St. Petersburg Astronomy Club has been the center of family astronomy in the Tampa Bay Area since 1927. Our 401 adult members are dedicated to promoting and sharing the wonders and science of astronomy. We host a dark-sky star party each New Moon at Withlacoochee River Park, along with local star parties, telescope-making workshops, science lectures, astronomy lectures, educational outreach sessions and much more.

Inside this Issue:

Astronomy Image of the Month

NGC 4565, the Neddle Galaxy, PlaneWave CDk14, Astro-Physics 1600GT **by Howard Ritter**

June Preview

In next month's Examiner, the editor will be doing a review of the Dwarf 2 and his first impressions. We have at least a half-dozen SPAC members that have received these Dwarfs recently (straight from Middle Earth), so we're all on the learning curve. This will be my own initial impression.

Due to inclement weather and being unable to do the review, Mike Partain will be doing a review of a classic eyepiece, the **Edmund Optics RKE 28mm** Precision Eyepiece in next month's edition. With its super thin edge, the RKE provides bright, crisp images in a binoviewer or as a single monocular view.

May General Meeting

This month's general meeting is on Thursday, May 25th at **7:30 PM**. The meeting will be ***in person*** at St. Petersburg College, Gibbs Campus, 6405 5th Avenue North, Natural Science Building, Classroom 236, 2nd floor, and **also virtual**. This month's presentation is **Eclipse Double Header** by SPAC member Greg Shanos

To attend virtually with **Zoom,**
join from your computer, tablet or smartphone by clicking here.
You can also dial in using your phone.
United States: +1 (301) 715-8592
Meeting ID: 993-399-331
Passcode: 999123

The club's **New Moon observing weekend** will by May 19th-21st at Withlacoochee River Park east of Dade City.

New SPAC Members

We would like to welcome Guy Brandenburg, Mike Reese, and Rudy Diaz to our family of members.

Examiner Staff

Editor	Guy Earle	813 785-1972
Space News	Steve Robbins	386 736-9123
Field Reporter	Kelly Anderson	813 672-2751
Mirror Lab	Ralph Craig	727 384-2086

A Dobsonian Restoration

Guy Earle

Last month we heard from the sister of a long-time SPAC member, David Rodda, who was looking to donate her brother's telescopes to the club. David can no longer use his collection of scopes, one of which is a classic Celestron C8 SCT (the old, original orange tube version) that will be given away at our 2024 OBS star party, and another that is a home-built 10" Dobsonian. David spent many hours going to our club's Mirror Lab in the mid-90's, grinding his own mirror and building his telescope according to the classic Dobsonian design. The design is still popular as visual "light buckets" as the majority of the intrinsic value of the telescope is put into the largest mirror possible. They tended to always be non-motor driven but used a series of Formica and Teflon for easy movement. It's more common to find them with motor systems now or using them on equatorial platforms so they track, like I have done with my own 16" Dobsonian. Below is a photo from our 2004 OBS star party, back at the old Hickory Hill observing site in Brooksville. Ironically, when talking to Ron Jones of the Mirror Lab (bearded blue jean extrordinaire with the white and blue scope near center-left), he pointed out David in the photo. It was ironic since I myself had taken the photo of the Mirror Lab group, which included David (second from left) and the telescope I now had in my garage.

One thing I noticed right away, once I started to examine it in detail, was that David used ebony star Formica on the altitude bearings and ground board. Back in the day, ebony star was the best Formica you could use to build a scope, which gave you the best "sticktion," that perfectly

smooth motion both in altitude and azimuth. The Formica was rough, but still usable, but not nearly as rough as the woodwork used to build the cradle around the tube and the rocker box it sat in.

I was hit with nostalgia, as there were many things about this scope that rang familiar. Back in 1996 I had built a 12.5" f/6 Dobsonian that looked very, very similar to David's scope. The build of the scope is a standard construction originated years before by amateur telescope maker John Dobson, for whom the scope's design was named. The 1.83" secondary mirror holder is from Novak, and the primary is a University Optics cell, both of which I had used in my 12.5" scope. I had sold that telescope back in 2006 in order to purchase the 16" Dob that I still use.

The tube, I quickly realized, was not salvagable. David had coated the tube with Monokote, a clear plastic used for RC planes. When new, it probably looked pretty slick and kept the water off better than any polyeurethane coating, but the last 25 years had not been kind. It was cracked and split everywhere, so there was no saving it. The focuser was some version of a Celestron, I think, based off the coloring, but was constructed mostly of plastic and not usable. While the ebony star Formica and the old hardware were useable, the woodwork was not looking good. If I was to do this, I'd have to go all in.

My eyes rested on another scope in my garage, a 1959 Cave Astrola that I had restored back in 2019; it too was a 10" mirror with a focal ratio of 7.1; David's is a 7.7 so they were nearly identical. I tried to clean David's primary mirror, but the coatings were so shot there was no chance of using it unless it was recoated. My 10" Cave sat in telescope mothball, as I had been using my 16" on the equatorial platform to do my planetary imaging. That Cave mirror is excellent, and it bugged me that I wasn't using it anymore. I glanced over at the Cave and back and David's scope, and I had a solution.

I would sand the wood smooth, put a new tube, and use some of the hardware from David's scope and put my Cave mirror in it, all the while making it so that I could put the telescope on both the equatorial platform for planetary imaging but also for basic Dobsonian operation. If you've never tried to put a 73" tube in a car, consider yourself lucky. It's awkward, so I borrowed something from my 1996 telescope design and created a split tube, held together with internal supports and four draw-clasps. It's rigid, and allows me to stand the upper part of the tube in the rocker box for transport. The lower 2/3, which has the primary mirror, cradle and altitude bearings, is thereby more manageable to lift and maneuver. The new tube is an actual Sonotube from White Ca; not all concrete sonotubes, like those at Home Depot, are the original Sonotube brand, which are a much better quality. Having disposed of David's focuser, I moved my nice Moonlight model off the Cave's fiberglass tube. I couldn't use the Cave's original 1959 tube for this project. I also couldn't use the secondary mirror assembly from the Cave as the spider supports were too short, so I used David's assembly instead. I also kept his cradle and altitude bearings, as well as the rocker box. They all required an immense amount of sanding, down to 1000 grit, and were then coated in primer. The ground board, which has the Teflon on it for the azimuth, was recut with a new piece of ¾" birch, since the original was a staggering 1.5" thick and heavy as all get out. I had issues with the paint going on correctly, so it took a lot of effort and repainting, but eventually the black was coated with some satin polyeurethane. The eyepiece tray that was on the side was broken, so I turned a $5 box that I had picked up at an estate sale into a nice, attachable case.

I'm a firm believer in maximum contrast to give you the best images, both visual and photographic, and for years I've used velvet. Yes, you read that correctly—velvet. Flat black is hardly ever that—flat, nor black. It usually comes out gray. You can spend tons of money from Prostar for black flocking paper, but velvet, while still not all that cheap, is awesome. Some white Elmers glue will hold it down just fine, so I lined the entire upper tube assembly with it. That picture to the right is after it is installed in garage lighting, and you can barely see the secondary. It's a quick fix for telescopes that makes the black truly black in the eyepiece and therefore stars and planets pop when you look at them. Tube edging can be purchased as door trim guard on Amazon for a few bucks, and I was approaching the finish line.

I took the extra step to move my primary 2.5" closer to the secondary to allow enough rack-in focus for my binoviewer. Some normal eyepieces require an extender, which is in the focuser in the picture to the right. I put the Telrad back on, a strip of Velcro on the back for balancing weights, and David's scope is back in business. I'm taking it this New Moon weekend to Cheifland to give it a run under some very dark skies. Maybe I'll see you at Withlacoochee River Park in June, likely the last time I or most astronomers will be there until the post summer extreme heat and rain.

Flats and Darks

My Favorite Celestial Objects
By Wayne Frey
part 1

I am a long time amateur astronomer and I still get amazed at the new objects I see in the night sky. Even more amazing are the celestial events that occur in our solar system. This journey in to astronomy is endless and rewarding. Every day I learn something new about it and the great men and women from our past that got us to the present with our knowledge of the Universe. The history of Astronomy is a great thing to read about and learn from but I am going to talk about the present.

We have beginners and seasoned observers so I hope this peaks every one's interest whether it be observing the night sky or following the exploration of space. Both have increased our knowledge of the Universe we live in. Let us start with observing. A simple question asked of me at a star party was, “What is your favorite object to look at?” My simple quick answer is Jupiter but there are so many different types of objects to look at.

Lets start with stars. My favorite star is Canopus. It is one of the biggest brightest stars in our galaxy. It shines brightly just above the horizon in the south. It is even bigger and brighter than Sirius but you would not know this unless you took the time to read about the objects you see. If Canopus was as close to us as Sirius is, we would not have a dark sky when it was above the horizon.

Runner up is Polaris (the north star). It is a second magnitude star with a smaller fainter companion, yes a double star. It is also the point that all the other stars rotate around at this point in time. Speaking of double stars which is your favorite? Mine is Albireo in Cygnus the Swan. Albireo A is an orange -yellow star while Albireo B is blue-white. Runner up is the winter Albireo AKA h3945 or 145 /Canis Majoris. It too is yellow and blue but fainter than Albireo, both very colorful double stars. Stars are like people, they like friends and often cluster together in groups.

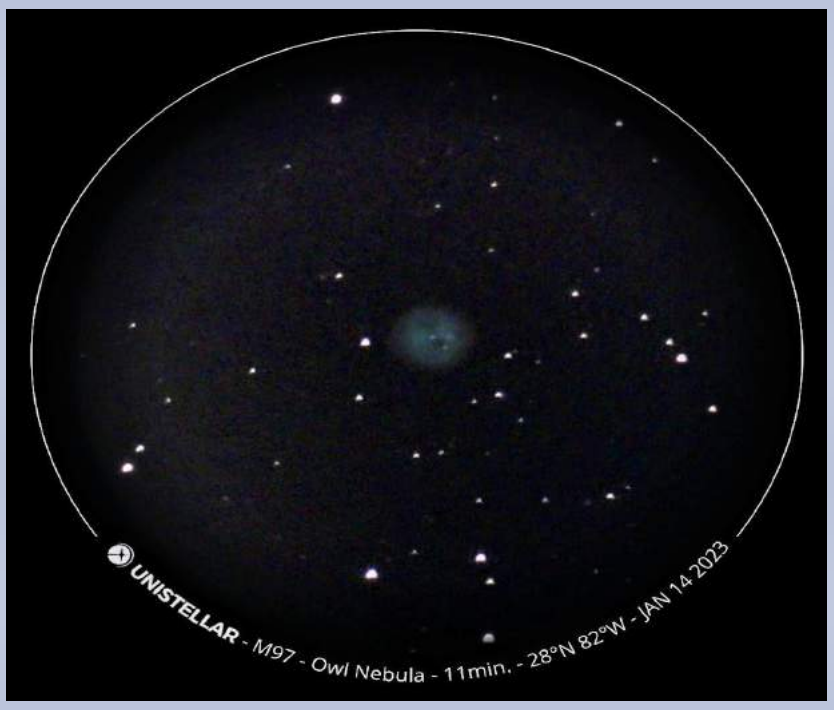
My favorite open star cluster is M 46 AKA NGC 2437, first cataloged by Charles Messier. It is located in the constellation Puppis. It is very large, very bright and very rich in stars. Estimates say about 5000 stars in this cluster.

Not only is 46 the year I was born but this cluster also contains a Planetary Nebula NGC 2438. We will talk about planetary nebula (PN) later. Runner up is another open cluster (OC) that contains a planetary nebula. NGC 2818 in the southern constellation Pyxis the Mariner's compass.

I hope you are not getting tired of all this talk about stars because there is another type of star cluster called Globular star Cluster (GC). Unlike an open star cluster which is like a friendly gathering of people, this one is like a crowd at a concert or football game. Globular Clusters can contain up to a million or more stars. My favorite is Omega Centauri in the southern constellation of Centaurus (half man half horse). Also know as NGC 5139 it is the largest known globular in our galaxy and contains an estimated 4 million stars.

Runner up is M 13 AKA NGC 6205 in the constellation Hercules (the strong man). It is estimated to contain several hundred thousand stars.

I have come to the end of the stars, well almost. That Planetary Nebula I mentioned earlier. It is really a dead star. Back in the 1800s they mathematically determined that our solar system should have another planet so all the astronomers of the day where looking for it. When they found these little nebulae that looked like a planet, they started calling them planetary nebula. One hundred years later we now know they are dead stars that did not supernova. I will not go into the physics of the process but you are seeing the outer gas shell of a star. My favorite is M 97 AKA NGC 3587 or the Owl nebula in the constellation Ursa Major (the big bear).



It has two dark circles that resemble a pair of eyes along with several stars superimposed in the nebula. Runner up is the ring nebula or M 57 AKA NGC 6720 in the constellation Lyra (the harp). It is small but bright and a favorite at summer star parties. I once asked a young person trying to see

it through my telescope. “Do you see a ring”, I asked. “No” was the replied, “I see an eye looking back at me”.

That sums up my favorite objects in our galaxy. Next we will talk about my favorite objects beyond our galaxy along with my favorite nebulae in our Milky Way. What is your favorite object or objects?

SPAC New Moon Weekend

Withlacoochee River Park

April 21-23, 2023

By Intrepid Field Reporter

KELLY ANDERSON

This month’s New Moon Weekend began (as usual) a couple of days early as Joe Canzoneri and your Intrepid Field Reporter arrived mid-day on Wednesday, April 19th. We jumped the gun a bit based on the forecast for clear skies Wednesday and Thursday, with partially clear skies on Friday, and a washout on Saturday night. Well, two out of three ain’t bad, I reckon.

Wednesday night was good enough for me to get good polar and star alignments, but everything from there went rapidly downhill. Clouds were more the rule than the exception. In desperation I pointed my RC-6 at a blank space in the heavens and imaged for about a half-hour. I have no idea what I was imaging, but there were at least more stars than clouds. Joe didn’t have any better luck. At least the temperatures were comfortable. A nice breeze during the day felt good, but we needed to put on a few layers after sunset.

Thursday brought out a bunch who were eager to take advantage of the promised clear skies, and that is just what we got. Probably the best seeing we experienced in a few months. Bob & Rita Mizell, Tim Harris, Les Gatechair, and Bob Stelmock joined our happy gang. Later on Ray Yates, who presented night vision technology at OBS, showed up late afternoon, followed closely by Paul Crate & wife Lyn and sister Cindy. Temperatures were a bit warmish at mid-day but again the breezes held so it felt comfy until sunset. Out came the extra layers once again. Ray’s demo didn’t come of very well at OBS because of clouds, but he was able to show it off Thursday night. It’s pretty amazing technology that really brightens observing, and brings out a lot more of the cosmos with only traditional eyepieces.

Friday afternoon Mike Partain joined us for a few hours. Unfortunately family obligations required my presence elsewhere so I had to head back to the ranch Friday morning. I was told that Friday and Saturday were lousy for astronomy, but several dedicated members stayed over Sunday night and were rewarded with another session of awesome clarity.

The Moon is scheduled to not appear May 19 – 21 so join us for some camaraderie to go along with guaranteed clear skies.

Space Exploration News

STEVE ROBBINS

By now we all are familiar with the bad news about the Starship test launch from SpaceX. I'm not talking about the explosion at the end, which was to be expected. I'm not talking about the booster losing thrust vectoring ability before the explosion. I'm talking about the incredible crater, blasted through solid concrete by 16.7 million pound-feet of thrust, by far the most powerful launch in human history. Chunks of concrete were thrown well outside of the area intended to be impacted (literally!) by launch debris. Here is YouTube's Angry Astronaut (QR code below) walking all the way from the road to the beach and showing video taken during the launch of large chunks of concrete falling into the ocean itself. The good news? Excavation for a proper flame trench is already more than half done. Environmental groups have declared legal war on SpaceX's presence at Boca Chica and the situation is still developing.

Critical for finding possible extraterrestrial civilization on exoplanets is deciding on what exactly are the conditions that we deem most helpful in isolating the most likely candidates. Keep in mind that we are biased, assuming that life will be like us, with mostly the same needs as we have. One critical thing that seems essential is a magnetic field to shelter the planet and its atmosphere from the solar wind, so considerable research is taking place on how to detect magnetic fields on exoplanets. That is a difficult proposition. However, there is one phenomenon that happens both on Earth and Jupiter, two planets with magnetic fields, and that is the aurora caused by the solar wind being funneled into the northern and southern regions and ionizing the atmospheres there. This, on Earth, causes coherent radiation of light in discrete and coherent wavelengths, blue from oxygen and red from nitrogen in our case. Now, observing the planetary system of the red dwarf, YZ Ceti, scientists have detected coherent radio emmissions as a result of the aurora on two of its planets. Of course, the Internet "telephone game" morphed this into a shrill hype saying alien life has been detected. Of course,

those reports are wrong. The details, including direct links to the relevant research papers can be found in a video by astrophysicist Dr. Becky Smethurst (QR to the right).

On May 8, a house in New Jersey's Hopewell Township received a visitor from space: a .9 kg stony chondrite meteor. Penetrating the roof of the house, it bounced off the floor, through the ceiling of a bedroom and fell back through the ceiling to finally come to rest on the floor. The meteorite was still warm when found. Local emergency responders scanned for radioactivity and harmful substances and gave the residents the all clear. This meteorite was confirmed to be a 4.6 billion year old piece of construction debris from the early days of our Solar System.

Europe's space program is incredibly healthy and does ground breaking science at least equal to anything the United States has accomplished. However, it was disappointing when shortly after the launch of its Jupiter Icy Moons Explorer, or JUICE, the antenna for one of it's primary instruments, Radar for Icy Moons Exploration (RIME), failed to fully deploy, leaving the radar inoperative. With that radar, ESA planned to probe below the surface of Jupiter's ice moons to determine underlying structure. The history of jammed devices on interplanetary probes is daunting. However, after three weeks of effort, ESA announced on May 12 that the antenna was freed and fully deployed. JUICE joins Rosetta and GAIA as ESA solar system probes that reinvent the fields of research.

June Lunar Calendar

J

une 1, the Moon will cross the celestial equator going south at the Descending Node

June 3, Antares will be 1.6° south of the Moon

Full Moon June 3, the Full Strawberry Moon

June 4, Venus will be at Greatest Elongation: 45.4° east of the Sun

June 6, the Moon will be at Perigee: 364,860 km from Earth

June 9, Saturn will be 3.0° north of the Moon

Third Quarter June 10

June 13, the Moon will cross the celestial equator going northward at the Ascending Node

June 14, Jupiter will be 1.5° south of the Moon

June 15, the Pleiades will be 1.8° north of Moon

June 16, Mercury will be 4.2° north of Aldebaran

June 16, Mercury will be 4.3° south of the Moon

New Moon June 17

June 20, Pollux will be 1.7° north of the Moon

June 21 is the summer solstice for the northern hemisphere

June 21, Venus will be 3.7° south of the Moon

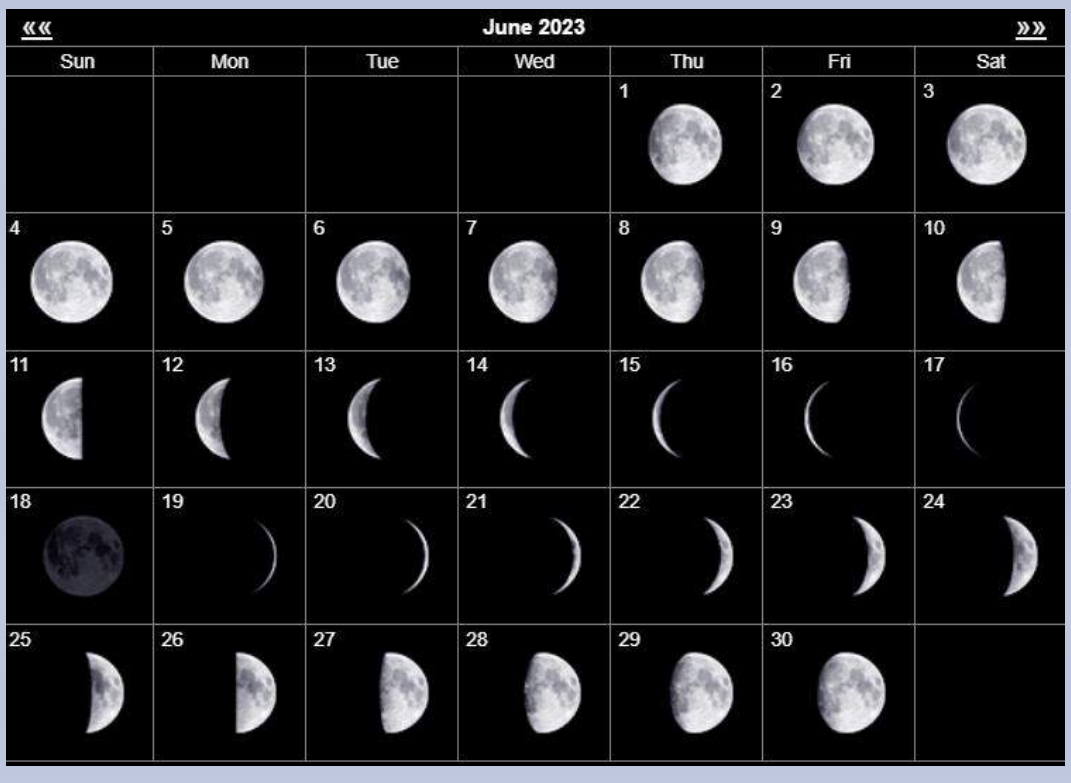
June 22, Mars will be 3.8° south of the Moon

June 22, the Moon will be at Apogee: 405,385 km from Earth

First Quarter June 26

June 27, Spica will be 3.3° south of Moon

June 28, the Moon will cross the celestial equator going southward at the Descending Node



SPAC Image Gallery

Here are some excellent astrophotography highlights from our fellow SPAC members. Anyone who would like to share his or her work, I encourage you to email the editor to submit for future newsletters or share them on our SPAC Facebook page.

Previous page: **Wr 134 or The Fish On The Platter Nebula**
In Colorized HOO with rgb stars **by Steven Miller**
&
Below: **M81 by Joe Canzoneri**

Left: **The Leo Triplet** of galaxies w/Dwarf 2 **by Guy Earle**

Above: **M20 The Trifid Nebula,** OTA: GSO 10" RC 1350mm f/5.3, Mount: CEM 70, Camera: ZWO ASI 2600MM, Exposures: L: 180s x36, RGB: 60s x12, Filters: Anlita 2" LRGB

&

Below: **NGC 5139 Omega Centauri,** OTA: GSO 10" RC 1350mm f/5.3, Mount: CEM 70 Camera: ZWO ASI 2600MM, Exposures: L: 60s x50, RGB: 60s x12, Filters: Anlita 2" LRGB **by Jamie Kenas**

SPAC Business Meeting

Our next business meeting is **Wed., June 14th, at 8:00 PM** via conference call; details upon request. All interested members are invited to attend. All club business decisions are made at the business meeting so as not to encumber the general meeting.

Officers & Directors

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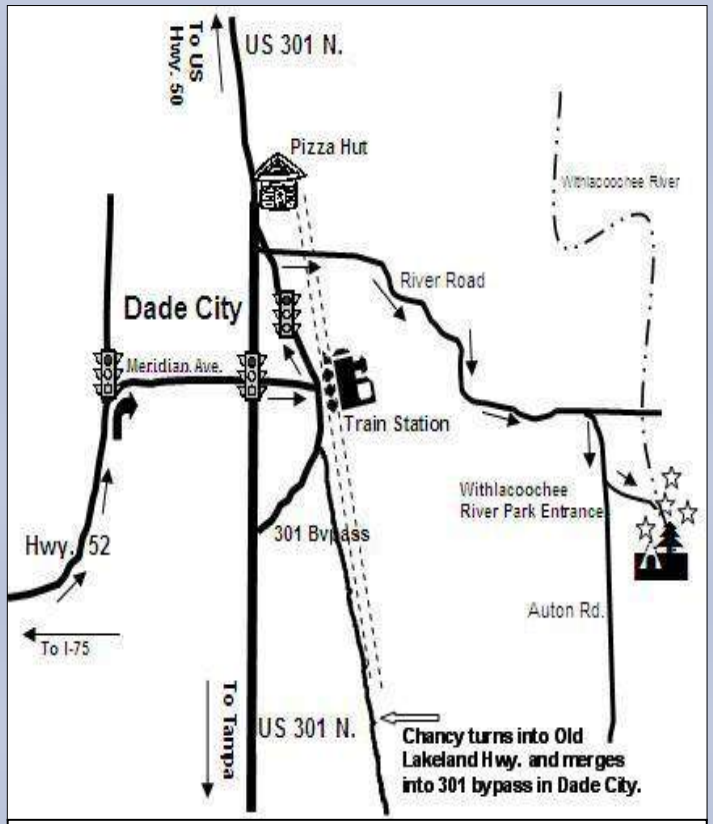
Click on the name to send email



Withlacoochee River Park – Dade City, FL
Detailed directions can be found at:
www.StPeteAstronomyClub.org

Withlacoochee New Moon Weekends

There's no need for reservations. However, the park closes at sundown, so you will need to arrive before then. The park rangers will give you the gate-code once you're inside the park. Please do not call for the gate code as they are not allowed to give it out over the phone.

Reservations are not necessary. Please print and display our Friends-Of-The-Park Pass on your dashboard.

Please join us! All astronomy enthusiasts are welcome. You do not need to be a club member to attend. Please refer to our Club Calendar for details and scheduled dates.

St. Petersburg Astronomy Club

Recognition of Patrons & Benefactors

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St. Petersburg Astronomy Club Membership Form

Membership in St. Petersburg Astronomy Club, Inc. (SPAC) is open to anyone, regardless of age, who is interested in astronomy. Benefits of membership include a monthly subscription to the SPAC Examiner newsletter, reduced camping rates and use of the club's bunkhouse at our dark sky site at Withlacoochee River Park, the ability to serve on the SPAC board and voting privileges. Dues are considered donations and are non-refundable. Membership options are available as listed below.

You are now able to choose how you wish to join or renew your membership:

- **Preferred On-line Website Option: New instructions as our website has been updated.**

Go to https://www.stpeteastronomyclub.org/Sign_In.php on the SPAC website where you can join, view and update your membership profile, provide payment, and **print your membership card**.

- **US Mail Option: Takes more time to process manually because we are all volunteers.**

Complete the attached membership form and send it along with your payment to:

Jim Hunter
17316 Oak Ledge Drive
Lutz, FL 33549.
(Checks should be made payable to SPAC, Inc.)

Adult 1: _____ Adult 2: _____

Street: _____

City, State, Zip: _____

Home Phone: _____ Cell Phone: _____

Email Address: _____

Number of Children under 18: _____

Memberships:

Single: [ ] $ 30.00/YR. Includes one adult, minor children, the "SPACE" newsletter, and all the rights and privileges of membership.

Family: [ ] $ 35.00/YR. Includes two adults, minor children and the above rights and privileges.

Patron: [ ] $ 50.00/YR. A Patron member is entitled to the above rights and privileges.

Benefactor: [ ] $100.00/YR. A Benefactor member is entitled to the above rights and privileges.

Student: [ ] FREE. SPAC offers free membership to full time high school and college students.
Expected date of graduation: _____

Total Submitted: $_____

Your SPAC Membership Card is required for reduced fees at the campground.