

Night Visions

2018 July Issue

Newsletter of the Baton Rouge Astronomical Society

Monthly Meeting Monday, July 9th at 7PM at HRPO

(Monthly meetings are on 2nd Mondays, Highland Road Park Observatory).

Presenter: J. Robert Parks, LSU Astronomy Instructor will talk about his research to characterize young stellar objects.

What's In This Issue?



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NEW!

"Free The Milky Way" Campaign

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Observing Notes – Corona Australis – The Southern Crown & Mythology

Like this newsletter? See PAST ISSUES online back to 2009
Visit us on Facebook – Baton Rouge Astronomical Society

President's Message

We are now into summer and getting longer nights.

The highlights

- ❖ June was the Opposition of Saturn.
- ❖ In space exploration news the Japan Aerospace Exploration Agency (JAXA) space probe Hayabusa2 has been sending back striking images of the asteroid (162173) Ryugu. Hayabusa2 is on a mission to return a sample to Earth in 2020.
- ❖ On June 30th we had the 1st Asteroid Day at HRPO

Our Secretary Krista Dison has resigned. I would like to take this moment thank her for her service. Any member willing to fill the role of Secretary should let me know.

Here's our new Member Pin. Have you claimed yours yet?



REMINDERS:

- ❖ The BRAS Business Meeting will be Tuesday July 3 (because the 4th is a holiday), and the BRAS Monthly Meeting will be Monday July 9, both will be at HRPO and at 7 PM.
- ❖ If you have not reserved your member pin yet, please come to a meeting to pick one up.
- ❖ July 26 will be the Great Martian Opposition, Mars will brighten to an apparent magnitude of - 2.79.

Please check with Ben Toman if you are willing to help with our Outreach Requests. Remember, Outreach to our community is a lot of what we do. Our astrophotographers (or members wishing to be astrophotographers) should check with Scott Louque about BAG (our new acronym stands for BRAS Astrophotography Group (see Page 5).

Clear Skies

Steven M. Tilley, President



The Fabulous Bush Pigs by Al Rose



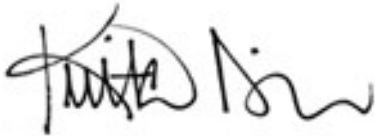
Secretary's Summary of May Meeting

Steven calls meeting to order at 7:04pm.

29 members in attendance

No new members

- Scott L announces Tyler Ellis as the night's guest speaker. The talk is about Tabby's Star.
- Steven asks for volunteers for Asteroid Day.
- John updated the club on the new AL observing awards.
- Forrest Smith was awarded the AL Double Star Award.
- Krista Dison received the AL Outreach Award.
- Chris Kersey revealed the newest shirt design for summer camp.
- Scott L gave an update on the astrophotography meeting.
- Steven announced Michele Fry will get a mug for her fantastic work on the newsletter.
- Raffle held.
- Meeting adjourned at 8:25pm



Krista Dison, Secretary

2018 Officers:

President: Steven M. Tilley
Vice-President: Scott Louque
Secretary: Krista Dison
Treasurer: Trey Anding

BRAS Liaison for BREC:

Chris Kersey

BRAS Liaison for LSU:

Greg Guzik

Committees/Coordinators:

Light Pollution:

John Nagle

Newsletter:

Michele Fry

Observing:

John Nagle

Outreach:

Ben Toman

Webmaster:

Frederick Barnett



"What the...??? We've been gazing up at poorly hit golf balls this whole time?"





BRAS Outreach Report

Hi Everyone,

The dog days of Summer are upon us and the days are long (but getting shorter!), and hot (into the 90's). Not too much to report on since last month, but we do have some more outreach opportunities available. Please take a look at the list and let me know if you are able to help out.

We have some new Night Sky Network toolkits arriving and some other fun ideas in the works. Stay tuned for more information soon!

Upcoming Outreach

Tuesday, July 3rd

2pm-3pm

Greenwell Springs Library
demos and club info

Thursday, July 5th

2pm-3pm

Jones Creek Library
demos and club info

Tuesday, July 10th

2pm-3pm

Fairwood Library
demos and club info

Thursday, July 12th

2pm-3pm

Central Library
demos and club info

Thursday, July 19th

2pm-3pm

Scotlandville Library
demos and club info

Thursday, July 19th

6:30pm-8:30pm

West Baton Rouge Parish Library
demos, club info and
possible observing.



Night Sky Network provides clubs with some really cool resources for popularizing the cosmos. BRAS uses some of their colorful kits at our Outreach events to capture the interest of the public. Come and help us, and you'll learn a bunch yourself!

Sorting The Solar System Cards



Where Are The Black Holes (and how do we know)?



. BRAS earns these kits by holding Outreach events, and the support material NSN offers in each kit is extensive and makes our mission easier. Take a look: <https://nightsky.jpl.nasa.gov/download-search.cfm>



BRAS Astrophotography Group - June Meeting

Our third meeting was held on Saturday June 9th at Krista Dison’s house north of Watson, where the skies are nice and dark. 8 members were in attendance: Chris D, John N, Krista D, Roz R., Scott C, Scott L, Steven T, and new BRAS member Chelsea Wall from Ponchatoula. Food included spaghetti, finger sandwiches and watermelon, and was enjoyed by all down to the last bite.

Chris and Scott C. discussed processing of an image, and the steps necessary.

Scott C. and Krista talked about their session at the BRAS Dark Site the night before.

Chris and Scott C. discussed cables and cabling.

Finder scopes and auto guiders were discussed.

Scott C. and John set up their C5 telescopes in the back yard, with the first target being Jupiter.

The camera holder that John was using would not clamp his video camera properly, so he was not able to image, but gave live images of Jupiter and Venus (phase of about 60%) all night.

Scott C. imaged.

Chelsea set up her camera and imaged also.

~ Minutes submitted by Krista and John



The next meeting will be held July 14, 6 p.m. (the Saturday after our next club meeting), at Chris D’s house.

Let Scott L. know if you plan to attend: slouque@att.net

Scott L. submitted this Horsehead Nebula photo, *“all images and calibration frames taken from my driveway with my Canon T1i dslr hooked up to my Celestron 6 Newtonian telescope.”*

Tech Details:

14 - 300 sec light frames

8 - 300 sec dark frames

40 flat frames

200 bias frames

All images were Calibrated and Integrated in Pre Processing with PixInsight using the ImageCalibration and ImageIntegration processing tool. Then the stacked and integrated image was processed with PixInsight.

This final processed image was cropped to show just the horsehead and the reflection nebula to the lower left.





BRAS Light Pollution Committee Report

This committee meets at 5:45, same day as the 6:30 BRAS Business Meeting
(which takes place on the Wednesday before the Monthly Meeting)
Everyone is welcome to join in.

Meeting called to order by John Nagle
No new members, with 8 members in attendance

Old Business:

1. Gave out a few thumb drives with the following Codes for members to review: International Building Code 2012; International Existing building Code 2012; International Energy Construction Code 2009; International Residential Code 2012; ASHRAE Standard 90.1-2007. The city/parish current requirements are per the 2015 Codes, and the National Electrical Code 2014.
2. Discussed how to update the dark Sky Advocacy pages on the BRAS website, and what to update it with.
3. Asked for nominations for the BRAS Good Lighting Award.
4. Received more suggestions on lawyers to help interpret the Unified Construction Code of the city/parish.
5. IDA representative has contacted me and will review the Unified Development Code – Lighting chapter for the city/parish and will get back to me in a few weeks.

New Business:

1. Discussed the drawbacks for HRPO if Louisiana goes off of DST (Daylight Savings Time).
2. Agreed to find a more graphic way to demonstrate Light Pollution in addition to our portable light box showing the different types of lighting.
3. Informed that the next meeting of the National Association of Neighborhoods will be at the main Library on Goodwood on June 14th at 7:00 PM.

Meeting adjourned.

John Nagle, Chairman



P.S. Every year BRAS presents a Good Lighting Award to a company that uses BEST outdoor lighting practices. If you notice a business in EBRP that uses Full Cutoff lighting fixtures, please jot down and send their Business name, address, date and description to me at jonagle@cox.net. This would be much appreciated.

Should Louisiana adopt year-round Standard Time: Pros and Cons?

Louisiana lawmakers will be studying this situation, with a decision hoped for by 2019. Federal law does not require states to adopt DST, but only 2 states don't do it: Arizona and Hawaii. How will this affect our night sky viewing and BRAS Outreach events when it doesn't get dark til 9:30? Should BRAS weigh in? LPC will be talking about this, so let your opinions be known.

Here are some web articles discussing the situation:

<http://www.wafb.com/story/38086267/la-lawmakers-consider-getting-rid-of-daylight-saving-time>
<http://mentalfloss.com/article/88302/10-fascinating-facts-about-daylight-saving-time>

The Progression from Bad to Best Lighting Fixtures that decrease Light Pollution

No Cutoff - BAD



Partial Cutoff - BETTER



Full Cutoff - BEST



Free The Milky Way Campaign

used to be the 20/20 Vision Campaign, just renamed by the Light Pollution Committee.

This campaign's goal was to raise the SQM measurement at HRPO's back viewing pad to 20.0 by November 2020. We've decide to keep the effort going until the goal is reached, however long that takes.



Recent Entries in the BRAS Forum

There are also nine active polls. The Forum has reached 5300 posts.

- A.R.R.L. Field Day a Success
- Deep South StarGaze Changes Venue
- Young Stellar Objects Come in Two Types
- Fermi Celebrates Ten Years



BRAS Members' Corner

Here's where BRAS members can submit articles and photos about their astronomy-related accomplishments and adventures outside of BRAS activities (as if there were any spare time for such things!)

Send your contributions to Michele at newsletter@brastro.org



Messages from HRPO

Highland Road Park Observatory



FRIDAY NIGHT LECTURE SERIES

all start at 7:30pm

13 July: “Wonders of the Summer Sky” The temperature heats up as July’s constellations settle high overhead early in the night. BREC Education Curator Amy Brouillette takes the audience on a fascinating tour of Baton Rouge’s summer season. She highlights the celestial gems that will sparkle throughout the next three months—gems that visitors will be able to see live if they continue to visit HRPO!

20 July: “Before the Big Bang” Is it possible to know what occurred before the most profound event in our Universe’s existence. LSU physicist Parampreet Singh presents one of the most evocative talks of the year!

SCIENCE ACADEMY

Saturdays from 10am to 12pm

For ages eight to twelve. \$5/\$6 per child.

7 July: “Mercury”

14 July: “Summer Day”

21 July: “Mars”

28 July: “Surveying the Sun”



ONE-TIME CALLS FOR VOLUNTEERS

***Friday 6 July, 8pm to 10pm.** *Two or three volunteers.* **Edge of Night.** Pointing out different objects and passes as they appear or occur. Low difficulty.

***Saturday 7 July, 7pm to 10pm.** *Three or four volunteers.* **Evening Sky Viewing Plus.** Front desk greeting; physical science demonstrations; marshmallow roast; telescope operation. Low to moderate difficulty.

***Wednesday 11 July, 7:45pm to 9:15pm.** *Two or three volunteers.* **Mercurian Elongation.** Devices for Mercury viewing; information about MESSENGER. Low to moderate difficulty.

***Saturday 21 July, 12pm to 2pm.** *Two or three volunteers.* **Solar Viewing.** Telescope operation for Sun viewing; front desk staffing. Moderate difficulty.

***Thursday 26 July, 10pm to 12am.** *Two or three volunteers.* **Great Martian Opposition.** Front desk greeting; merchandise sales; devices for viewing Mercury, Venus, the Moon, Mars, Jupiter, Saturn, Ceres, Vesta and Neptune; information about Mars missions and possibility of life on Mars.

ONGOING CALL FOR VOLUNTEERS

HRPO periodically needs BRAS volunteers for crafting (gluing, cutting, painting, etc.); training is offered for these easy to moderate tasks. We also have plenty of “grunt work”. We are asking any members with the time to do so to assist. Thank you.



EDGE OF NIGHT

Friday 6 July from 8pm to 10pm

No admission fee; for all ages.

It's not light, it's not dark. It's that special time called twilight, and HRPO wants to introduce you to it! *Are all sections of the sky the same shade of blue? Which stars are seen first? Are Mercury and Venus or the Moon out? Is that moving object a plane, a satellite or space debris? How much actual darkness should I expect in a light-polluted city when twilight has passed?* There is no other time like twilight. Bring it into your life!



GLOBE at Night: 4 to 13 July [Hercules]

Instructions to participate in this project are at...
<http://www.braastro.org/phpBB3/viewtopic.php?f=29&t=2760>



MERCURIAN ELONGATION

Wednesday 11 July from 7:45pm to 9:15pm

at Burbank Soccer Complex

No admission fee; for all ages.

Periodically Mercury reaches its greatest angular separation in the sky (elongation) from the Sun. This is the safest way to view Mercury by amateurs. The planet will appear as a “half-Mercury”. Venus, Jupiter and Saturn will also be seen.



GREAT MARTIAN OPPOSITION

Thursday 26 July from 6:30pm to 12:30am

No admission fee. For all ages.

EXPLANATION: Every twenty-six months the planet Earth catches up to the planet Mars, which orbit the Sun more slowly. As this happens, Mars rises earlier in the night sky and increases in angular size. Due to the fact that Earth's and Mars' orbits are not perfect circles, some *oppositions* are closer than others. During the last week of July, Earth will be closer to Mars than it has been in fifteen years.

This is an excellent opportunity for formal and informal educators; viewers, sketchers and photographers; and families and children. This "Great Martian Opposition" will yield the best view of the Red Planet since before many current high schoolers were born. The large Syrtis Major region and the southern polar cap both will be visible through at least October (a transient dust storm notwithstanding).

OPPOSITION EVENT TIMELINE AT HRPO (subject to change)

6:45pm to 9:45pm = Martian demos, exhibits, experiments and games

7:45pm to 8:15pm = Mercury viewing

8:00pm to 9:30pm = Venus viewing

9:00pm to 9:45pm = Ceres viewing

9:00pm to 12:30am = Waxing Gibbous Moon viewing

9:17pm = visible pass of Tiangong 2

9:25pm = visible pass of Cosmos 2297 Rocket

9:29pm = visible pass of Cosmos 2098 Rocket

9:30pm to 11:30pm = Jupiter viewing

9:30pm to 12:30am = Mars viewing

9:38pm = visible pass of Cosmos 1825

9:40pm = visible pass of Cosmos 2227 Rocket

9:45pm to 12:30am = Vesta viewing

10:00pm to 12:30am = Saturn viewing

11:30pm to 12:30am = Neptune viewing

{~11:45am to 12:15am = *Opposition of Mars*}



SPECIAL ALERT: DAYLIGHT TIME DISCUSSION

There is a conversation right now in the Louisiana State Legislature to eradicate the back-and-forth of Daylight to Standard. There are two options if the twice-yearly switch is ended: to remain on Standard time year-round, or to remain on Daylight time year-round.



Observing Notes:

by John Nagle

Corona Australis - The Southern Crown

Position: RA 19, Dec. -40°

Named Stars

Alfecca Meridiana (Alpha CrA), “break”, “southern”, “Al Kubbah”, “the Tortoise”, “Al Hiba”, “the Tent”, “Al Udha al Na’am”, “the Ostrich Nest”, and in the MUL.APIN of ancient Mesopotamia “MA.GUR”, “the Bark”, mag. 4.11, 19 09 28.28 -37 54 15.3, is a blue-white main-sequence sub-giant star and a rapid rotator, spinning on its axis at almost 200 km per second at its equator, making a complete revolution in around 14 hours. It has an excess of infra-red radiation, which indicates it may be ringed by a disk of dust.

There are no other named stars in this constellation.

Deep Sky:

NGC 6541, C 78, Bennett 104, mag. 6.3, 18 08.0 -43 42, 14’ in size, is a globular cluster with a high concentration of stars; very well resolved, bright and round. The cluster lies about halfway between the stars **Theta Corona Australis** and **Theta Scorpii** (about 14 billion years old).

NGC 6496, Bennett 100, mag. 8.6, 17 59.0 -44 16, 3.3’ in size, is a globular cluster with a low concentration of stars; pretty large and elongated. Located on the border with **Scorpius**. Has a nebula attached to it – look for the 5th magnitude star **SAO 228562**.

NGC 6726,6727, mag. 8.0, 19 01.7 -36 53, 9’x7’ in size, two fairly bright stars (involved in a high surface brightness nebulae); illuminated by the variable star **TY CrA** and **HD 176386** (a **Herbig Ae/Be** star), with the nebula a blue color formed in the shape of a figure eight. Dark nebula **SL 42** is located about 1.8° to the east.

NGC 6729, C 68, mag. 9.5, 19 01.9 -36 57, 1’ in size, is a comet shaped nebula illuminated by the variable star **R CrA**, located at the apex of the nebula. Located to the southeast of **NGC 6726, 6727**.

NGC 6768, PGC 062997, MCG 07-39-010, mag. 13.5, 19 17 50 -40 10 25, 1.20’x1.10’ in size, is made up of two galaxies colliding, one is an elongated elliptical galaxy, and the other is a lenticular galaxy. Located 35’ south of **IC 1297** (a planetary nebula at 19 18 41 -39 34 39).

IC 4812, 19 01.1 -37 04, 10’x7’ in size, is a patch of nebulosity (reflection nebula) surrounding two 6.5 magnitude stars (**BrsO 14** – a binary originally, now a diffuse nebula or a supernova remnant).

Be 157, 19 02.9 -37 08, 50’x17’ in size, is a dark nebula of high opacity and an irregular shape (like a boomerang) that stretches around the **Corona Australis Nebula** like a huge, draping black scarf. The star **Gamma CrA** is located on its eastern edge.

Coronet Cluster, is an open cluster of a few dozen stars, and is one of the nearest and most active regions of ongoing star formation, and is used to study star and protoplanetary disk for rotation. Also known as the **R CrA Cluster**.

Corona Australis Nebula, is composed of **NGC 6726, NGC 6727**, and **NGC 6729**, and is the home of the variable stars **R CrA** and **TY CrA**.

Corona Australis Molecular Cloud is a dark molecular cloud with many embedded reflection nebulae, including **NGC 6729, 6726, 6727**, and **IC 4812**. It contains **Herbig-Haro** objects (proto-stars) and some very young stars. It is one of the closest star-forming regions to the **Solar System**.

Beyond magnitude ten there are many objects: 2 NGC; 2 IC, 3 SL; 24 ESO; 1 PK; 2 WRAY; Fg 3, and 1 MCG.

Other Stars:

Epsilon CrA, mag. 4.83, 18 58 43.47 -37 06 25.5, is an eclipsing binary star with two very similar eclipses that take place within an orbital period of 0.5914264 days. These two stars are actually contacting each other as they go by.

V 693 CrA, mag. 6.50, 18 41 57.8 -37 31 14, is a nova star.

V 394 CrA, mag. 7.50, 18 00 25.97 39 00 35.1, is a recurrent nova and an eclipsing binary star.

HD 166473, mag. 7.92, 18 12 25.83 -37 45 09.2, is a rapidly oscillating Ap star.

HD 166724, mag. 9.31, 18 14 00 -42 34 31, has a planet in orbit.

TY CrA, mag. 9.39, 19 01 40.83 -36 52 33.9, a blue-white star, illuminates nebula **NGC 6726/6727**.

R CrA, mag. 11.5, 19 01 53.65 -36 57 07.6, a blue-white star, illuminates nebula **NGC 6729, 6726, 6727**- the **Corona Australis Nebula**.

2A 1822-371, mag. 15.10, 18 25 46.81 -37 06 18.6, is a low-mass X-ray (pulsar) star, and an eclipsing binary.

RXJ 1856.5-3754, mag. 25.7, 18 56 35.11 -37 54 30.5, is the closest known neutron star to **Earth**, and possibly a quark star. Around a million years ago, **RXJ 1856.5-3754** was one component of a binary system. Its partner, a star now known as **Zeta Ophiuchi**, was expelled from its original system by the force of the catastrophic death of its companion. **Zeta Ophiuchi** is still traveling.

Sky Happenings: July, 2018 *(what follows pertains ONLY to the current month. Material above is good year after year.)*



- July 1st** - Dawn: Look toward the southwest to see the waning gibbous **Moon** and rusty **Mars**, 6° apart, slowly disappear from view as the sky brightens,
Dusk: Spot **Mercury** low on the western horizon shortly after sunset, where you will find the planet for the next 17 days.
- July 3rd** - The **Moon** passes 3° south of **Neptune** at 7 PM CDT.
- July 6th** - **Last Quarter Moon** occurs at 2:51 AM CDT,
Earth is at aphelion (94.3 million miles or 152,095,566 km from the Sun), the farthest for 2018, at 12 noon CDT.
- July 7th** - The **Moon** passes 5° south of **Uranus** at 9 AM CDT.
- July 9th** - **Venus** passes **Regulus** 1.1° north at 3 PM CDT.
- July 10th** - The waning crescent **Moon** passes 1.1° north of **Aldebaran** at 5 AM CDT. Parts of **Canada** will see an occultation,
Jupiter is stationary at 11 PM CDT. Look for the planet 2° to the right of the double star **Alpha Librae**.
- July 12th** - **Mercury** achieves greatest eastern elongation of 26° at 12 midnight CDT,
Pluto is at opposition at 5 AM CDT,
New Moon occurs at 9:48 PM CDT.
- July 13th** - The **Moon** is at perigee (222,097 miles or 357,431 km from **Earth**) at 3:25 AM CDT.
- July 14th** - The **Moon** passes 1.4° south of the **Beehive Cluster (M 44)** at 1 AM CDT,
The **Moon** passes 2° north of **Mercury** at 5 PM CDT,
The **Moon** passes 1.6° north of **Venus** at 11 PM CDT.
- July 15th** - Dusk: The waxing crescent **Moon** and **Venus**, less than 2° apart, trail **Regulus** by less than 5° as they descend in the west,
Venus is 1.6° south of the **Moon** at 11 PM CDT.
- July 19th** - **First Quarter Moon** occurs at 2:52 PM CDT.
- July 20th** - Asteroid **Thisbe** is at opposition at 4 AM CDT,
The **Moon** passes 4° north of **Jupiter** at 7 PM CDT,
Night: The waxing gibbous **Moon**, **Jupiter**, and **Alpha Librae** form a compact triangle in the southwest.

- July 24th** - Night: The waxing gibbous **Moon** is above **Saturn** in **Sagittarius**.
- July 25th** - The **Moon** passes 2° north of **Saturn** at 1 AM CDT, **Mercury** is stationary at 2 AM CDT.
- July 26/27** All Night: **Mars** arrives at opposition – see **Mars** below.
- July 27th** - **Mars** is at opposition at 12 Midnight, The **Moon** is at apogee (252,415 miles or 406,223 km from **Earth**) at 12:44 AM CDT, **Full Moon** occurs at 3:20 PM CDT, The **Moon** passes 7° north of **Mars** at 5 PM CDT.
- July 30th** - The **Southern Delta Aquarid** meteor shower peaks.
- July 31st** - The **Moon** passes 3° south of **Neptune** at 1 AM CDT, **Mars** comes closest to **Earth** (35.8 million miles or 57,590,000 km), and is its biggest (24.3") since 2003, at 3 AM CDT. Look in the southwest of **Capricornus** to see **Mars** blazing at magnitude -2.8, and flaunting its disk at 24.3" wide.



Planets:

Mercury – **Mercury** crosses from **Cancer** into **Leo** this month, passing within 1° of the **Beehive Cluster (M 44)** on the night of July 3rd/4th. The planet glows at magnitude 0.0, and should be easy to see with the naked eye, though you will need binoculars and a transparent sky to see **M 44**. The two stand 7° high 45 minutes after sunset. **Mercury** is about 15° to the lower right of **Venus** for the first half of July. **Mercury** will reach its greatest eastern elongation (26°) during the evening and night of July 11th – 12th. The planet dims and dips closer to the horizon as July progresses. **Mercury** will cross into **Leo** on the 14th, when a slender crescent **Moon** passes 2° above it. A telescope will reveal **Mercury**'s 8" diameter disk, which will appear 38% lit. By July 17th, the planet has dimmed to magnitude 1.0, and evening twilight will swallow the planet within another week.

Venus – **Venus** shines at magnitude -4.1 in early July, and brightens to magnitude -4.3 by month's end.

Venus will spend July among the background stars of **Leo**. The planet will be fairly low in the west at nightfall, lower with each passing week. Telescopes will show the planet's phase thinning from 70% to 57% lit, while the overall diameter of its disk grows from 16" to about 20". On July 9th, **Regulus** is about 1° to the lower left of the planet, and on the 15th, the 3 day old waxing crescent **Moon** is less than 2° to the lower right of Venus.

Mars – **Mars** begins the month rising about two hours after sunset, and is already at magnitude -2.2.

Mars will spend July among the background stars of **Capricornus**. The planet follows a little bit more than 30° behind **Saturn** throughout July, retrograding just above the faint **Psi Capricorni** around mid-month. In early July, the red planet rises around 10:30 PM local daylight time and climbs highest around 3 AM. In late July, the planet rises around sunset and peaks in the south shortly before 1 AM. **Mars** reaches opposition on the night of July 26th/27th, rising less than a half-hour after sunset, and peaking at magnitude -2.8. **Mars** will come closest to **Earth** on the night of July 30th/31st, attaining a diameter of 24.3". Observing **Mars** through a telescope and its details - it all comes down to angular size. Both **Syrts Major**, a prominent dark feature with a triangular shape, and the bright **Hellas Basin** cross the central meridian around 1 AM CDT on July 12th and 13th. The bright **Elysium Plain** takes center stage at 1 AM CDT on July 21st. At 1 AM CDT on the night of opposition, **Mare Sirenum** appears on the central meridian. Less than 24 hours after opposition, the **Full Moon** will be 7° north of Mars – most of **Europe, Asia, Africa, and Australia** will see a total lunar eclipse.

Jupiter – **Jupiter** is near the meridian in the south soon after sunset in early July. The planet will fade this month from magnitude -2.3 to -2.1, and telescopes will show a disk shrinking from 41" to 38" wide. On July 10th – 11th, **Jupiter**'s retrograde motion will stop, and it will be 2° to the upper right of the wide double star **Alpha Librae**.

Saturn – **Saturn** was at opposition on June 21st, and so starts July visible from dusk to dawn. Its magnitude fades from +0.0 to +0.2, and has a disk measuring 18" across, with a ring system spanning 41". The rings have a tilt of 26° to our line of sight. In early July, the planet lies 4.7° due east of the **Trifid Nebula (M 20)**, with the even brighter **Lagoon Nebula (M 8)** 1° south of the **Trifid Nebula**. Open cluster **M 25** resides 4.0° to the northeast of **Saturn** and the globular cluster **M 22** sits 3.5° to the southeast of **Saturn**. The planet

drifts slowly westward during July, closing in on the **Trifid** and **Lagoon Nebulae**. By the 31st, the planet stands 2.7° east of **M 20**.

Uranus – Start targeting **Uranus** shortly before twilight begins. The planet, at magnitude 5.8, then lies reasonably high in the east. The planet is in southwest **Aries** some 12° south of 2nd magnitude **Alpha Arietis**. To confirm sighting, **Uranus** shows a distinct blue-green color and a 3.5” diameter disk.

Neptune – **Neptune** lurks in eastern **Aquarius**, rising around midnight on July 1st, and two hours earlier by month’s end. The planet glows at magnitude 7.8. You can find **Neptune** high in the south before dawn, where it will lie west-southwest of **Phi Aquarii** all month; it is 0.9° on the 1st, and 1.4° on the 31st. The planet will show, through a telescope, a blue-grey disk, measuring 2.3” across.

Pluto – **Pluto** can be found 15° east of **Saturn** in **Sagittarius**. **Pluto** reaches opposition on July 12th. The planet glows at 14th magnitude, so you will need an 8-inch or larger telescope to see it. **Pluto** will pass 35” to the west of the 6th magnitude star **50 Sagittarii** on the evening of July 3rd.

Earth – **Earth** reaches aphelion (farthest from the **Sun** in space) at 12 Noon CDT on July 6th, 1.02 a.u. (152,095,566 km.)

Moon – A thin waning crescent **Moon** is closer than 1° to **Aldebaran** at dawn on July 10th. On July 14th, a thin waxing crescent **Moon** will shine less than 2° above **Mercury** about 45 minutes after sunset. The **Moon** will be 2° to the right of **Venus** on the 15th. The waxing gibbous **Moon** is 3½° above **Jupiter** at nightfall on July 20th, and 2° to the upper right of **Saturn** on the 24th.

Asteroids – The second biggest object in the asteroid belt, **4 Vesta**, is the brightest. **Vesta** will fade from magnitude 5.6 to 6.3 during this month as it crosses one of the legs of **Ophiuchus**. To find the asteroid, start at magnitude 2.4 **Eta Ophiuchi** and then drop south one binocular field to magnitude 4.4 **Xi Ophiuchi**. **Vesta** lies a little to the left (east) of **Xi Oph**. During the **New Moon** weekend of July 14th, **Vesta** will cross the **Prancing Horse** dark nebula’s front shoulder. *My estimate* for **Vesta**’s position is as follows: on July 7th, about 1° north of **52 Oph**; on the 13th, about 1½ to 2° north of **51 Oph**; and on the 23rd, a little over 1° north of **44 Oph**.

Comets – Comet **21P/Giacobini-Zinner** could reach 6th magnitude at its September peak. This month, it should glow at around 10th magnitude. Look for it under the **Moon**-free skies during July’s 2nd and 3rd weeks. It will then be passing from northern **Cygnus** into southern **Cepheus**. *My estimates* of its location is as follows: On July 8th, just over 4° south of **Mu Cep**; July 11th, just under 4° southwest of **Mu Cep**; July 14th, less than ½° south of **Zeta Cep**; July 17th, about 1° north of **Delta Cep**. To see, one must use 100x or higher power in a four-inch or larger telescope.

Meteor Showers – The **Southern Delta Aquariid** meteor shower stands out for its longevity. The shower lasts from mid-July to mid-August, peaking on July 30th, just 3 days after the **Full Moon**. Your best opportunity is to watch under dark skies before dawn prior to the 25th. Maximum rate at peak is 25 meteors per hour.

There is one meteor shower connected with this constellation, called the **Beta Corona Australids**. Due to the low southern declination, this shower is limited to observers in the southern hemisphere. The zenithal hourly rate is three during its peak in mid-May.

When to View the Planets:

Evening Sky

Mercury (west)
Venus (west)
Mars (southeast)
Jupiter (south)
Saturn (southeast)

Midnight

Mars (southeast)
Jupiter (southwest)
Saturn (south)
Neptune (east)

Morning Sky

Mars (southwest)
Uranus (southeast)
Neptune (south)

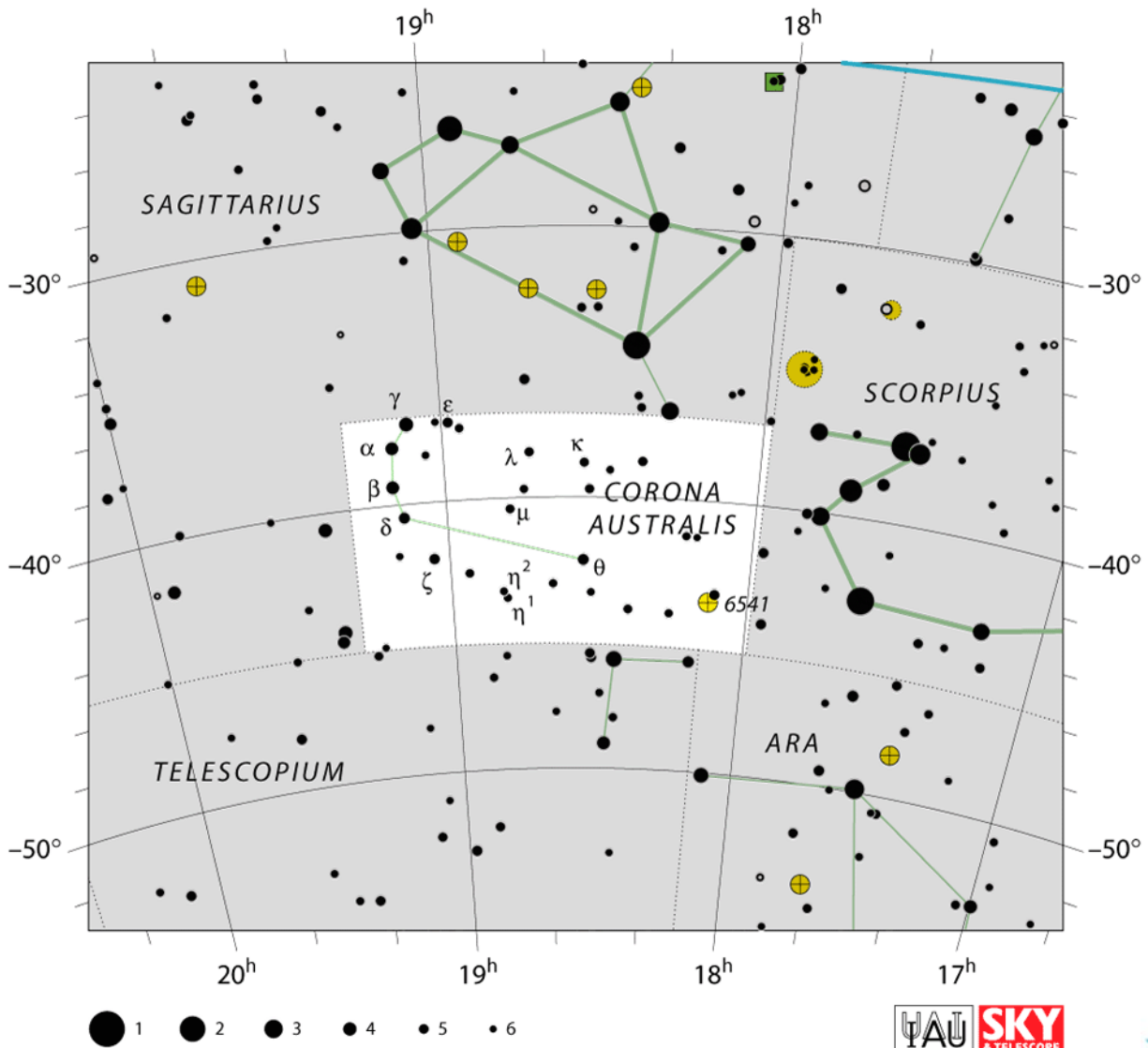


DARK SKY VIEWING · PRIMARY ON JULY 14TH, SECONDARY ON JULY 21ST

Mythology:

Corona Australis – the Southern Crown

Corona Australis was known to the Greeks not as a crown, but as a wreath, which is how it is depicted on old star maps. Aratus did not name it as a separate constellation but referred to it as a circlet of stars beneath the forefeet of Sagittarius. Perhaps it had slipped off the archer's head. None of its stars are brighter than fourth magnitude and there seems to be no legends associated with it, unless this is the crown placed in the sky by Dionysus after retrieving his dead mother from the Underworld. Hyginus gives this myth under the Northern Crown (Corona Borealis), but it seems out of place there and he may have confused the two constellations. If so, the wreath would be made of myrtle leaves, for Dionysus left a gift of myrtle in Hades in return for his mother, and the followers of Dionysus wore crowns of myrtle.



The End