

New Braunfels Astronomy Club

Texas, USA

June 21st, 2018

229th Meeting

Larry's

Celestial Calendar & Newsletter

June 21st, 2018 to July 19th, 2018 252nd Edition

Lunar, Stellar, and Planetary Pairings
Venus, Mars, Jupiter, and Saturn...Oh My!
Pluto at its Best!
It's Sum-sum-Summertime...June 21

Observer's Highlight Calendar for Clear Skies

Month Date Time/Direction Event

Month	Date	Time/Direction	Event
June	21	5:07 am CDT	Summer Solstice – Yea!
June	23	Nightfall/S	A waxing gibbous Moon and Jupiter pair up
June	27	Night/SE	A nearly full Moon and Saturn get very close
June	27	11:53 pm CDT	Full Moon
June	27	8 am CDT	Saturn is at opposition
July	6	2:51 am CDT	Last Quarter Moon
July	9	Dusk/W	Venus and Regulus are less than 1° apart
July	10	Pre-dawn/E	A waning crescent Moon and Aldebaran are close
July	12	Observing Challenge Pluto at its Best	Pluto is at opposition and shining at magnitude 14.8. Its in Sagittarius, just southeast of the Teaspoon.
July	12	9:48 pm CDT	New Moon
July	15	Dusk/W	Venus and a waxing crescent Moon are close
July	19	2:52 pm CDT	First Quarter Moon

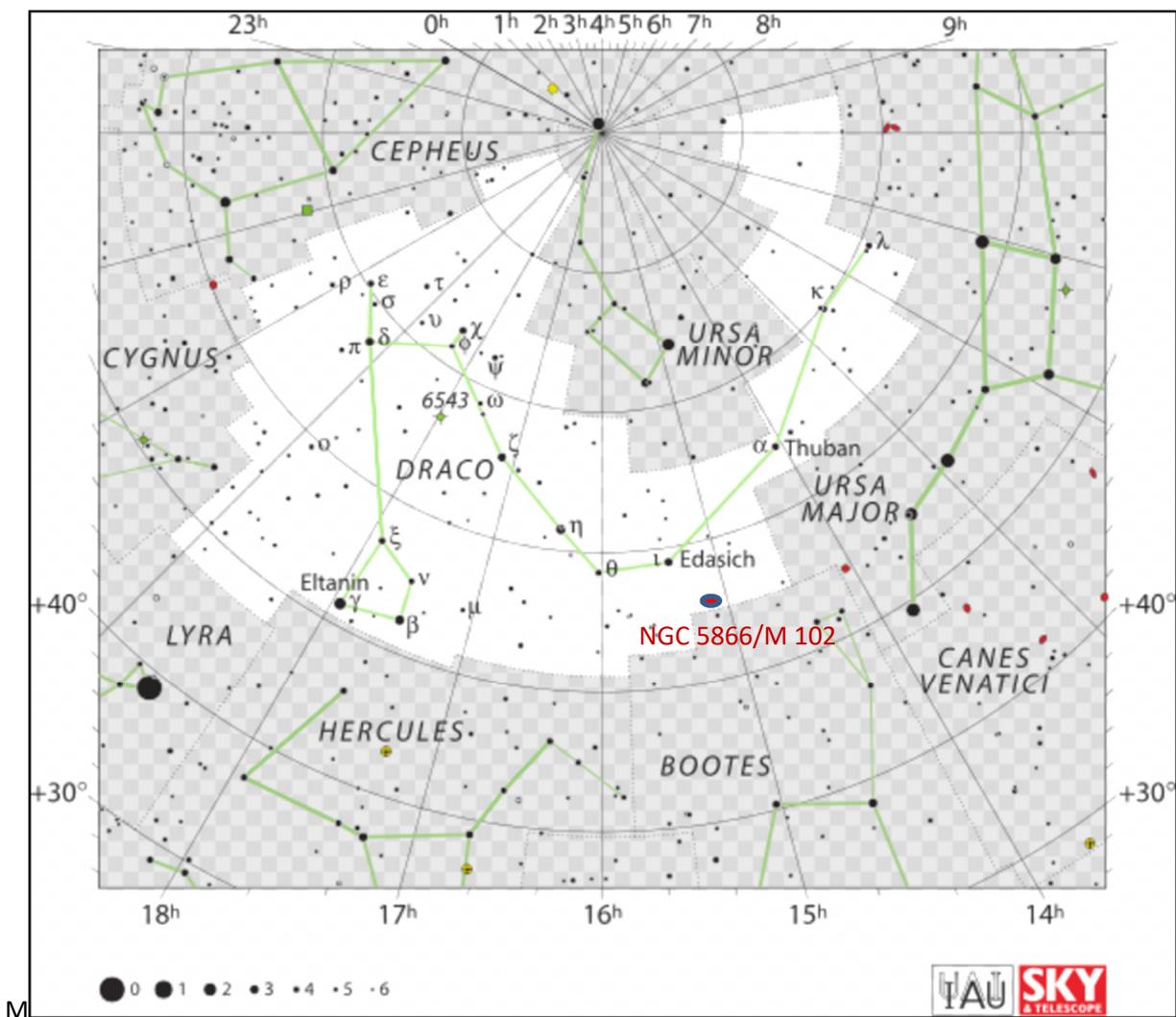
Solar System Roundup

- ✚ **Mercury** is climbing a bit and visible in the western sky just after sunset
- ✚ **Venus** is brilliant in the western sky before and after sunset.
- ✚ **Earth** still spins, and we are still here to marvel at the wonders of our universe.
- ✚ **The Moon** slides through the southern constellations and makes a few nice parings with Venus, Saturn, and Jupiter
- ✚ **Mars** is rising a few hours after sunset and follows Saturn. It is heading for opposition on July 26- 27th and will be over 24" in apparent diameter...its best view since 2003
- ✚ **Asteroid(s)** Ceres is moving SE through Leo, setting early. Vesta is heading WSW in Ophiuchus
- ✚ **Jupiter** is rising before 9pm now and is a beauty!
- ✚ **Saturn** is rising a couple of hours after sunset. It will be at opposition on June 27th.
- ✚ **Uranus** is lost in the Sun's glare.
- ✚ **Neptune** is in conjunction with the Sun and not well placed for observing
- ✚ **Comet(s)** PANSTARRS (C/2016 MI) heading SW between Scorpius and Corona Australis. 21P/Giacobini-Zinner is in northern Cygnus, heading NE into Cepheus
- ✚ **ISS Viewing for New Braunfels (works for Canyon Lake too)**

Date	Start Time	Start Location	Travel
06/26	06:04:04	S	NE along the horizon
06/28	05:57:04	SSE	NE
06/30	05:49:05	SW	NE
07/18	06:14:11	NW	SE
07/18	21:13:50	S	NE along the horizon
07/19	21:55	SW	NE

My Observing Pick: Draco

Latin for dragon, Draco is a sprawling constellation filling space between Ursa Major and Cygnus. It is a circumpolar constellation...it never sets! Dragons have deep significance in all mythology. Arabic astronomers depicted Draco as the “Mother of Camels”, protecting newborn camels from hyenas.



Name	Object Type	Location	Description
NGC 6543	Planetary Nebula	Just east-southeast of omega (ω) Draconis	Cat's Eye Nebula. Fairly bright magnitude 9.8
Eta (η) Draconis	Double Star		Yellow-white magnitude 2.73 and 4.8 arcseconds separation
NGC 5866 M 102?	Lenticular Galaxy	Just southwest of Iota (ι) Draconis	Magnitude 10.7 sometimes called M 102

What is it?

Trojans in the Solar System

Trojan asteroids are in the same orbit as the planet they are associated with. Why are they called trojans? The first to be discovered were named after opponents in the mythical/historical Trojan (Greek-Troy) war as described in Homer's *Iliad*, and this continues, though I wonder when they will run out of names.

The search for Trojans started as the result of a prediction. In 1772 Joseph-Louis Lagrange's solutions to the three-body orbital mechanics problem predicted 5 zones along Jupiter's orbit around the Sun where gravitational forces between it and the Sun are counteracted. Any smaller co-orbiting object within these zones should have a stable orbit around the Sun. Lagrange predicted that objects existed in these zones, but it wasn't until 1906 that German astronomer Max Wolf observed them. Astronomers then discovered that only two of the zones had objects, the zone leading in Jupiter's orbit and the zone following.

Since that time astronomers have identified zones, now named Lagrangian points (or Lagrange points, libration points, L-points) for all the planet-Sun, and planet-larger moon combinations. They are designated as L1 – L5 and are used as needed for placing spacecraft in their own stable orbit around the Sun. The Solar and Heliospheric Observatory (SOHO) is in a Sun-Earth L1 point. When it's finally launched, the James Web Space Telescope will be placed in a Sun-Earth L2 point. These zones allow the spacecraft to remain in a specific orbit without using much fuel.

Interestingly, the trojans in Jupiter's orbit and in all other planet's orbits occur at L4 (60 degrees leading) and L5 (60 degrees following) the planet, so L4 and L5 appear to be the "natural" collective zones. Per naming convention, leading path asteroids (L4) are named after Greek warriors and those following (L5) after warriors from Troy. As with all things human the naming convention, as adopted from Austrian astronomer Johann Palisa's suggestion, put the first two asteroid names in the wrong camps. Maybe this was purposeful as the first two were spies embedded in the others camp!

More recently the term *trojan* has been ascribed to small Solar System bodies in the same orbit as larger bodies, such as planets. The term *trojan asteroid* has been ascribed to those asteroids in Jupiter's orbit.

So, who has trojans? Discovered up to this point: Earth has one, Mars has seven, Jupiter has thousands, Neptune has seventeen.

Unlike in the *Iliad*, these trojans are not a threat.

Opportunities for NBAC Reach out

- New Braunfels and Guadalupe Master Naturalists

The New Braunfels and Guadalupe Master naturalists do not have any lectures on the night sky. Astronomy is in their curriculum, but they have no one to present. They are looking for someone to present a 45-minute talk + 15 minute Q&A at one of their monthly meetings.

New Braunfels: lindheimermn@gmail.com

Guadalupe: txmn.org/guadalupe/

Coming up: OUR 230th ASTRONOMY CLUB MEETING

Thursday, **July 19th**, 2018, from 7 – 9:00 p.m., held in the conference room of TJ's restaurant on Loop Road (337). Have dinner, snack, dessert, and/or a beverage if you like.

The New Braunfels Astronomy Club can be reached at www.astronomyntx.org

Eric Erickson ewandnl@yahoo.com