



The Newsletter for Keene Amateur Astronomers

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July 2026

McMath-Pierce Solar Facility



A nine-hour exposure of the McMath-Pierce Solar Facility on Kitt Peak. The normally white building appears red due to high altitude haze following the 1991 eruptions of Mount Pinatubo (principally: there were some other volcanoes around that time which contributed). No filters or multiple exposures were used. Three equally spaced star trails on the far right mark the Belt of Orion. To the left of these, there is a band of other trails containing red Betelgeuse, blue Bellatrix, and white Procyon. Picture by Dr Bill Livingston. Credit: Bill Livingston/NSO/AURA/[NSF](#)

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Editor's Message

I have been enjoying the longer days and twilight sitting on my deck watching the fireflies. There is something magical about fireflies as they blink their mesmerizing electric green in the darkness. I know our focus is on the night sky but there is something to be said about the beauty of the night and the creatures that inhabit it.

I have taken the month off from writing an article. I am currently busy pursuing other things. I have taken some time to write down what to see this month and provide some upcoming events that might be of interest. Stellafane is in August. If you find yourself in Acadia, there are night viewing events offered by the park rangers. UNH will be hosting their astronomy event in October.

Early this month you can catch Mars, Uranus, and Saturn in the morning sky on the 11th and 12th just before Sunrise. On the 13th Comet 10P/Tempel 2 can be spotted with binoculars or a telescope near Capricorn. It will be best 45 minutes or so after sunset. This comet returns every 5 and a half years and is relatively dim.

The New Moon on the 14th will make it an excellent time to see the Milky Way.

Great objects to view this month:

- **Messier 20 - The Trifid Nebula** located in Sagittarius is a rewarding target showing soft blues, reds, and dark dust lanes. Binoculars will show a soft glow but a telescope will resolve it into its many colors. At low magnifications it can be viewed in the same field of view as Messier 8.
- **Messier 12** - a globular star cluster in the constellation Ophiuchus. It has a noticeable asymmetric shape and a smart telescope will reveal its star density.
- **Omicron Cygni** - a colorful, optical double star, an orange and a blue/white star, located halfway between Deneb and Sadr. This a great object that can be seen with low magnification.

- **NGC 6826 - Caldwell 15** also known as The Blinking Planetary. This optical illusion is the result of the eye being overwhelmed with light. Using averted vision the nebula reappears. This planetary nebula is located in Cygnus. Higher magnifications will reveal a faint outer halo.
- **NGC 6946 - The Fireworks Galaxy** - a face on spiral galaxy located in Cepheus. The density of stars from the Milky Way make this a challenging object to spot. Experts recommend using low power, averted vision and patience to find this object.

Enjoy the beauty and wonder of the night sky,

- Susan Rolke

Monthly Business Meeting

The business meeting will be July 17th at the Observatory followed by observing.

Astronomy Conventions, Retreats, and More

[Stellafane](#) will be held August 13th - 16th. You can learn more and buy tickets for the event at their [new website](#) dedicated to the convention.

[Acadia Night Sky Program](#) is presented by park rangers every week on Sunday and Wednesday at 9:00 PM from July 15, 2026 to August 12, 2026. Join the rangers at Sand Beach to view and learn about Acadia's amazing night sky!

[Adirondack Astronomy Retreat](#) in Westport, NY will take place from August 11 - 13.

[Appalachian Mountain Club](#) is celebrating its 150th year and offering two opportunities to see the dark, the first in October and the second in December.

[Maine Astronomy Retreat](#), Washington, ME will take place September 7th - 13th this year. Enjoy a vacation with your telescope and stay in one of their cabins. See the website for more information.

[Dark Sky Maine Star Party](#), September 12 at Flye Point (Flye Point Road, Brooklin, Maine). Free to the public. *Donations accepted to help defray the cost.* Pay as you choose. Inquiries welcome at darkskeyaine@gmail.com. Check this webpage for updates as the event gets closer!

[New England Fall Astronomy Festival](#) at UNH in Durham NH. This year's festival will be held October 16th and 17th. Admission is Free.

Night Sky Network Online Webinar

Check out past webinars from the [Night Sky Network](#).

McDonald Observatory

[McDonald Observatory Livestream of the Sun](#) at 11 am CST (Noon EST) to enjoy a live solar tour and learn about the history of eclipses.

Observing

To find out skywatching tips for this month, click on the following link to learn more.

Video: [What's Up July 2026 Sky Watching Tips from NASA](#)

You can find past pdfs of the Astronomical League charts [here](#). Turn to the end of the Newsletter to see what is up this month.

NASA Night Sky Notes



This article is distributed by NASA's Night Sky Network (NSN).

The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Tropical Solstice Shadows

David Prosper and Kat Troche

Solstices mark the changing of seasons, occur twice a year, and feature the year's shortest and longest daylight hours - depending on your hemisphere. These extremes in the length of day and night make solstice days more noticeable to many observers than the subtle equality of day and night experienced during equinoxes. Solstices were some of our earliest astronomical observations, celebrated throughout history via many summer and winter celebrations.

Solstices occur twice yearly, and in 2026, they arrive on June 21 at 1:24 AM PDT (08:24 UTC) and on December 21 at 7:03 AM EST (15:03 UTC). The June solstice marks the moment when the Sun is at its northernmost position in relation to Earth's equator, and the December solstice marks its southernmost position. The summer solstice occurs on the day when the Sun reaches its highest point at solar noon in regions outside the tropics, and those observers experience the longest daylight of the year. Conversely, during the winter solstice, the Sun is at its lowest point at solar noon for the year, and observers outside of the tropics experience the least amount of daylight- and the longest night- of the year.

The June solstice marks the beginning of summer for folks in the Northern Hemisphere and winter for Southern Hemisphere folks, and in December, the opposite is true, as a result of the tilt of Earth's axis of rotation. For example, this means that the Northern Hemisphere receives more direct sunlight than the Southern Hemisphere during the June solstice. Earth's tilt is enough that northern polar regions experience 24-hour sunlight during the June solstice, while southern polar regions experience 24-hour night, deep in Earth's shadow. That same tilt means that the Earth's polar regions also experience a reversal of light and shadow half a year later in December, with 24 hours of night in the north and 24 hours of daylight in the south. Depending on how close you are to the poles, these extreme lighting conditions can last for many months, their duration deepening the closer you are to the poles.



A presenter from the San Antonio Astronomy Club in Puerto Rico demonstrating some Earth-Sun geometry to a group during a “Zero Shadow Day” event. As Puerto Rico lies a few degrees south of the Tropic of Cancer, their two zero shadow days arrive just a few weeks before and after the June solstice. Globes are a handy and practical way to help visualize solstices and equinoxes for large outdoor groups, especially outdoors during sunny days! Credit: Juan Velázquez / San Antonio Astronomy Club

While solstice days are very noticeable to observers in mid to high latitudes, that’s not the case for observers in the tropics - areas of Earth found between the Tropic of Cancer and the Tropic of Capricorn. Instead, individuals experience two “zero shadow” days per year. These days, with the sun directly overhead at solar noon, objects cast a minimal shadow compared to the rest of the year. If you want to see your own shadow at that moment, you have to jump! The exact date for zero shadow days depends on latitude; observers on the Tropic of Cancer (23.5° north of the equator) experience a zero-shadow day on the June solstice, and observers on the Tropic of Capricorn (23.5° south of the equator) get their zero-shadow day on December’s solstice. Observers on the

equator experience two zero-shadow days, occurring exactly between these two lines of latitude; equatorial zero-shadow days fall on the March and September equinoxes.

There is some serious science that can be done by carefully observing solstice shadows. In approximately 200 BC, Eratosthenes is said to have observed sunlight shining straight down the shaft of a well during high noon on the solstice, near the modern-day Egyptian city of Aswan. Inspired, he compared measurements of solstice shadows between that location and measurements taken north, in the city of Alexandria. By calculating the difference in the lengths of these shadows, along with the distance between the two cities, Eratosthenes calculated a rough early estimate for the circumference of Earth – and also provided further evidence that the Earth is a sphere!

Are you having difficulty visualizing solstice lighting and geometry? You can build a [Suntrack model](#) that helps demonstrate the path the Sun takes through the sky during the seasons. You can find more fun activities and resources like this model on [NASA's Wavelength and Energy activity](#).

Originally posted by Dave Prosper: June 2022

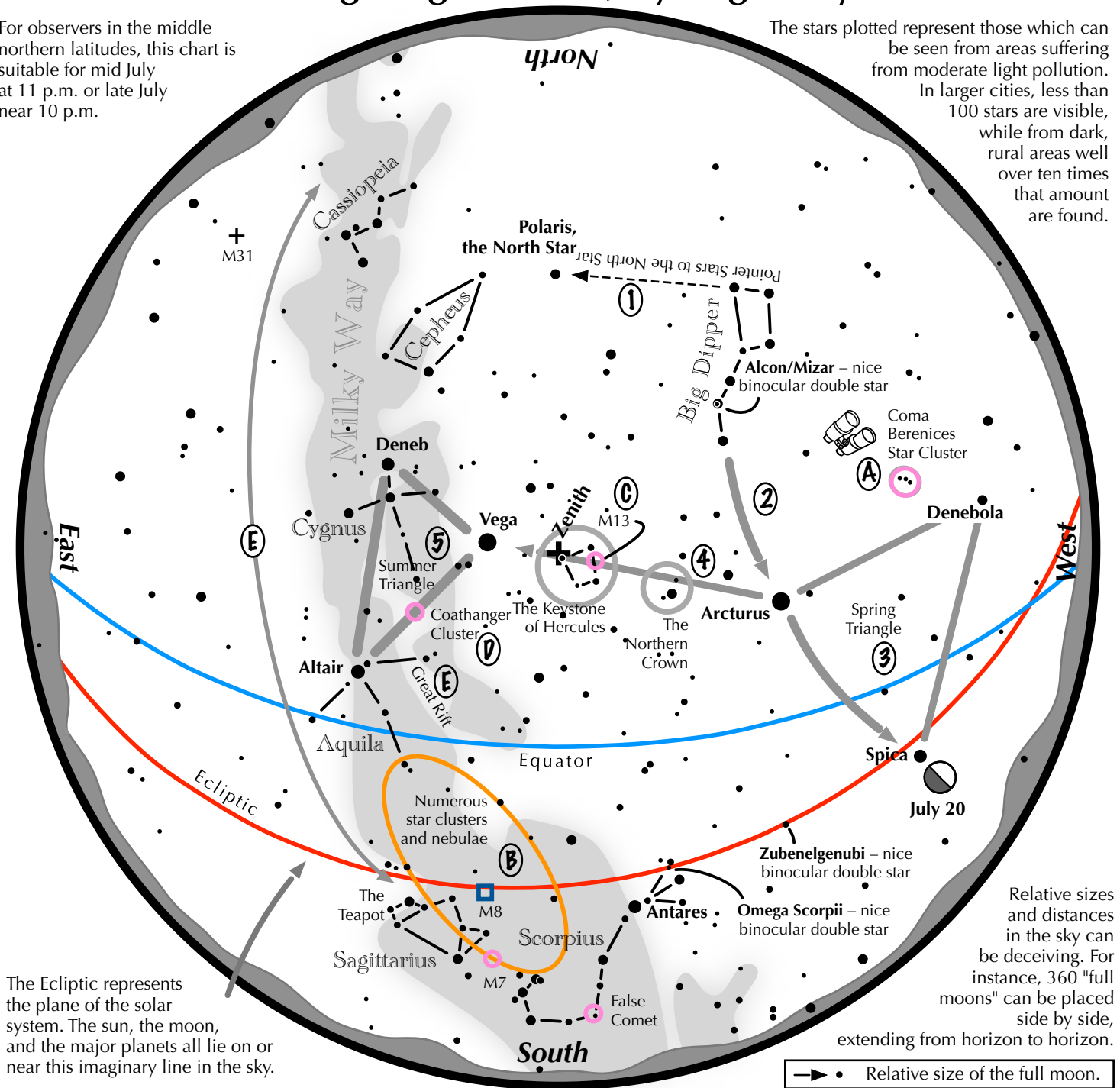
Last Updated by Kat Troche: March 2026

Navigating the mid July Night Sky

2026

For observers in the middle northern latitudes, this chart is suitable for mid July at 11 p.m. or late July near 10 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 mid July night sky: Simply start with what you know or with what you can easily find.

- 1 Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
- 2 Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the July evening sky, then continues to Spica.
- 3 Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
- 4 To the northeast of Arcturus shines another star of similar brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
- 5 High in the East lies the Summer Triangle stars of Vega, Altair, and Deneb.

Binocular Highlights

- A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
- B: Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
- C: On the western side of the Keystone glows the Great Hercules Cluster, containing nearly 1 million stars.
- D: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
- E: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.



M6 & M7

When these two big, bright, and beautiful open star clusters appear in the early evening in early July, summer is upon us.



If you have recently begun your journey under the stars, why not whet your appetite by exploring southeastern Scorpius and its two wonderful open star clusters, M6 & M7. You will return to them year after year!

While they are visible to the unaided eye from a dark location, binoculars help greatly.

1. Identify Scorpius standing low in the south-southeast on an early summer evening. As summer progresses, it ascends low in the south, then swings low in the southwest in the early fall.
2. From red Antares, direct your gaze southward down the scorpion's back, then turn eastward.
3. When its tail hooks northward, continue the length of that hook.
4. M6 and M7 should be plainly visible in the binocular field.

M6:

A faint hazy glow is seen by the unaided eye from a dark, clear site. Two dozen stellar lights can be discerned with 10x50 binoculars.

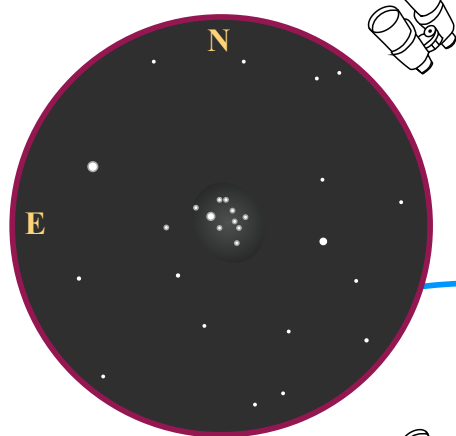
- Integrated Magnitude: 4.2
- Size: 33 minutes

M7:

A glittery glow is easily spotted off the scorpion's tail by the unaided eye. Binoculars reveal many faint stars.

- Integrated Magnitude: 3.3
- Size: 80 minutes

M6 Binocular View



M7 Binocular View

