



CONSTELLATIONS

The stars of summer

Under the night sky: You won't need fancy equipment to enjoy this show

Now that the weather is warmer, it's the perfect opportunity to get outside and spend some time observing the night sky.

With over 100 billion stars in our Milky Way galaxy, the night sky always offers something new to see. In fact, if you were to spend time counting each star individually, it would take you over 3,000 years.

Stars aren't the only thing in our galaxy, however; there are planets, nebulae (clouds of dust and gas) and asteroids. Plus, as of March 31 there are 2,666 satellites orbiting Earth, some of which are visible. You'll never run out of things to look at.

When you first start looking at the sky, it can seem overwhelming, especially on a clear, cloudless night. There are so many stars, it can feel impossible to make sense of what you are seeing.

But look closer and you'll notice that there are indeed patterns in the sky. These patterns are called constellations and although they may change place as to where we see them in the sky depending on the season, they do not change shape.

There are 88 officially recognized constellations, but not all of them can be easily seen. And, to make things more confusing, their names may not match up to the shapes they make. Even though the individual stars that make up a constellation may seem like they are right next to each other, in reality, they can be hundreds of light years away from one another. A light year is equivalent to the distance that light travels in one year, which is nearly 6 trillion miles.

Here, we've identified a few constellations and a meteor shower that are visible in the summer night sky in the Northern Hemisphere. You'll want to find a clear night when the moon won't be too bright, and try to find an area away from lights that can make it hard to see the stars.

Make sure to give yourself at least a half-hour to allow for your eyes to adjust to the darkness. Be sure to dress for the weather. And finally, make sure you bring a flashlight and ask permission before going out at night.

Things to observe in the summer's sky



Perseid meteor shower (July 17-Aug. 24)

Want to wish upon a shooting star? Your best chance to see one this summer is during the annual Perseid meteor shower, which will peak Aug. 11-12. Meteor showers happen when the Earth passes through the trail of debris (tiny bits of rock and dust) left by a comet as it orbits the sun. The bits that fall and burn in the Earth's atmosphere are called meteoroids. (Alas, they aren't really stars.) Meteor showers are named after the constellations they appear to originate from (in this case, Perseus in the northeastern sky). The Perseid meteor shower is caused from the Earth's orbit passing through the debris from the comet Swift-Tuttle. Find out the best viewing times in your area at timeanddate.com/astronomy/meteor-shower/perseid.html Photo by Bill Ingalls, NASA via Getty Images

Summer constellations

Have you noticed that the night sky looks different depending on the season? This is because the Earth is orbiting the sun, and it means that we see different constellations depending on the time of year. For example, summer is the perfect time to catch Scorpius in the night sky, but Orion is in the sky during the day. However, there are some constellations that you can see any time of the year at our latitude because they are circumpolar. These include Ursa Major, Ursa Minor and Cassiopeia. For a more detailed look at where the stars will be in your area, visit timeanddate.com/astronomy/night/. For a printable star chart by month, check out skymaps.com/downloads.html.

Light pollution

Living in an urban area can make it hard to see much of the sky at night. This is due to light pollution which is excessive, misdirected or obtrusive artificial light. Light pollution can disrupt ecosystems, cause negative effects on health and wastes energy. For an interactive example of how light pollution can effect what you can see at night, check out globeatnight.org/light-pollution-interactive.php.

The International Space Station

One of the brightest (and fastest) objects in the night sky is the International Space Station (ISS). The ISS is the about the size of a football field and has an acre of solar panels that make it possible to see from Earth without a telescope. Visit spotthestation.nasa.gov to sign up for alerts to find out when the ISS may be visible in your area.

To infinity and beyond

If the sky isn't cooperating or if you're interested in seeing even more of our universe, check out these resources:

almaobservatory.org

kids.alma.cl

The Atacama Large Millimeter/submillimeter Array (ALMA) is the largest radio telescope in the world. It's located in the Atacama Desert in Chile. The telescope can see 10 times more detail than the Hubble space telescope.

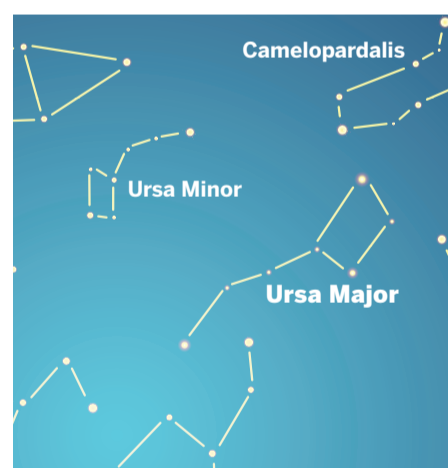
nasa.gov/mission_pages/hubble/main/index.html

The Hubble Space telescope is the first major optical telescope to be placed in space. It was launched April 25, 1990 and sent its first image on May 20, 1990. Next year, NASA plans to launch a new telescope, The James Webb Space Telescope, which will be 100 times more powerful than the Hubble.

skyandtelescope.org/astronomy-clubs-organizations/

If you'd like to find an observatory or astronomy club in your state, visit this website at Sky and Telescope magazine.

Sources: starchild.gsfc.nasa.gov, ucsusa.org, amnh.org, ipi.usra.edu, globeatnight.org, spotthestation.nasa.gov, almaobservatory.org, timeanddate.com, planetarium.ipsd.org, pottcoconservation.com, npr.org, earthsky.org, timeanddate.com, skymaps.com, shutterstock.com



Ursa Major (Big Dipper)

Technically, we are starting off with spotting something that is not actually a constellation. The Big Dipper is an asterism, or a recognized, but unofficial, grouping of stars. It is a part of the constellation known as Ursa Major (the Greater Bear). If you look due north, you will see the Big Dipper. It is made up of four stars in its cup and three in its handle.



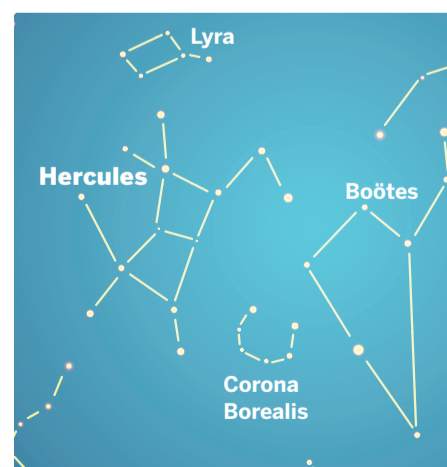
Summer Triangle (Lyra, Aquila and Cygnus)

The Summer Triangle is another asterism made up of the stars of three constellations. It is easiest to find Lyra first, as its brightest star, Vega, is one of the brightest stars this time of year. Use the two stars in the Big Dipper's cup closest to its handle to find Deneb which makes up the tail in Cygnus, the swan. The last star in the triangle is Altair, part of Aquila (the eagle).



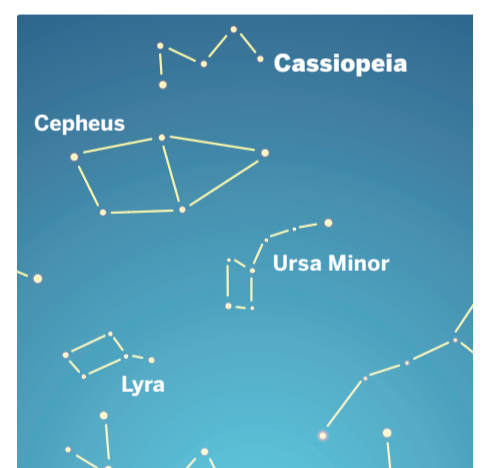
Ursa Minor (Little Dipper and Polaris)

Once you've found the Big Dipper, use the two stars at the edge of its cup to find Polaris (or North Star). The North Star is the first in the handle of the Little Dipper. Like the Big Dipper, the Little Dipper is made up of three stars in its handle and four stars in its cup. Another spotting tip: The Little Dipper and the Big Dipper face each other with their handles pointing in opposite directions.



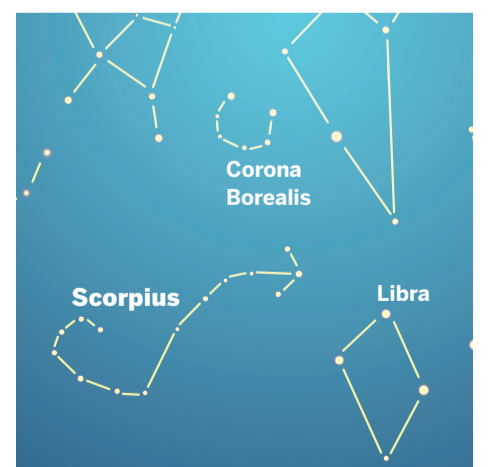
Hercules (the fifth largest constellation)

If you've found Vega (looking North), look just east and see if you can't locate the four stars that make up Hercules body. In total, Hercules is made up of 22 stars. If you have some binoculars handy, see if you can spot M13 in the keystone. M13 is a globular star cluster, home to over 100,000 stars.



Cassiopeia (W or M)

Opposite of the Big Dipper's cup in the northern sky is Cassiopeia, which looks like a "W" or "M" made from five stars. It is one of the 48 "original" constellations identified by the Greek astronomer Ptolemy. Although it is visible year-round, it will appear to be the brightest in early November.



Scorpius (the scorpion)

The j-shaped constellation Scorpius will appear low in the summer sky. It is best viewed later in the summer in July and August and may not be completely visible. It is one constellation that looks like its namesake, which makes it easy to spot. Scorpius is one of the 12 astrological constellations of the zodiac.