

Central Coast Astronomical Stargazing

July

Preparing for your stargazing session:

Step 1: Download your free map of the night sky: www.SkyMaps.com

They have it available for Northern and Southern hemispheres.

Step 2: Print out this document and use it to take notes during your stargazing session.

Step 3: Watch our stargazing video: youtu.be/PDwCnDmScgk

*Image credit: all astrophotography images are courtesy of NASA unless otherwise noted. All planetarium images are courtesy of Stellarium.

Main Focus for the Session:

1. Libra (the Weighing Scales)
2. Scorpius (the Scorpion)
3. Sagittarius (the Archer)

Notes:

Libra

At one time, this constellation was once a part of the claws of Scorpius, but it was re-drawn to mean “weighing scales”.

The four stars in the diamond are interesting: two are double stars (at 3 and 9 o'clock position), the lowest one (6 o'clock position) is an orange pulsating variable star, and the top star (beta star) is a bright blue star and is called Zubeneshamali which means “northern claw”. The 3 o'clock star (alpha star) is called Zubenelgenubi which means “southern claw”.

The circle above the topmost star is Gliese 581 which has several planets, and astronomers are interested in two of them since they're in the habitable zone. So far, Libra has three star systems known to have planets.



Understanding Star Clusters:

Open clusters are one of the two types of star clusters. They are usually found within the galactic plane and nearly always found within the spiral arms of galaxies. They have a few hundred stars and aren't very populated, kind of like living in the country instead of the city. The fuzzy blue stuff (nebulae) is gas and dust we'll talk about in a bit.

Globular clusters are the other kind of star cluster. Each bright dot is a star. And these stars are packed in a tight ball by gravity, kind of like being in New York City – everybody lives close together.

Scorpius

M4 is a bright globular cluster (mag 5.9), is the closest globular cluster to Earth, only 5600 light years away.

To find it, look for Antares, the bright orange star at the heart of Scorpius. It's a little to the right and up, and you've got it!

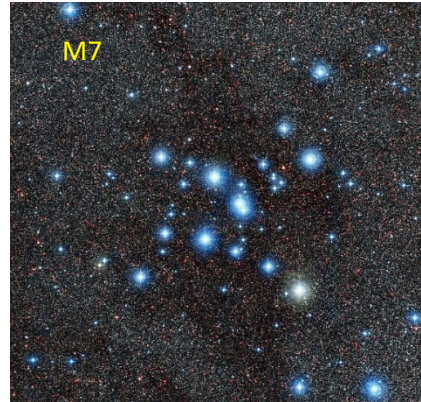


Antares means “like Mars”, and is one of only two first magnitude class M stars. (The other is Betelgeuse in Orion, a winter time constellation.)

In the image (right), notice that the shape of Scorpius really does look like a scorpion with a long tail and a stinger on the end.

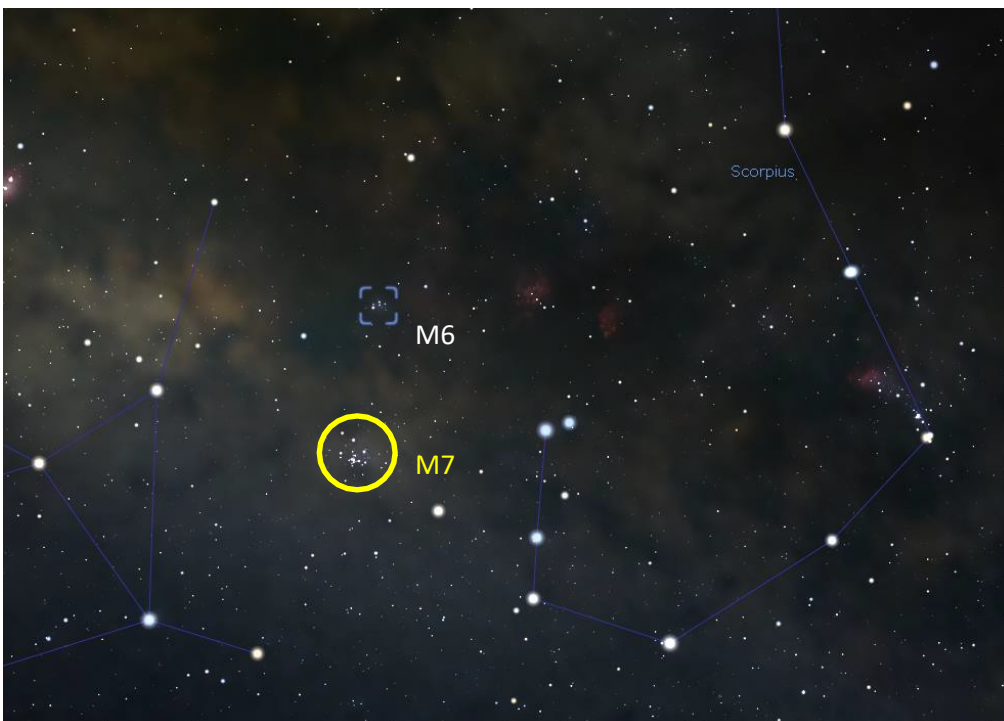


M6 (Butterfly Cluster) is an open cluster (mag 4.2) and is best seen in binoculars, as it's about the size of the full moon and contains more than 300 stars (you'll only see a few dozen in binoculars).

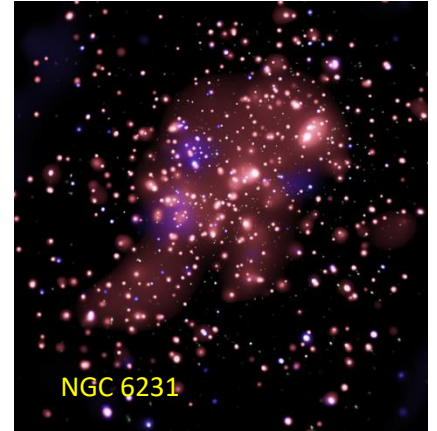


Milky Way has its center just inside the border of Sagittarius, about 3 degrees north and a bit east of M6. The bulge of the Milky Way can be seen above and including Sagittarius and Scorpius.

M7 (Ptolemy's Cluster) is an open star cluster (mag 3.3) right below M6, a concentration of over 100 stars, best seen with binoculars right next to the "stinger" of Scorpius. This cluster was discovered by Ptolemy in 130 AD. You should be able to get both clusters in one view through your binoculars.



NGC 6231 is an open cluster (mag 2.6) headed right for us at about 50 mph. The False Comet is the binocular appearance of the large general area around NGC 6231. NGC 6231 is a beautiful open cluster in a telescope.



There are so many globular clusters in this one area because they are all orbiting the center of our galaxy!

Pipe Nebulae B78 is a nice, large, dark nebula for binoculars, and is actually in Ophiuchus, but it appears above the back of Scorpius. It's visible in a clear, dark night. It's part of a much larger Dark Horse Nebula. The Pipe Nebula is the "rump" and hind leg of the horse. Use averted vision and a set of binoculars to find the "prancing horse".



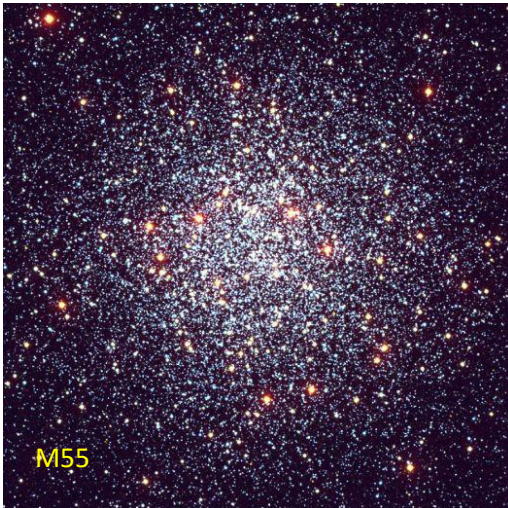
A dark nebula is a dust cloud. Astronomers used to think these were "holes in the sky", but really these are dark clouds that absorb the wavelengths of lights from objects behind them. Dark nebula don't have clear borders or regular shapes.



Sagittarius

There is so much to see in this constellation! Nice binocular objects in Sagittarius including M8 and M24, which can all be seen with the naked eye. M55, M22, M23, M25, and M17 are all binocular objects you can easily find.

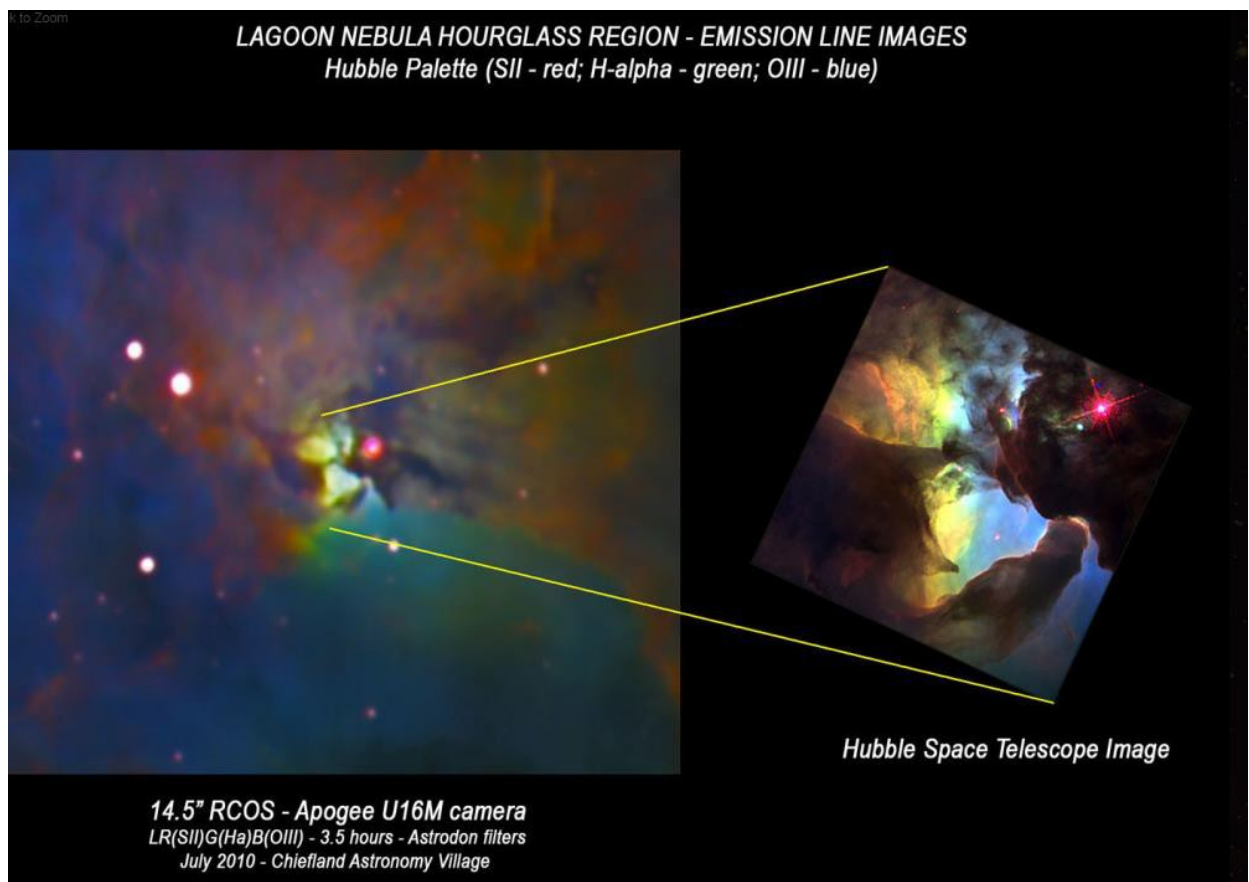
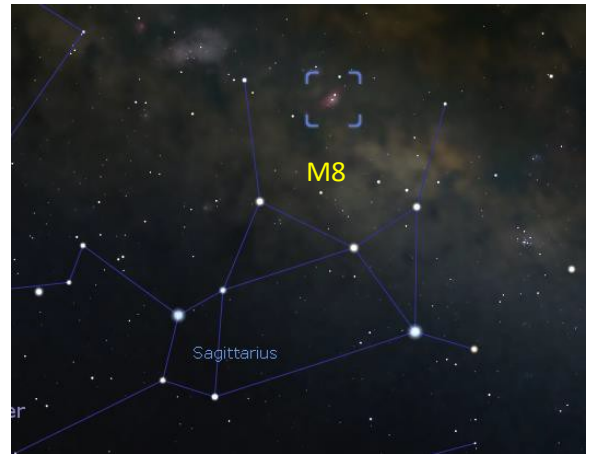
M55 (globular cluster) has about 55 variable stars (mag 7.4), and you can see this with your binoculars (it will look like a fuzzy patch). To see individual stars requires a telescope.



M22 is an elliptical globular cluster of stars in Sagittarius (mag 5.1)



M8 consists of an open cluster (NGC 6523), a long skinny dark nebula (no Barnard number), and a bright nebula containing the Hourglass Nebula. So you get three for one in M8! These three objects are surrounded by a faint large emission nebula. For seasoned astronomers, using an O-III filter will show this larger nebula well.



M23 (NGC 6494) is an open cluster (mag 6.9)



M25 is an open cluster of stars (mag 4.9).

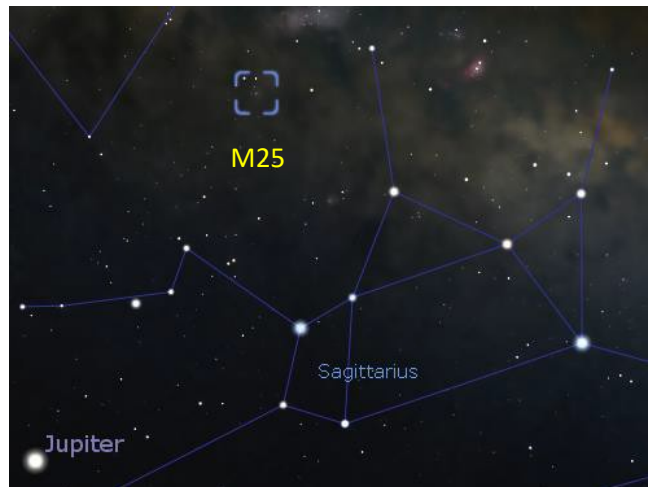
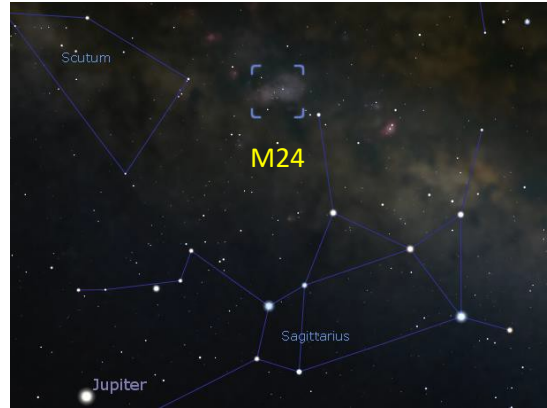


Image: Starhopper, Wiki

M24(Milky Way Star Cloud) is one of only 3 Messier objects that is not a deep sky object. It's the densest concentration of individual stars that can be seen with binoculars. In fact, you'll get about 1,000 stars in your binoculars on a dark night.



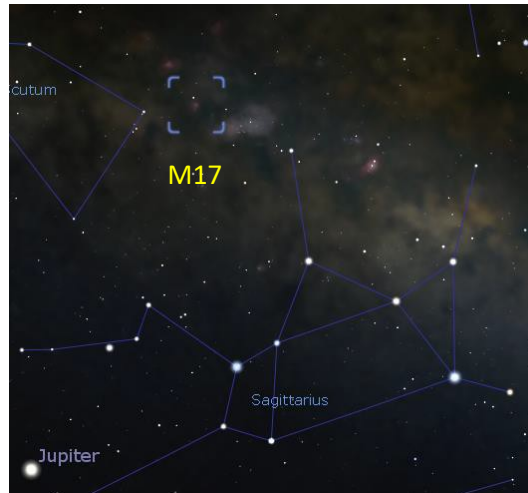
Image: Tomas Mazon



M17 (Swan Nebula, Omega Nebula) is an H II region (a cloud of hydrogen gas where the hydrogen atoms have lost an electron) about 40 light years across and is considered one of the brightest and most massive star-forming regions of our galaxy. It's similar to the Orion Nebula (M42), except this one is viewed edge-on instead of face-on. A nearby open cluster (NGC 6618) is embedded and causing the gases to glow. (mag 6)



Image: Chuck Ayoub



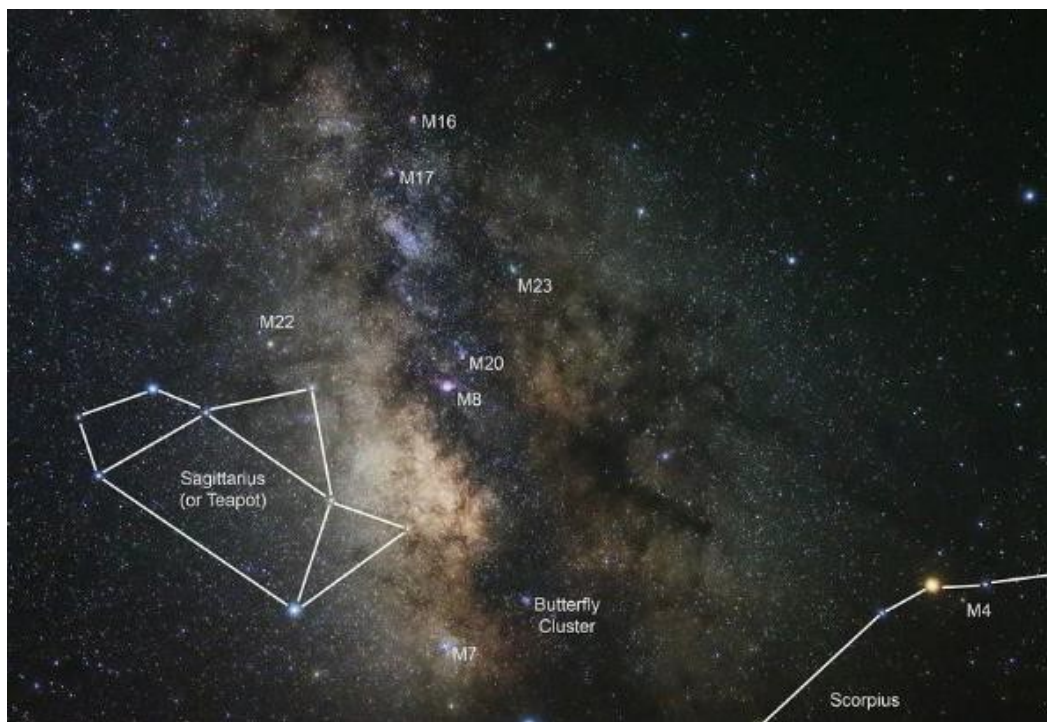


Image credit: Rick Albrecht

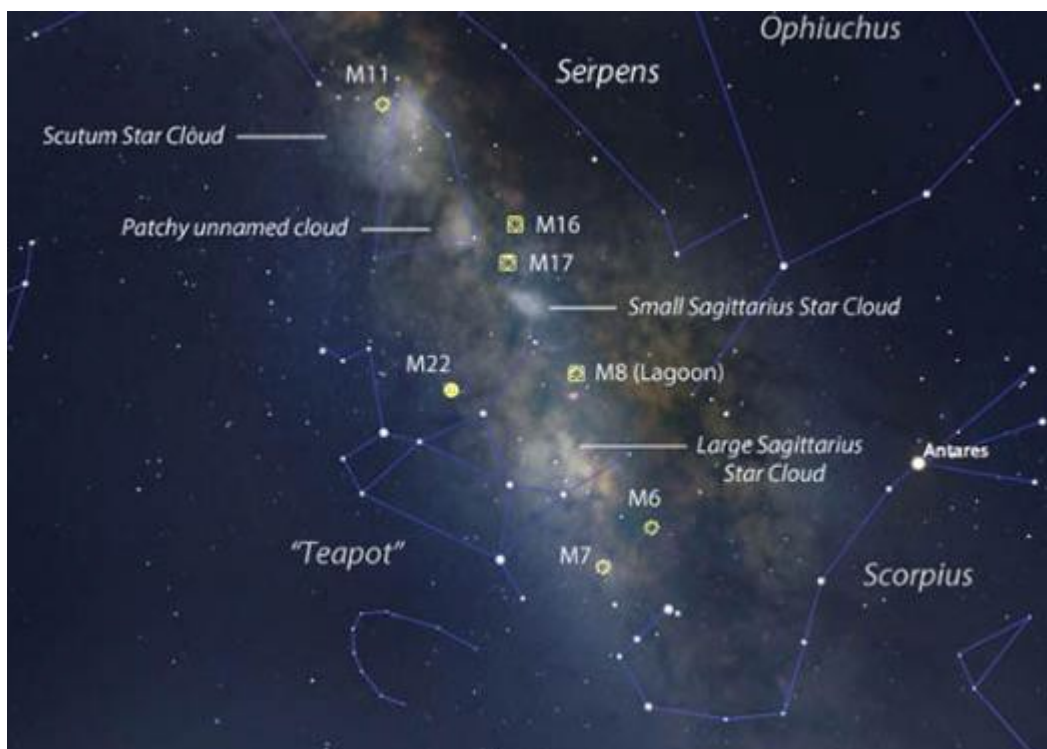


Image credit: KTAR News, July 2019