

Central Coast Astronomical Stargazing

December

Preparing for your stargazing session:

Step 1: Download your free map of the night sky: 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/dPSoeR4RosQ

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

Main Focus for the Session:

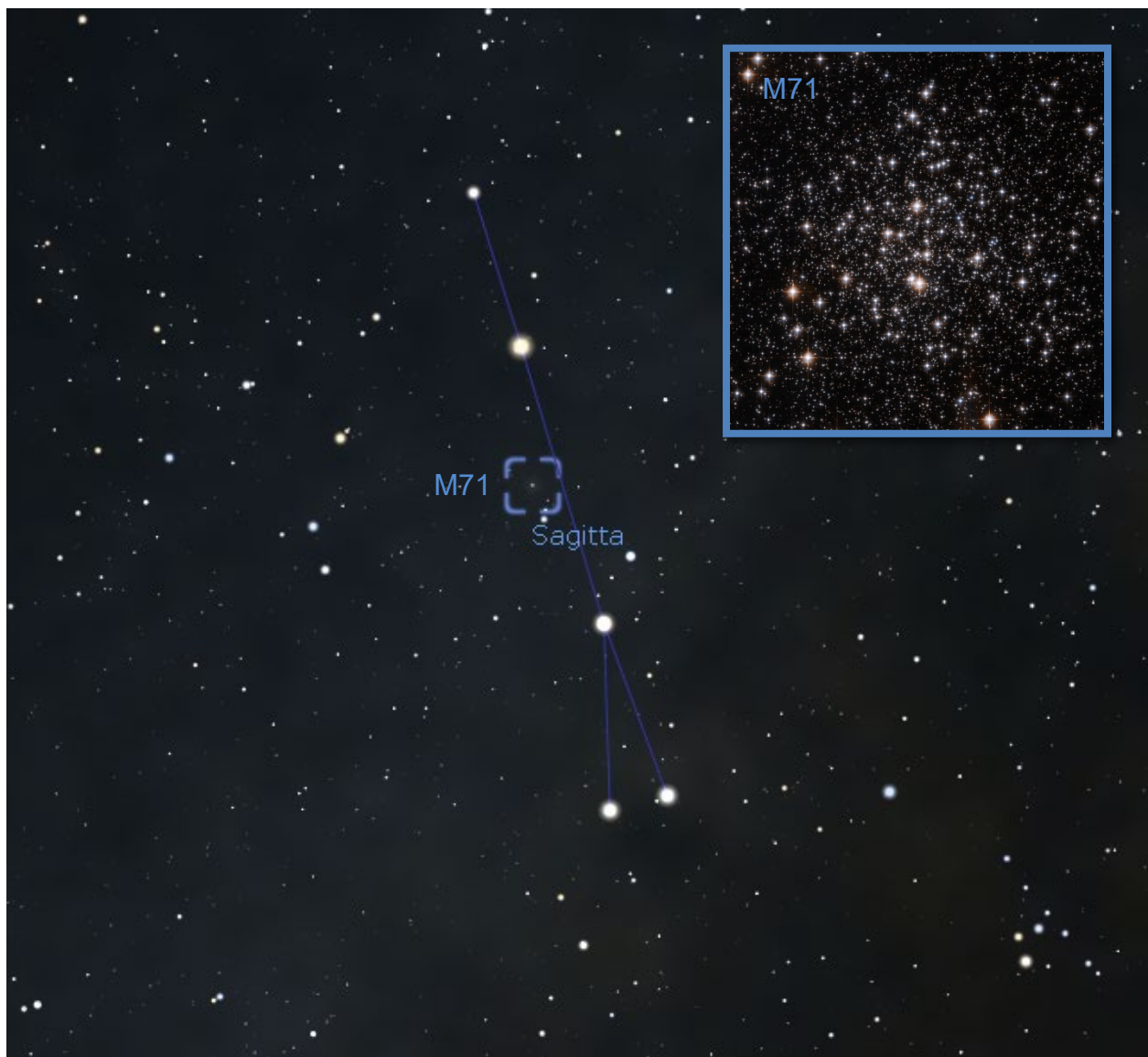
1. Sagitta (the Arrow)
2. Delphinus (the Dolphin)
3. Sculptor (the Sculptor)
4. Triangulum (the Triangle)
5. Aries (the Ram)

Notes:

Sagitta (the arrow)

M 71 is a globular cluster located between gamma and delta Sagittae. It has a magnitude of 8.0 and is about 18,000 light years away. M 71 was discovered by the Swiss astronomer Phillippe Loys De Chesaux in 1746. It is only 40 light years across and only contains a mass of 40,000 suns.

At one time, astronomers weren't sure if this object was a rich open cluster or a poor globular cluster. Modern consensus is that M 71 is a globular cluster and its orbit within the galactic disk stripped it of many of its stars. This object is visible in binoculars.

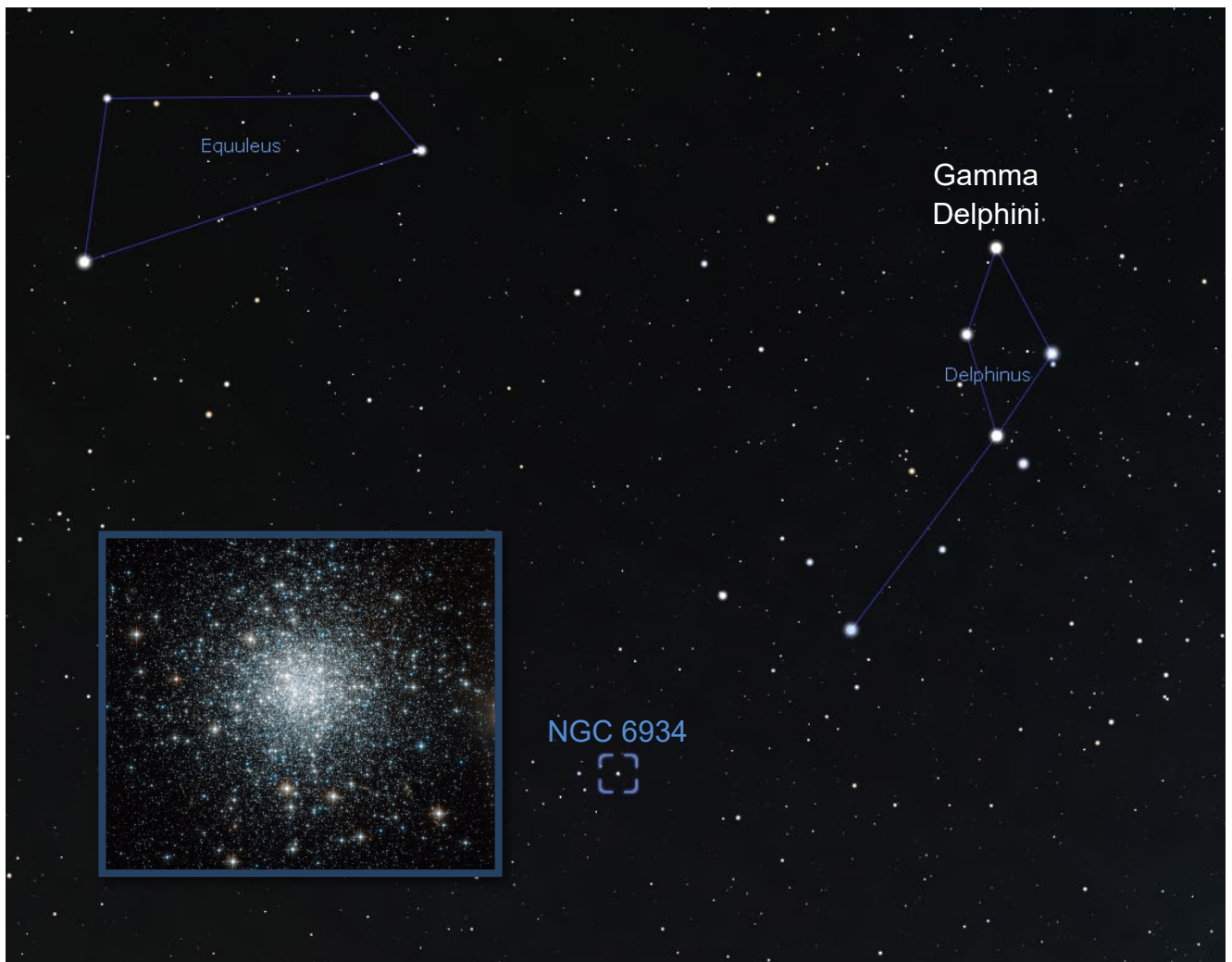


Delphinus (the dolphin)

Gamma Delphini is a double star discovered by James Bradley in 1755. It is about 100 light years away and consists of a yellow orange star (magnitude 4.4) and a yellow white star (magnitude 5.0) with a separation of 9" between the stars.

According to Burnham this may be a binary pair since they share a proper motion of 0.2" per year at a position angle of 189 degrees. Their physical separation is about 300 astronomical units, so if they are a binary system, one orbit is going to take a lot of years. This is a nice double in small telescopes.

NGC 6934 is a globular cluster with a magnitude of 8.8 and a distance of 57,000 light years. William Herschel discovered NGC 6934 on September 24, 1785. It is about 118 light years in diameter. NGC 6934 is located in southern Delphinus.

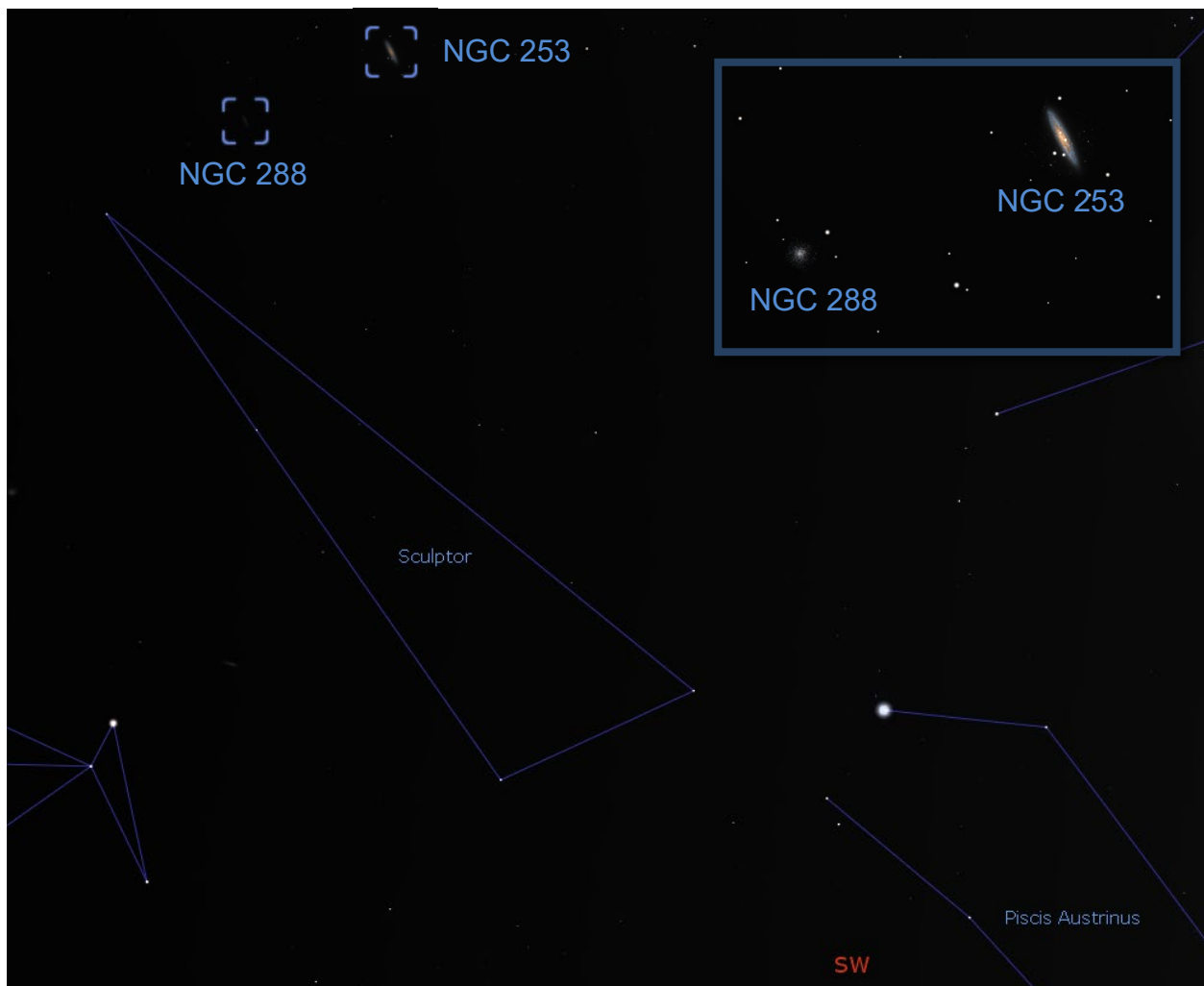


Sculptor (the Sculptor)

Sculptor (the Sculptor) is a modern constellation created by Nicolas Louis De La Caille and first published in his 1763 star catalogue, a year after he died.

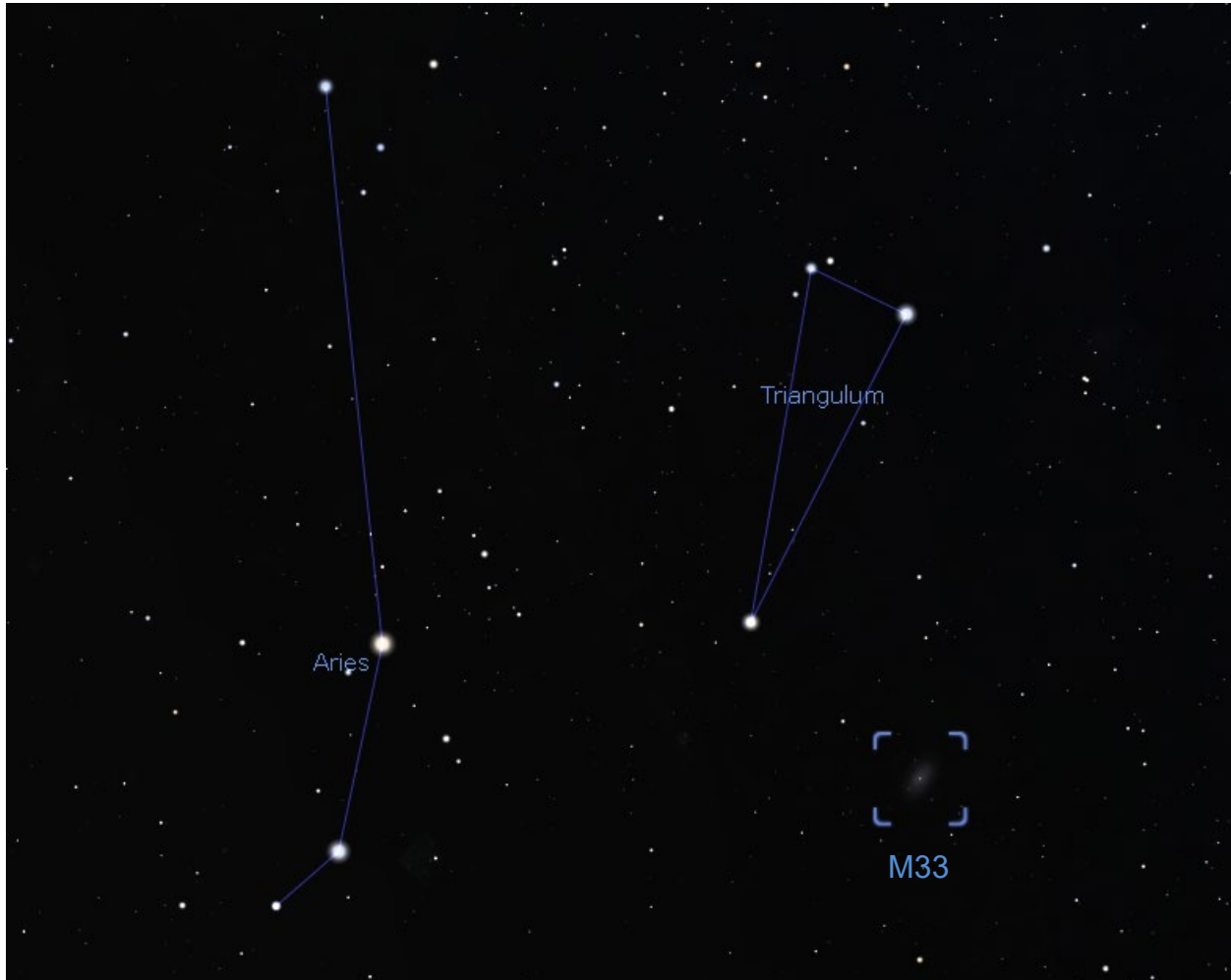
NGC 253 is a highly inclined spiral galaxy, called the Silver Coin galaxy. It has a magnitude of 7.6 and is 9.8 million light years distant. Caroline Herschel discovered NGC 253 on September 23, 1783 using a small Newtonian sweeper scope at 30 times power. This galaxy is easily seen in binoculars and is a wonderful object in small telescopes.

NGC 288 is a globular cluster with a magnitude of 8.1 and a distance of 27,400 light years. It was discovered by William Herschel on October 27, 1785. NGC 288 is about 1 and 3/4 degrees Southeast of NGC 253.



Triangulum (the triangle)

M 33 is a face on spiral galaxy. It is the third largest member of our local group of galaxies which includes the Milky Way and the great Andromeda galaxy. M 33 is magnitude 5.7 and only 2.7 million light years distant. Charles Messier discovered M 33 on August 25, 1764. It is sometimes called the Pinwheel Galaxy or the Triangulum Galaxy. Even though M 33 has a fairly bright magnitude it is pretty faint because it is larger than a full moon. From dark skies it can be easily seen in binoculars.

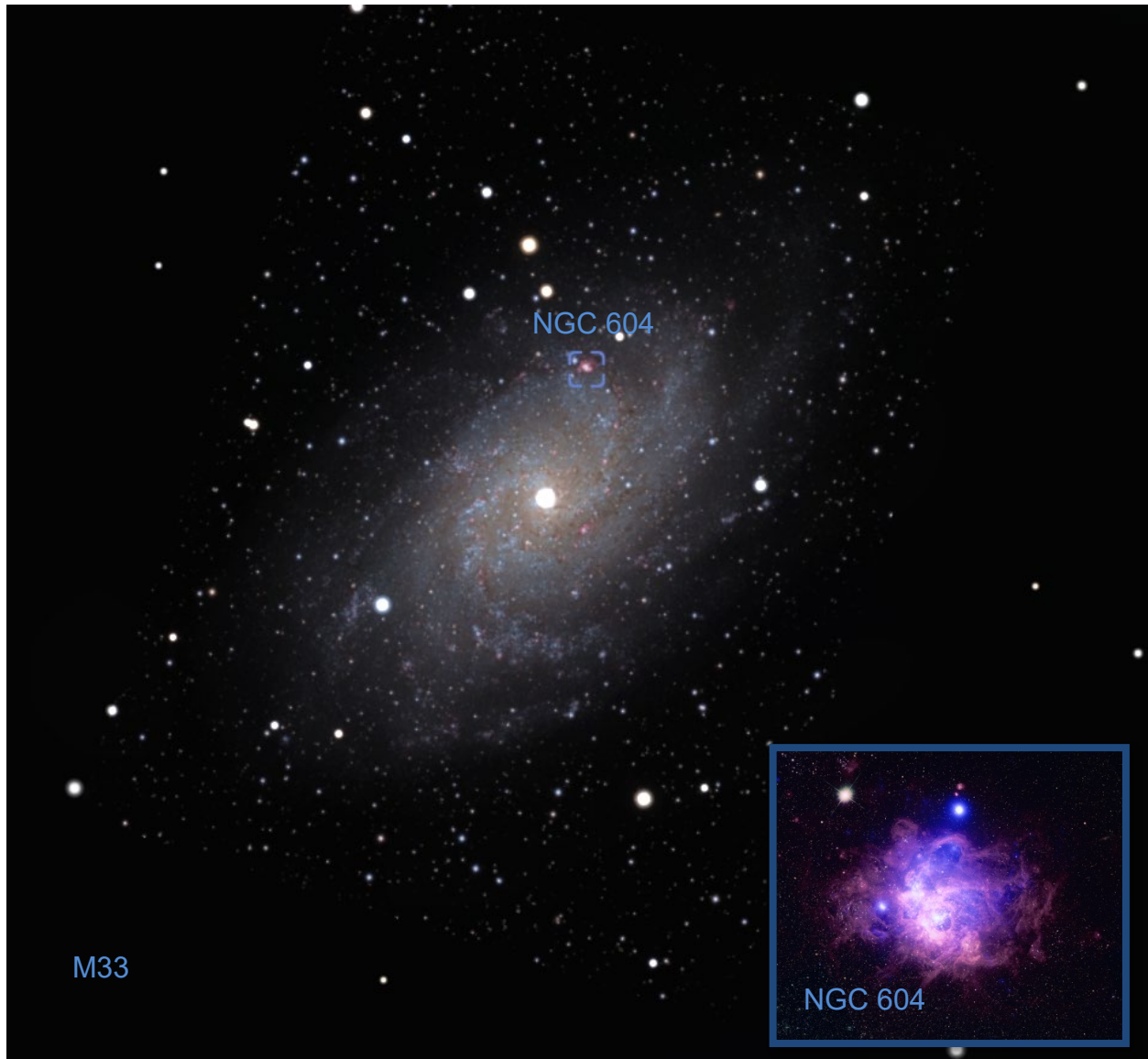


NGC 604 is an extremely large star birth area (H II region) in M 33. It is largest H II regions known with a magnitude of 10.5 and a diameter of 1,500 light years. It was discovered by William Herschel on September 11, 1784.

From a dark area I can see it in my 8" telescope and it has a good response to my O-III filter. If you could replace the Orion Nebula with NGC 604, it would cover over 50 degrees of the sky.

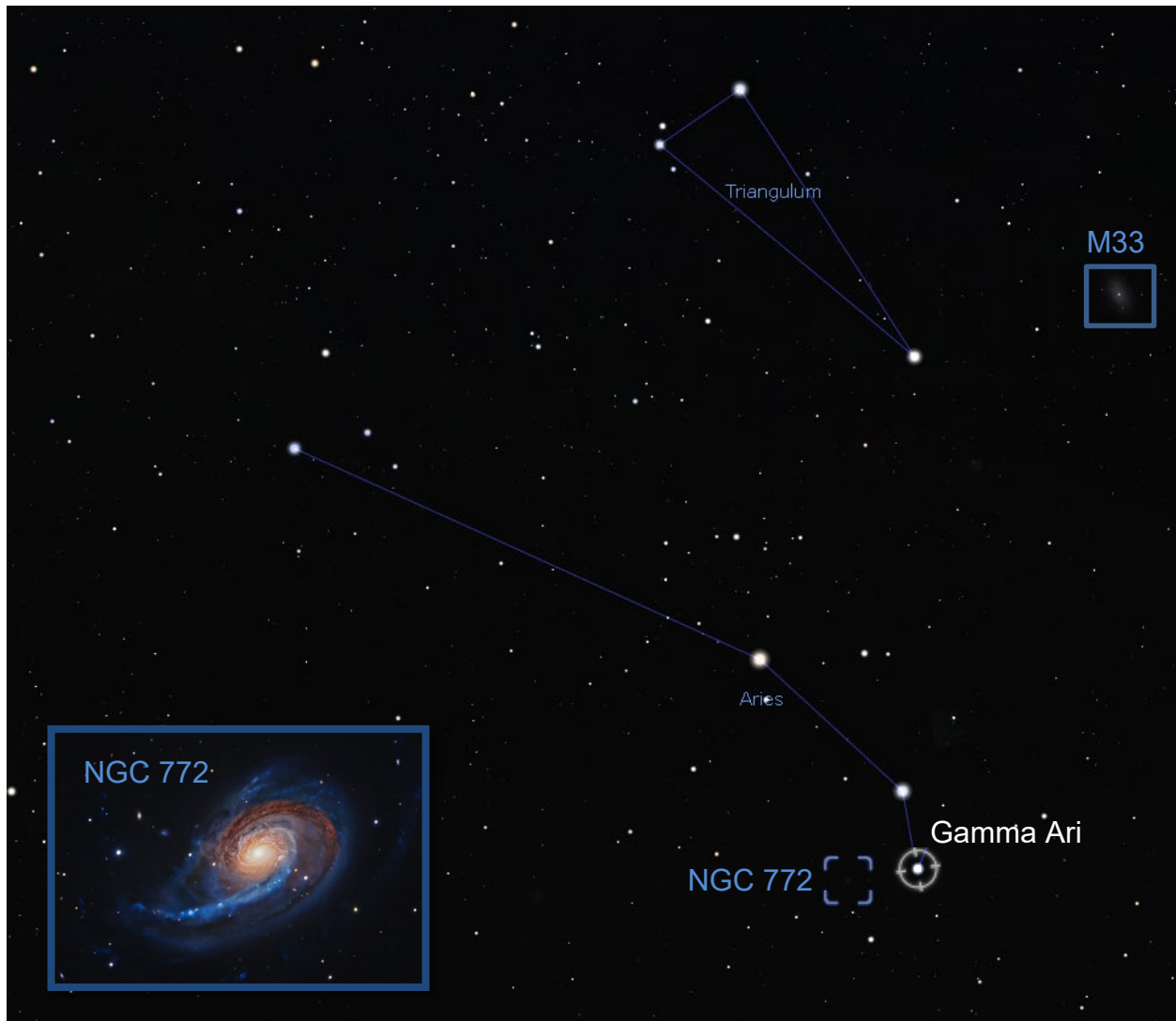
What does that mean? If you start at the horizon and go to directly overhead (called the zenith) that is 90 degrees. So 50 degrees would cover over half that distance. If you replaced the Orion nebula with NGC 604, it would extend well beyond the entire constellation of Orion and Sirius (the brightest star) would be a foreground star with NGC 604 behind it.

A Hubble image of NGC 604 shows more than 200 massive stars (15 – 200 solar masses) newly formed in the center of this nebula.



Aries (the ram)

Gamma Arietis is a binary pair of white stars with magnitudes of 4.5 and 4.6, currently about 7.5" apart. The combined luminosity of these stars is 50 suns. They are about 160 light years distant. Robert Hook discovered this pair of stars while observing comet Hevelius in 1664. It appears that the position angle is changing very little while the separation is decreasing over time. In 1779 William Herschel measured the separation at 10.2" apart. This would occur if the orbit of this pair is horizontal to our line of sight. In a small telescope this is a beautiful binary pair.



NGC 772 is a spiral galaxy with a magnitude of 10.3 and a distance of 106 million light years. William Herschel discovered NGC 772 on November 29, 1785. It is located about 1 and 1/2 degrees East and a bit South of Gamma Arietis. NGC 772 has been given the nickname the Fiddlehead galaxy due to its shape in photographs.