Central Coast Astronomy Virtual Star Party
## April 10th 7pm Pacific

Welcome to our Virtual Star Gazing session! We'll be focusing on objects you can see with binoculars or a small telescope, so after our session, you can simply walk outside, look up, and understand what you're looking at.

CCAS President Aurora Lipper and astronomer Kent Wallace will bring you a virtual "tour of the night sky" where you can discover, learn, and ask questions as we go along! All you need is an internet connection. You can use an iPad, laptop, computer or cell phone. When 7pm on Saturday night rolls around, click the link on our website to join our class. *CentralCoastAstronomy.org/stargaze*

Before our session starts:

Step 1: Download your free map of the night sky:
SkyMaps.com
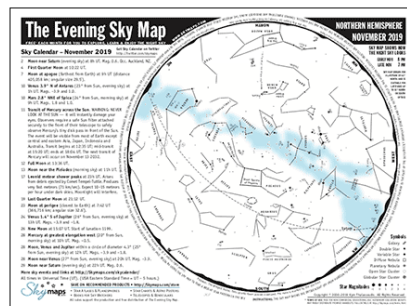
They have it available for Northern and Southern hemispheres.

Step 2: Print out this document and use it to take notes during our time on Saturday. This document highlights the objects we will focus on in our session together.

Celestial Objects:

Moon: The moon 2 days from new, which is excellent for star gazing!

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

Main Focus for the Session:

1. Cancer (the Crab)
2. Leo (the Lion)
3. Lynx (the Lynx)
4. Ursa Major (the Big Bear)

Cancer (the Crab)

Cancer, the crab, ancient Greek zodiacal constellation.

**M 44, open cluster, Praesepe or Beehive**

Large, open cluster 1.2 degrees across, with a visual magnitude of 3.1 and a distance of 610 light years. M 44 contains over 200 stars and is about 500 to 700 million years in age.

This open cluster was first mentioned by Aratus in 260 BC as a small nebula. Bayer noted M 44 as the Greek letter, epsilon, in his 1603 atlas Uranometria. Galileo first resolved M 44 into stars in 1609. M 44 is bordered on the northeast by Asellus Borealis (northern donkey), Gamma Cancri and on the southeast by Asellus Australis (southern donkey), Delta Cancri. It makes sense that Praesepe, which means "fodder manger" is bordered by two hungry donkeys.

M 44 is visible to the naked eye as a faint cloud but best seen in binoculars as a pretty open cluster. Another nickname is the Beehive cluster and it is the official open cluster of Utah. M 44 is located, roughly, in the center of Cancer.

M 67, open cluster

This open cluster is about 25' across, with a visual magnitude of 6.9 and a distance of 2960 light years. M 67 contains over 700 member stars and is one of the oldest open clusters with an age of about 3.7 billion years. This open cluster is located in southern Cancer about 1.75 degrees west of Alpha Cancri. Binoculars easily resolve M 67 into a nice cluster of stars.

M67

M44

M67

M44
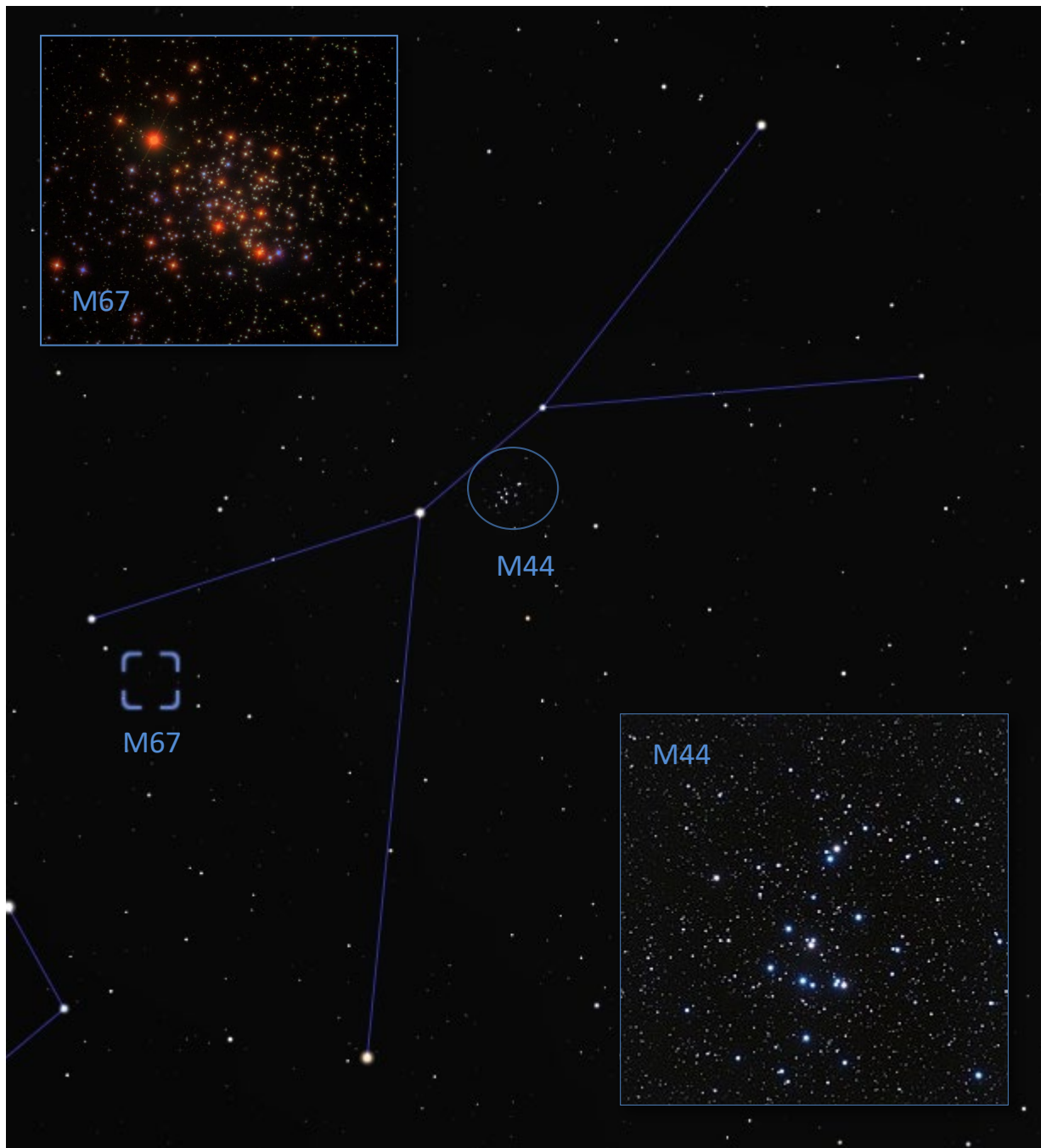
Leo (the Lion)

Leo, the lion, ancient Greek zodiacal constellation.

Regulus, star, Alpha Leonis.

With a visual magnitude of 1.35, Regulus is the 21st brightest star in the sky, excepting our sun. It is 79 light years distant, 146 times brighter than our sun and is about 5 times the diameter of our sun.

Gamma Leonis, binary star.

This pair of stars is about 130 light years distant and consists as a visual magnitude 2.37 star orbited by a visual magnitude 3.64 star, with a current separation of 4.73". William Herschel discovered this binary pair on February 11, 1782. One orbit takes about 554 years. In my 8" scope, Gamma Leonis appears as a nice close pair of orange stars. Gamma Leonis is located about in the center of the Sickle. The Sickle is an asterism in the front of Leo.

M 65, galaxy.

At a distance of 32.8 million light years, M 65 has a visual magnitude of 9.3 and a size of 9.8' x 2.9'. This spiral galaxy was discovered by Charles Messier on March 1, 1780. M 65 is inclined 74 degrees to our line of sight and can be seen in 10x50 binoculars. This galaxy is located about 2.6 degrees south-southeast of Theta Leonis

M 66, galaxy.

At a distance of 32.8 million light years, M 66 has a visual magnitude of 9.0 and a size of 9.1' x 4.2'. This spiral galaxy was discovered by Charles Messier on March 1, 1780. This galaxy can be seen in 10x50 binoculars. M 66 is about 20' east of M 65 and both galaxies can be seen together in a low power eyepiece in a moderate sized telescope. About 35' north of M 66 is an edge on spiral galaxy, NGC 3628. This galaxy, along with M65 and M 66 make up a group called the Leo Trio.

M66

Peter Bresler

M65

Peter Bresler

Leo

M65, M66

NGC 3628

M65

M66

M65, M66
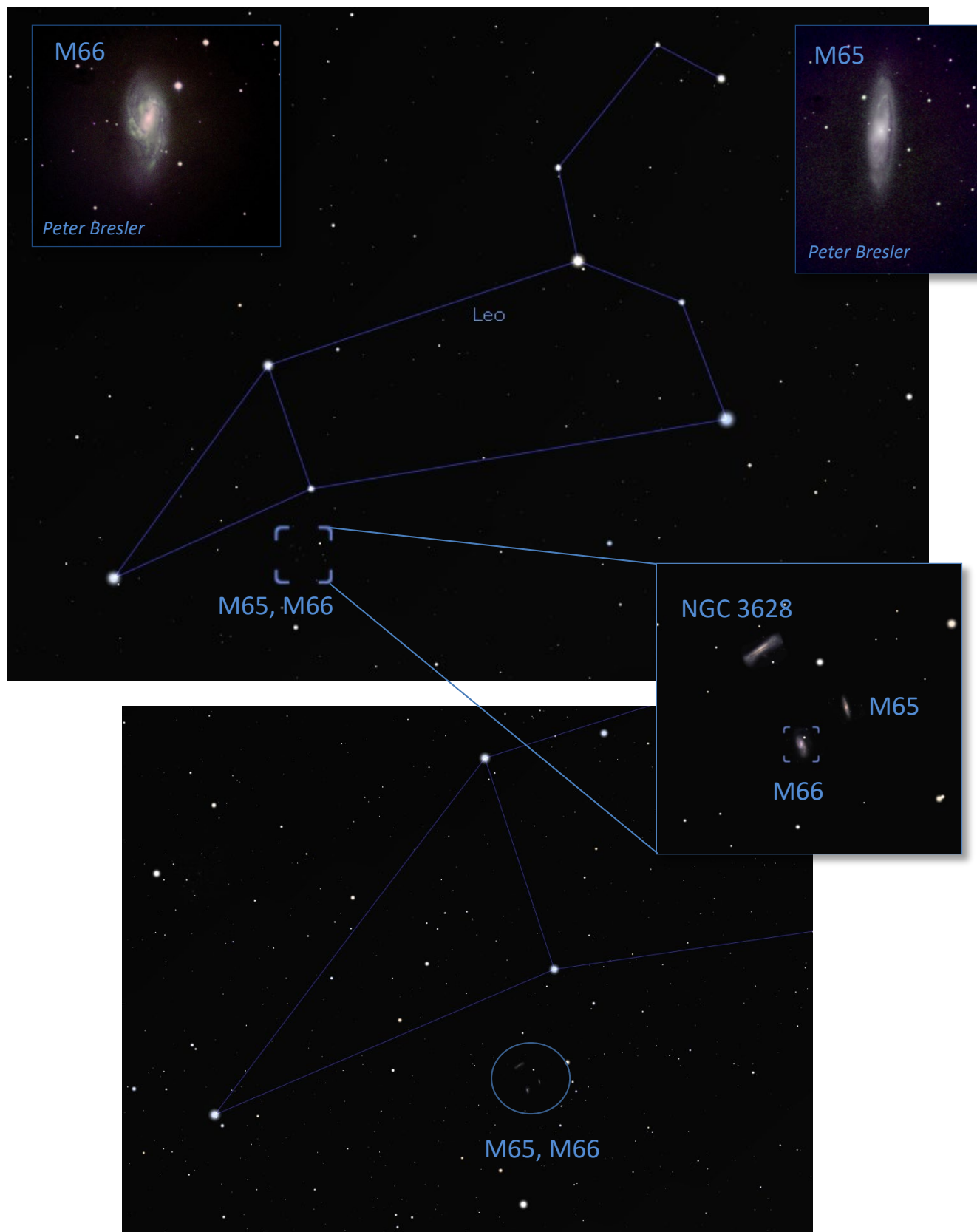
Lynx (the Lynx)

Lynx, the lynx, modern constellation created by Johannes Hevelius in 1687.

NGC 2419, globular cluster, Intergalactic Traveler.

At a distance of 270,000 light years, NGC 2419 has a visual magnitude of 10.4 and a size of 4.6' x 4.6'. This distant globular cluster was discovered by William Herschel on December 31, 1788. NGC 2419 is located about 7 degrees north of Castor, Alpha Geminorum, and a little bit east. Due to its extreme distance, this globular cluster is known as the Intergalactic Wanderer. With improved knowledge of the Milky Way, we now know that this globular cluster is gravitationally bound to our galaxy. NGC 2419 is one of the furthest globular clusters that can be seen in an 8" scope.
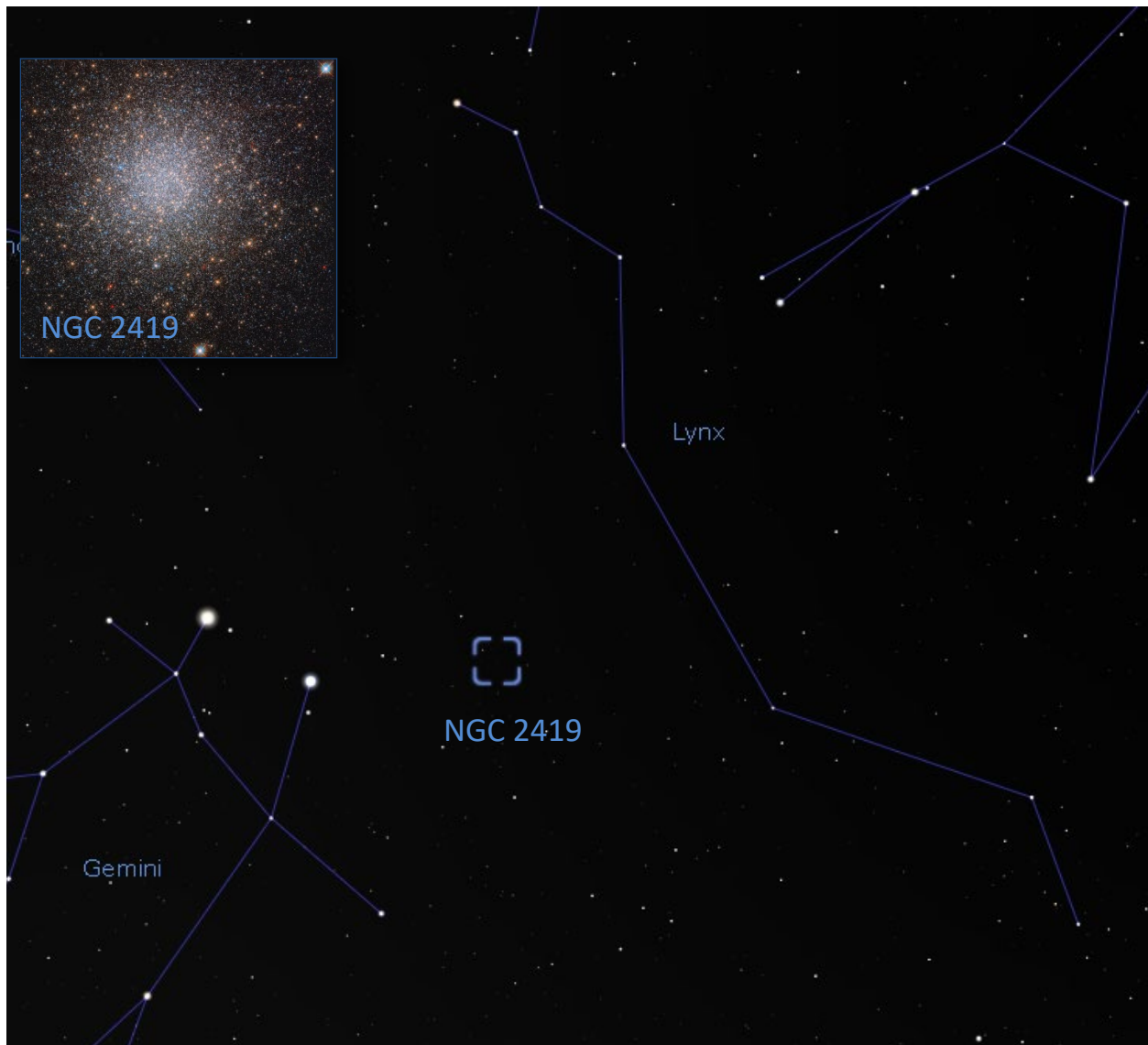
Ursa Major (the Big Bear)

Ursa Major, the Big Bear, ancient Greek constellation.

M 101, galaxy, the Pinwheel Galaxy.

At a distance of 21.8 million light years, this face on spiral galaxy has a visual magnitude of 7.7 and a size of 29' x 27'. It has a diameter of about184,000 light years. Pierre Mechain discovered this galaxy on March 27, 1781. M 101 is located 6.5 degrees east of Mizar and about 0.5 degree south. This galaxy is visible in 7x50 binoculars. There are nine NGC H II regions in the arms of this galaxy, some visible in an 8" scope with the use of an O-III filter.
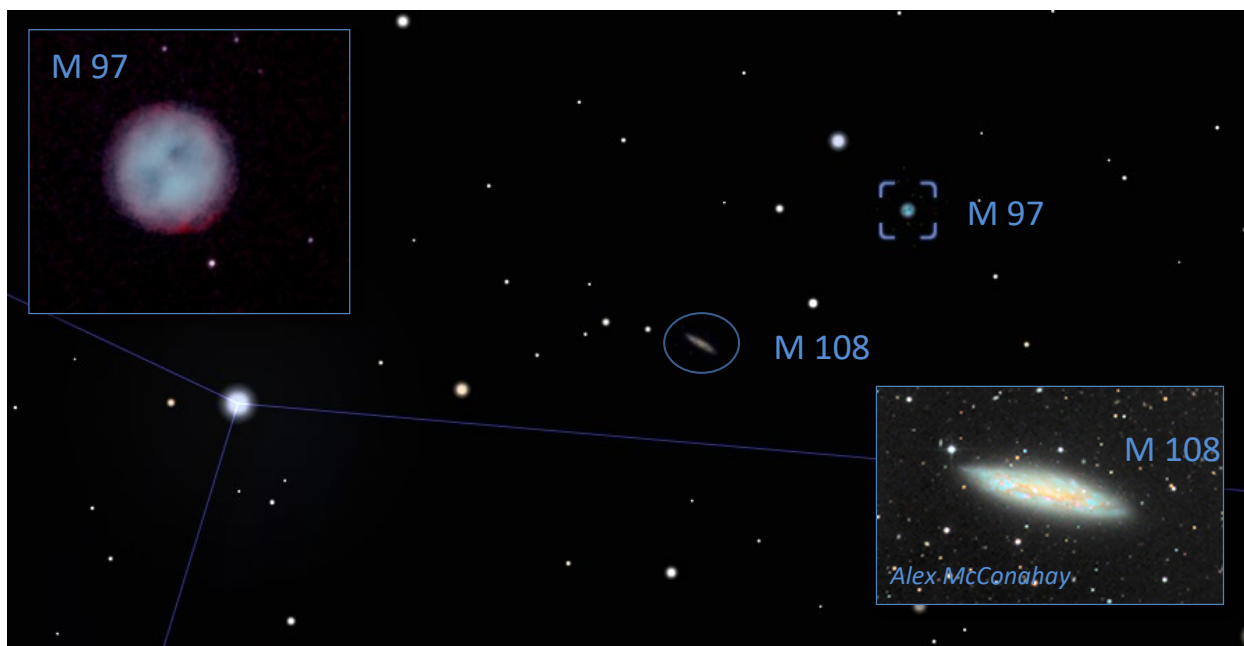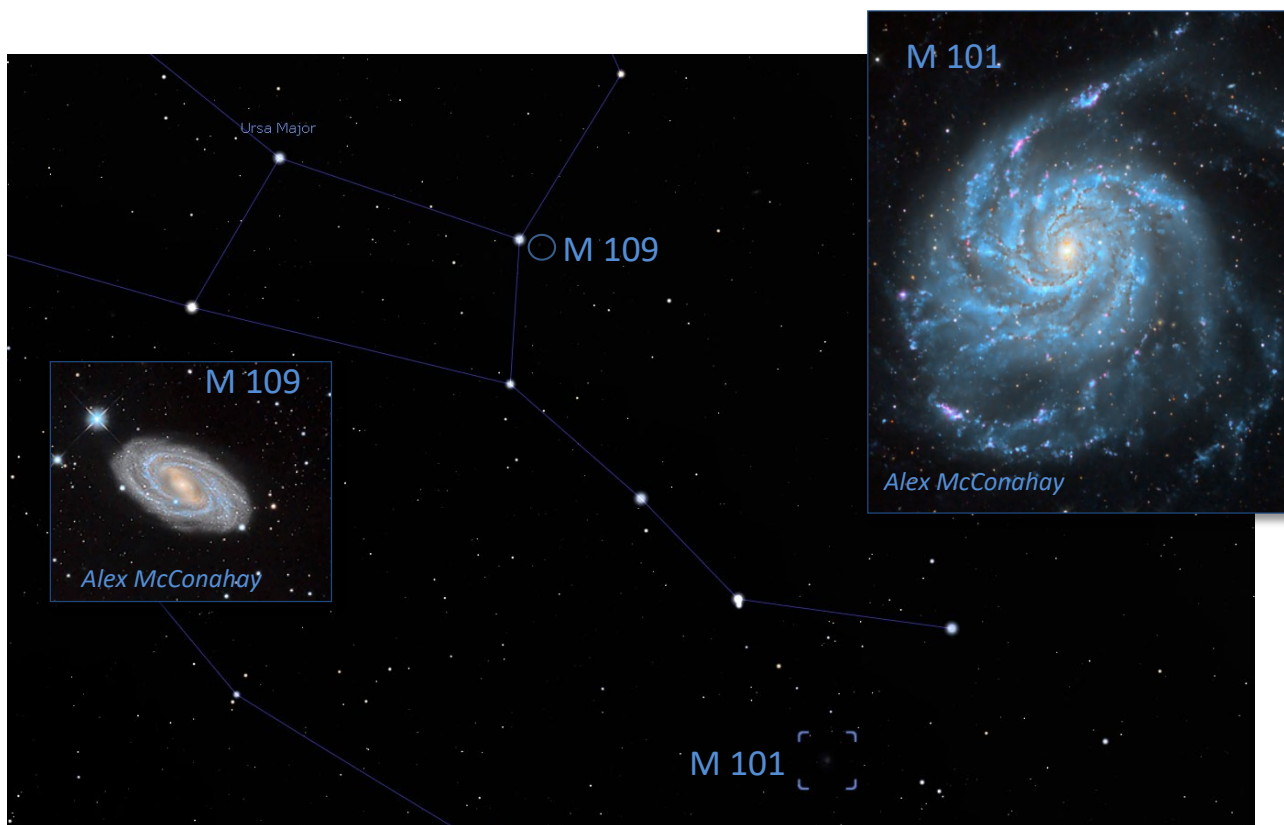
M 109, galaxy.

At a distance of 67.5 million light years, this barred spiral galaxy has a visual magnitude of 9.8 and a size of 7.6' x 4.7'. Pierre Mechain discovered M 109 on March 12, 1781. It has a diameter of about 137,000 light years. One of the faintest Messier objects, its arms are barely visible in a 14" scope. M 109 is located about 38' south east of Gamma Ursa Majoris.

M 97, planetary nebula, Owl Nebula.

At a distance of 4140 light years, M 97 has a visual magnitude of 9.9 and a diameter of 170". Pierre Mechain discovered M 97 on February 16, 1781. Lord Rosse gave it the Owl Nebula nickname. M 97 is directly visible in an 8" scope as a diffuse disk. The Owl Nebula is located about 2.3 degrees southeast of Beta Ursa Majoris.

M 108, galaxy.

At a distance of 46.0 million light years, M 108 has a visual magnitude of 10.0 and a size of 8.7' x 2.2'. It is about 100,000 light years in diameter and is only 8 degrees from being edge on. Pierre Mechain discovered M 108 on February 19, 1781. M 108 is about 45' northwest of M 97 and about 1.5 east-southeast of Beta Uras Majoris.

M 101

Alex McConahay

Ursa Major

M 109

M 109

Alex McConahay

M 101

M 97

M 97

M 108

M 108

Alex McConahay

Equipment Recommendations:

Binoculars for Astronomy:

    Celestron Cometron 7x50 Binoculars ($35)
    Orion's UltraViews 10x50 ($140)

Cell phone mount:

These grab hold of the eyepiece and keep the lens of your camera steady for imaging on a spotting scope, binoculars, or small telescope. You can find these for about $15 on Amazon: https://amzn.to/3h3GjE6

Beginner telescopes:

For kids: 8" Dobsonian Telescope: https://bit.ly/2XEFaeK
or build it yourself: https://bit.ly/3h4UkS8

For adults: (it's going to depend what you want to look at)

8" Newtonian Reflector https://bit.ly/3f3C0qS (easy to use, good all-around scope for deep sky objects, planets, moon)

8" Schmidt-Cassegrain https://bit.ly/3dJKG59 (more compact, good all-around scope for planets, galaxies, nebulae, astrophotography)

90mm Refractor https://bit.ly/37aG8lX (harder to use, best for planets and moon observing)