Chagrin Valley Astronomical Society

Sky Report July 2025 – by Laz Ilyes

Note: In NE Ohio, we are currently observing Eastern Daylight Time (UTC -4)

Comets and Meteor Showers

Comet 24P/Schaumasse is expected to be the brightest **comet** visible in the Northern Hemisphere in the remainder 2025, though it will likely require binoculars to see. It will be best viewed in the morning sky. By the end of the month, it will be found in the constellation **Taurus**, rising above the horizon at around 3:30am. At that time the **comet** will still be extremely dim, having a magnitude of about +20. We'll need to be patient. The **comet** is not expected to reach its peak brightness until the very end of the year.

There are **no significant, observable meteor showers in the month of July 2025**. There will however be a **minor shower**, the **alpha Capricornids** reaching a peak maximum of about 5 meteors per hour on **July 30th**. The **radiant** for this shower will be **about 35° above the southeastern horizon** at around midnight on July 30th. Look below the constellation Aquila and find the zodiacal constellation Capricorn.

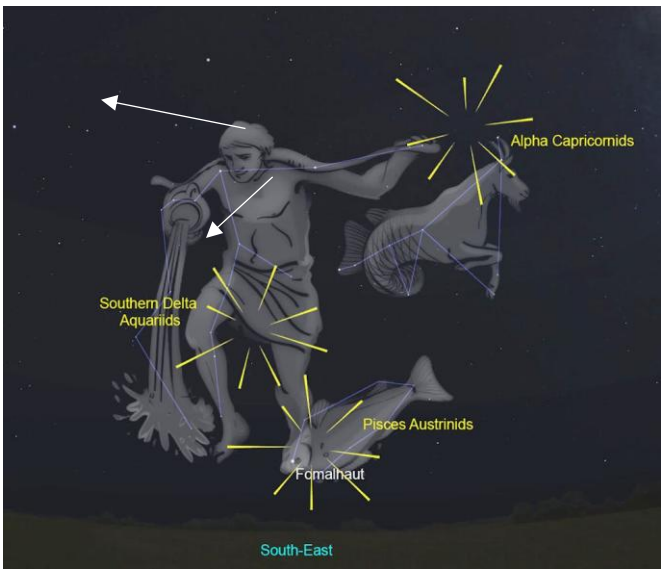


Illustration of the Radiant for the **alpha Capricornids**

Moon

July 2025

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 Waxing crescent 39.0% 6 days	2 First Quarter 3:30 P.M. 7 days	3 Waxing gibbous 58.2% 8 days	4 Waxing gibbous 67.3% 9 days	5 Waxing gibbous 75.9% 10 days
6 Waxing gibbous 83.5% 11 days	7 Waxing gibbous 90.0% 12 days	8 Waxing gibbous 95.1% 13 days	9 Waxing gibbous 98.5% 14 days	10 Full Buck Moon 4:38 P.M. 15 days	11 Waning gibbous 99.3% 16 days	12 Waning gibbous 96.5% 17 days
13 Waning gibbous 91.4% 18 days	14 Waning gibbous 84.3% 19 days	15 Waning gibbous 75.4% 20 days	16 Waning gibbous 65.2% 21 days	17 Last Quarter 8:39 P.M. 22 days	18 Waning crescent 42.6% 23 days	19 Waning crescent 31.5% 24 days
20 Waning crescent 21.3% 25 days	21 Waning crescent 12.6% 26 days	22 Waning crescent 5.9% 27 days	23 Waning crescent 1.7% 28 days	24 New Moon 3:12 P.M. 0 days	25 Waxing crescent 0.9% 1 day	26 Waxing crescent 4.1% 2 days
27 Waxing crescent 9.3% 3 days	28 Waxing crescent 16.0% 4 days	29 Waxing crescent 24.0% 5 days	30 Waxing crescent 32.7% 6 days	31 Waxing crescent 42.0% 7 days		

Moon Visualization:

Almanac.com/Astronomy

Educator Guide: Moon Phases | NASA/JPL Edu,

Daily Moon Guide | Observe – Moon: NASA Science

On **Wednesday, July 16**, the **Moon** and **Saturn** will share the same right ascension, with the Moon passing 3°50' to the north of Saturn. The Moon will be 21 days old. At around the same time, the two objects will also make a **close approach**, technically called an **appulse**. From NE Ohio, the pair will be visible in the dawn sky, rising at 00:00 (EDT) and reaching an altitude of 46° above the southern horizon before fading from view as dawn breaks at around 05:21.

There will be a **lunar occultation** of the **Pleiades** open star cluster (M45) visible in **NE Ohio** on **July 20, 2025**. The illuminated portion of the **Moon** will begin to pass over the star **Electra** just after **4:30am EDT** and by **5:30am EDT cover most of the stars in the cluster**.

On **Monday, July 28**, the **Moon** and **Mars** will make a **close approach**, passing within **1°07'** of each other. The **Moon** will be 4 days old. From **NE Ohio** however, the pair will unfortunately not be easily observable – they will reach their highest point in the sky during daytime and will be no higher than 12° above the horizon at dusk. The **Moon** will be at mag -10.6 in **Leo**; and **Mars** will be at mag 1.6 in **Virgo**.

Planets

Here is a chart summarizing the visible planets on **July 15, 2025 in NE Ohio**. https://stellarium-web.org/

Mercury will appear at its farthest apparent distance west from the **Sun** on **July 4**, (mag 0.5). The celestial bodies will be separated by 25°54'. The event is called the "greatest elongation" and it's the best time to try observing **Mercury**, so don't miss the chance! **Mercury** will be a "morning star" so look for it just above the Eastern horizon shortly before dawn.

Venus reaching its high point for the morning apparition in **July**. It will be prominent in the constellation of **Taurus** for most of the month, passing near **Aldebaran** and the **Hyades star cluster**. By the end of the month, it will briefly enter **Orion**.

Mars will be visible in the evening sky, appearing in the western sky, getting lower as the month progresses. It will be located near the constellation **Leo**. **Mars** will be dimmer than **Mercury**, but brighter than **Regulus**.

As mentioned before, on **July 28**, the **Moon** and **Mars** will make a **close approach**, passing within **1°07'** of each other. From **NE Ohio** however, the pair will unfortunately not be easily observable as the pair will be very low in the sky at dusk.

Jupiter will become visible in the morning sky, rising before sunrise after being hidden behind the sun due to solar conjunction. It will initially be low on the eastern horizon, but will gradually rise higher throughout the month, approaching **Venus**. By the end of **July**, **Jupiter** will be rising with the stars of **Gemini**, making it easier to spot.

Saturn's largest moon **Titan**, shines at magnitude 8.5. It's easy to spot in a small telescope as it circles the ringed planet every 16 days. Due to **Saturn's** shallow tilt, **Titan's** shadow transits **Saturn's** disk (as mentioned in last month's sky report). On the morning of Wednesday, July 2, at around 3:30am EDT,

Titan's shadow will begin its next transit across **Saturn's** face. By 4am, the shadow should be distinctly visible and should be about midway across **Saturn** when dawn breaks in **NE Ohio**. The transit will continue however, lasting about 5 hours in total.

Uranus will be visible in the morning sky, appearing as a blue-green speck in binoculars and as a small disk through a telescope. It will be located near the **Pleiades** and **Venus**, with **Venus** passing just south of **Uranus** on July 4th.

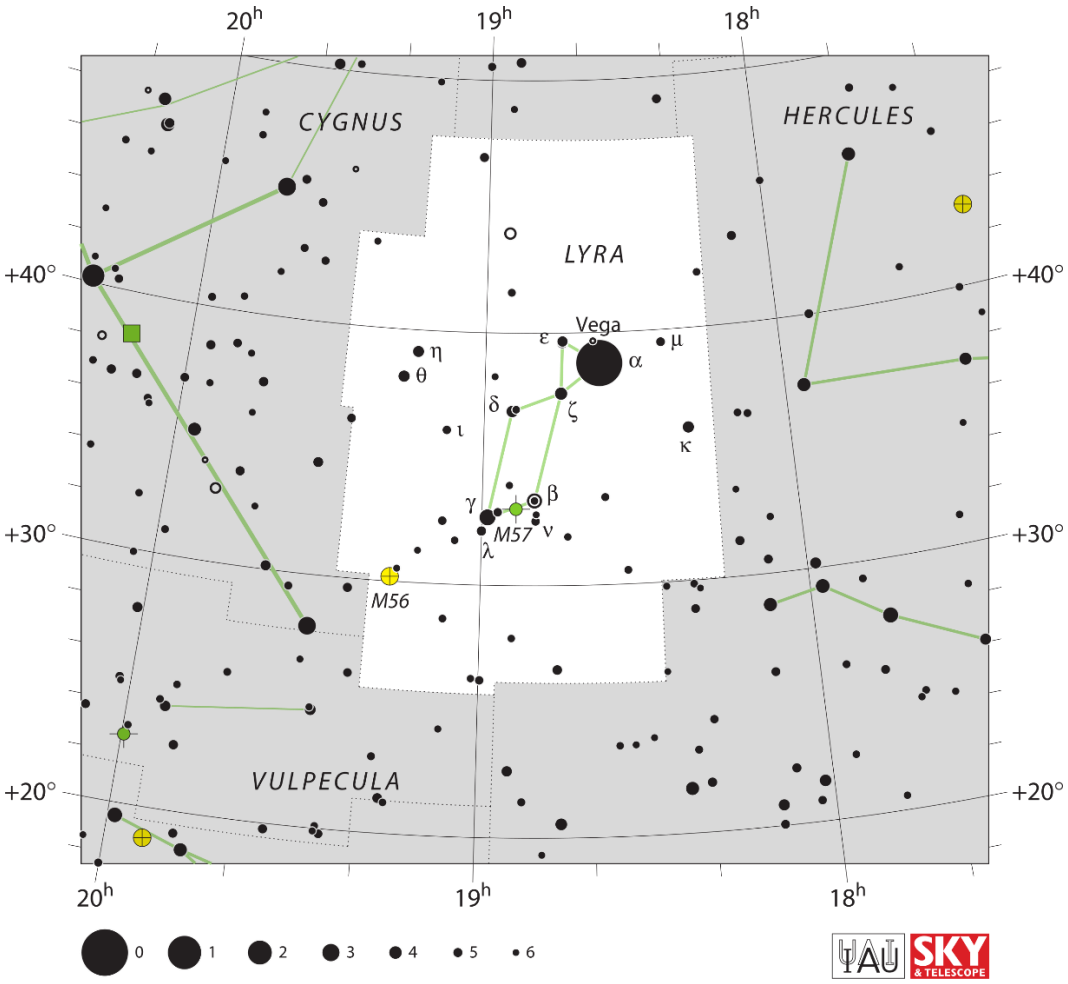
Neptune will be visible in the southeastern sky before dawn, near the brighter planet **Saturn**. It will be a challenging object to spot, requiring binoculars or a telescope, and will appear as a faint blue-gray "star." **Neptune** will be in retrograde motion for most of the month, and its proximity to **Saturn** makes it easier to locate. **Neptune** will be best visible in the few hours before sunrise. It is too faint to be seen with the naked eye and requires good binoculars or a decent telescope.

For a detailed ephemeris for any of these planets, please consider using NASA Jet Propulsion Laboratory's "Horizons System" tool at https://ssd.jpl.nasa.gov/horizons/app.html#/

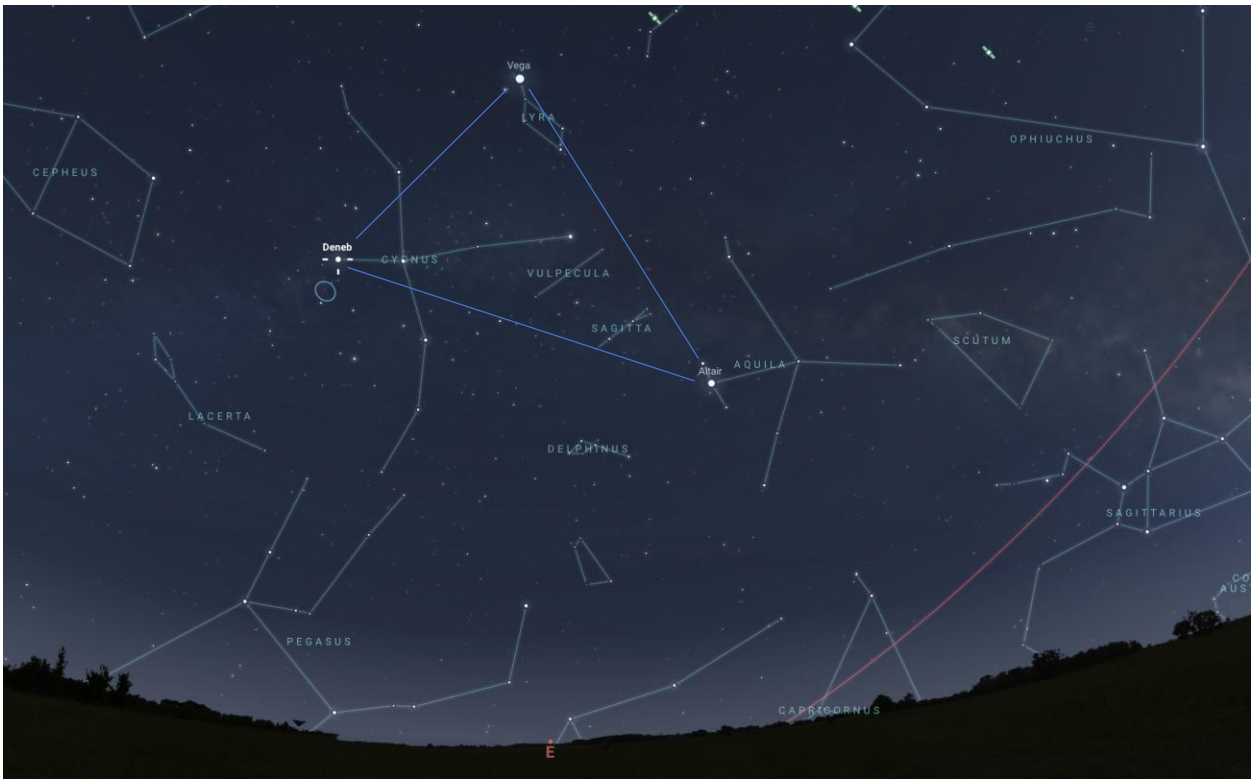
Constellations

Lyra (Lyr)

Lyra is a constellation visible in the northern hemisphere during the summer months, particularly from late spring through early autumn. It's a smaller constellation, but its bright star **Vega** makes it relatively easy to spot. **Vega**, the brightest star in **Lyra**, is a blue-white star and a key component of the **Summer Triangle** asterism (a recognizable pattern of stars). It's located about 25 light-years from Earth and is magnitude +0.03.

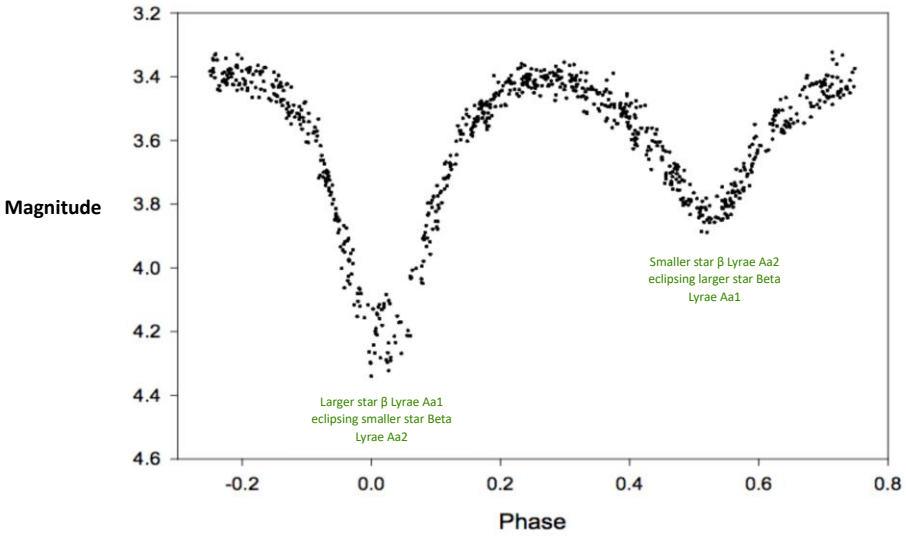


The aforementioned **Summer Triangle** asterism is an extremely useful star pattern to use as a starting point for observing the night sky during the summer months. The triangle is comprised of the stars **Vega**, **Deneb** (in the constellation **Cygnus**), and **Altair** (in the constellation **Aquila**). These are extremely bright stars and can be seen even in very bright, sky-polluted summer skies. Below, is an illustration of the asterism as simulated in our evening sky on July 8 at 10:45pm EDT using the app **Stellarium**. If you are not already familiar with this asterism, take some time on the next clear night to go out and find the **Summer Triangle**.



The Summer Triangle as seen in NE Ohio at 10:45pm on July 8, 2025

In addition to **Vega**, **Lyra** also has another interesting principal star. The eclipsing binary star system **Beta Lyrae**, also known as **Sheliak**, has a period of approximately **12.94 days**. This period represents the time it takes for the two stars in the binary system to orbit each other and complete one cycle of eclipses. The brightness of **Beta Lyrae** varies from **magnitude 3.25 to 4.36** over this period. The plot below, shows the magnitude of the binary system over the entire orbiting period.



(It may be noted that nearby **Gamma Lyrae** (aka **Sulafat**) is approximately magnitude **+3.2** and **Zeta 1 Lyrae** is approximately magnitude **+4.4**. You may consider using these as a visual reference to try estimating the brightness of the **Beta Lyrae** binary system when observing).

Despite its small size, there are many interesting deep sky objects (DSOs) in the constellation **Lyra**. Among these are two Messier objects, **M56**, and **M57**, as well as two in the NGC catalog, **NGC 6743**, and **NGC 6791**.

Messier object **M56** is a globular cluster located approximately halfway between the stars **Albireo** (**Beta Cygni**) and **Sulafat** (**Gamma Lyrae**). Charles Messier discovered the globular cluster in 1779. The cluster is located **33,000 light-years away** from **Earth**. It has an apparent **magnitude** of **8.3** and can be easily observed with a small telescope.

This beautiful **Hubble** image of **M56** was constructed using both visible and infrared observations. Using various observations by **Hubble**, astronomers have been able to study the chemical composition of the cluster. **M56** has relatively few elements heavier than hydrogen and helium, which is a sign that its stars were born early in the universe's history before many of the elements in existence today were formed in significant quantities.

Image of **M56** – NASA & ESA

The very famous Messier object **M57** is know to most as the **Ring Nebula**. This planetary nebula was discovered by the French astronomer **Antoine Darquier de Pellepoix** in **1779**. The **Ring Nebula** has an **apparent magnitude of 8.8**, and is easy to find, as it lies about halfway between the two stars **Sheliak** and **Sulafat**. However, a moderately-sized telescope is required to resolve its beautiful ring-like details. The deep blue color in the center represents **helium**, the light blue color of the inner ring is the glow of **hydrogen** and **oxygen**, and the reddish color of the outer ring is from **nitrogen** and **sulfur**.

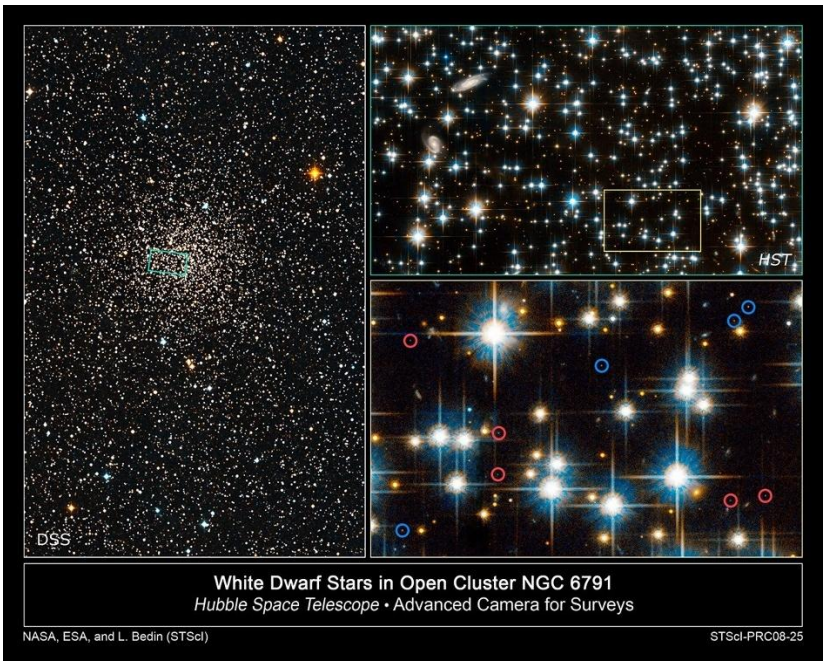
Image of **M57** by Laz Ilyes

The open cluster **NGC 6743** can be found by extending an imaginary line segment from **Delta Lyrae,** through **Sulafat** (**Gamma Lyrae**), down almost to **Beta Cygni** (**Albireo**). The cluster spans a diameter of approximately **7 arc-minutes** and has **magnitude +8.2**. The grid coordinates of the **NGC 6743** open star cluster are **RA: 19^{h} 02^{m} 0^{s}, Dec +28° 48' 0”**

Location of **NGC 6743** – [The Sky Live]

Open cluster **NGC 6743** – by Second Digitized Sky Survey (DSS2)

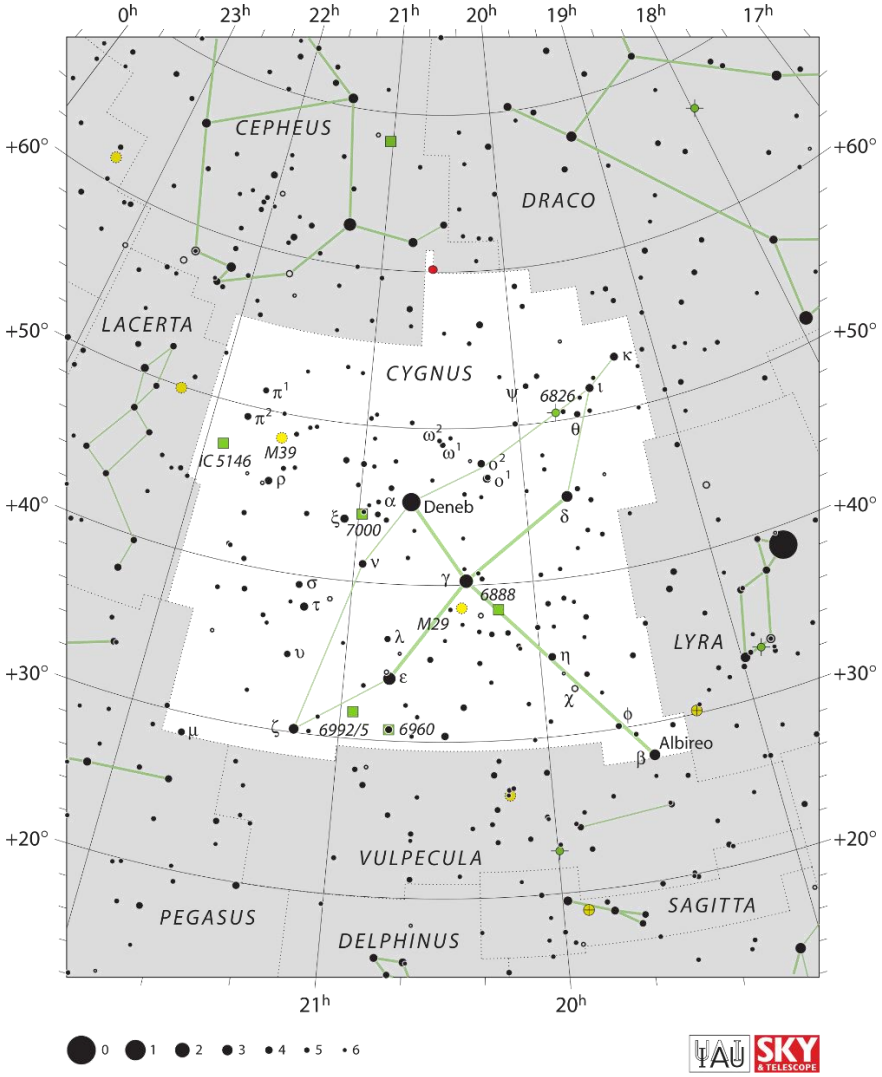
NGC 6791 is another open cluster in **Lyra**. It is 13,300 light-years away and it was discovered by **Friedrich August Theodor Winnecke** in **1853**. At roughly **8 billion years old**, and with an **iron** to **hydrogen** abundance ratio that is more than twice that of the **Sun**, it is one of the oldest and most metal-rich clusters in the Milky Way. The open cluster is located at **RA: 19^{h} 20^{m} 53^{s}, Dec +37° 46' 18"**



Images of **NGC 6791** by ESA & NASA

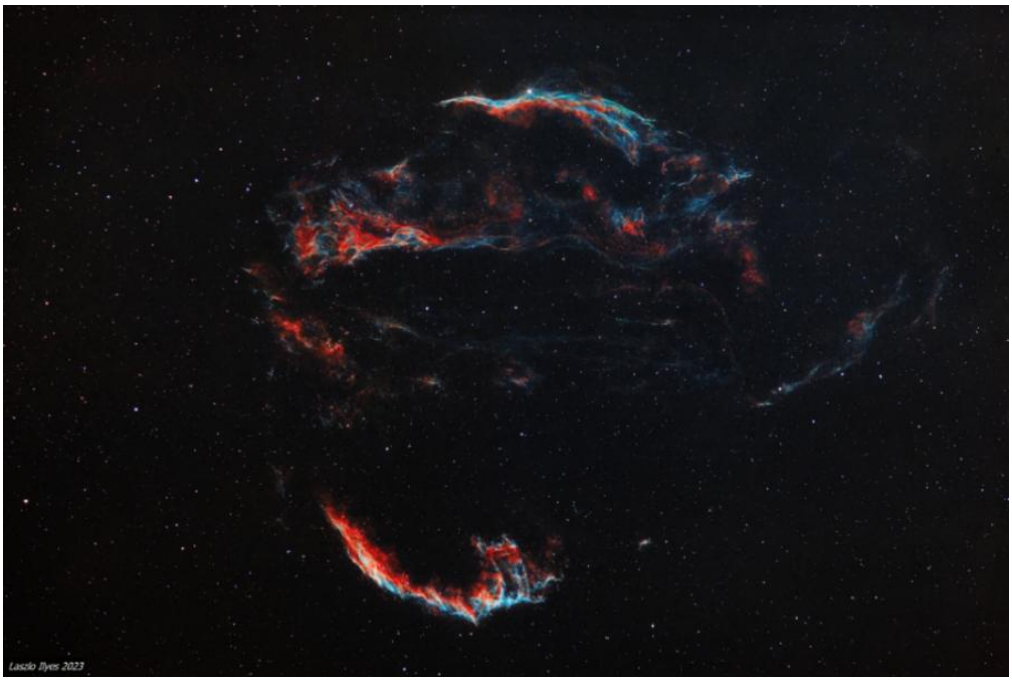
Cygnus (Cyg)

Cygnus, also known as the Swan, is a northern constellation located on the plane of the Milky Way. It's easily recognizable by its prominent Northern Cross asterism, with its brightest star, **Deneb**, marking the tail of the swan. The name "**Deneb**" comes from the Arabic word "dhanab," meaning "tail," referencing its position in the constellation. **Cygnus** is a popular constellation during the summer and autumn months, given the many interesting things to be observed in it.



Falling directly in the galactic plane, this constellation is populated with a rich background of stars. And the abundant interstellar material of the **Milky Way Galaxy** places some very well-known nebulae there as well. Notable DSOs include the **Veil Nebula** (**NGC 6992/6995**, **NGC 6960**), the **North America Nebula** (**NGC 7000**), the **Pelican Nebula** (**IC 5070**), and the **Crescent Nebula** (**NGC 6888**). Open clusters like **M39** (**NGC 7092**) and **M29** are also worth observing. And if you are viewing **Cygnus**, make a point of observing the star **Albireo** (**Beta Cygni**). This optical double (not a true binary) is comprised of a bright lemon-yellow star shining very close to a very bright violet colored star, making quite a lovely contrast!

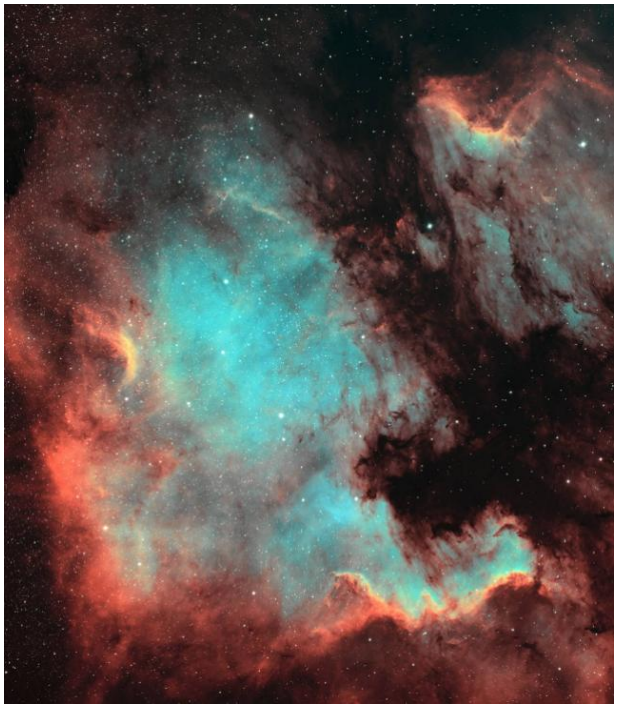
The **Veil Nebula**, also called the **Cygnus Loop** is an old supernova remnant. It is thought to have resulted from a star (about 20 times the mass of our **Sun**) that went supernova about 10,000 years ago, exploding into the spherical shape we now see. **NASA's HST** made a number of images of the vast cloud over the decades and estimated that the outer layers of the nebula represent a shockwave of gas moving at an unimaginable **100,000 km per second**! Thank goodness it is 4,200 light-years away.



The **Cygnus Loop** or **Eastern Veil** (**NGC 6992**/**NGC 6995**) & **Western Veil Nebulae** (**NGC 6960**) – by Laz Ilyes

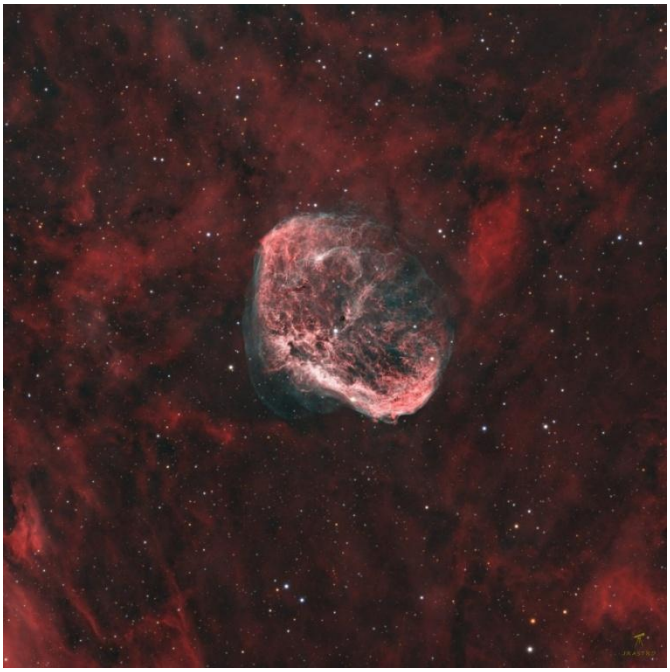
The **North America Nebula** (**NGC 7000** or **Caldwell 20**) is an emission nebula, close to Deneb. It is named because its shape resembles the North American continent. The **Pelican Nebula** is a star-forming region about 30 light-years wide located 1,800 light-years from **Earth** and is also known as **IC 5070** and **IC 5067**.

The **North America Nebula** (**NGC 7000**) and the **Pelican Nebula** (**IC 5070**) are actually part of the same giant ionized gas complex, as determined by American astronomer **Stewart Sharpless** in his study of nebulae on the Palomar Sky Survey plates in 1959. They appear to be separate nebulae because the vast molecular cloud **L935** which lies in front of the glowing gasses, appearing to divide it into two distinct entities. **L935** is a very active star forming region and reveals very interesting structure when imaged in detail. The emission nebulae are largely comprised of Hα, but also contains a significant percentage of OIII, NII, and SII.



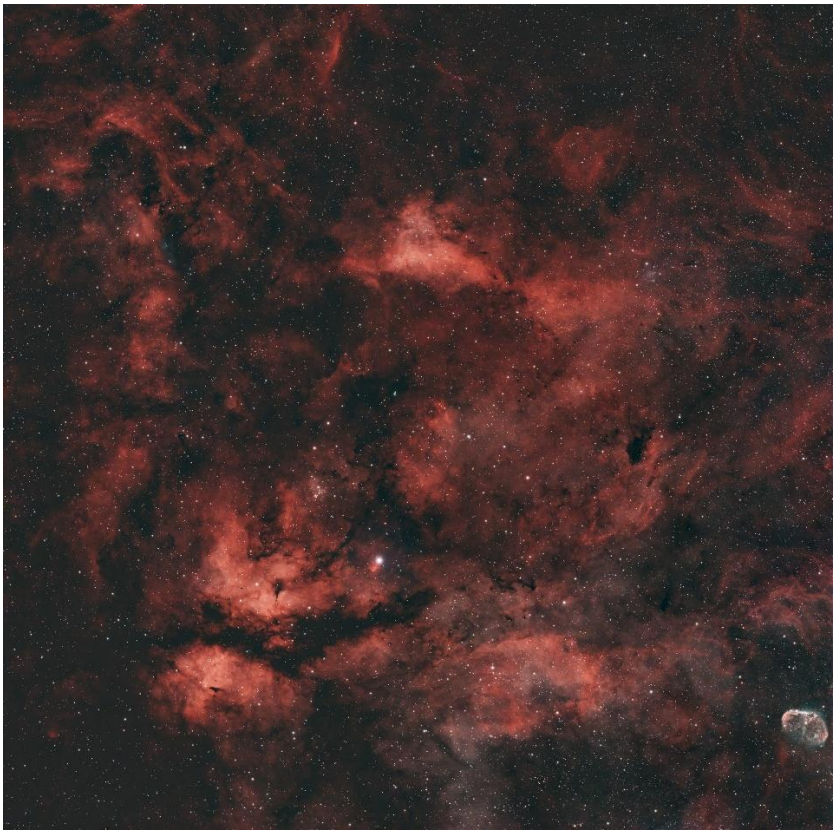
North America Nebula (**NGC 7000**), Molecular Cloud **L935** & **Pelican Nebula** (**IC 5070**) – by Laz Ilyes

The **Crescent Nebula** (**NGC 6888**) is a distinctive type of emission nebula. It is a cosmic cloud glowing as it is blasted by radiation from an ageing **Wolf-Rayet star**. Also known as **Caldwell 27** and **Sharpless 105**, it should be noted that the nebula really isn't crescent-shaped! Discovered in **1792** by **William Herschel** he could see only the extreme western edge of **NGC 6888** in his telescope and described it as "a faint, milky ray joining to" [double stars], which ultimately led to it being erroneously dubbed the **Crescent**.



The **Crescent Nebula** (**NGC 6888**) – by Jeff Ratino

The **Sadr Region**, also known as **IC 1318** or the **Gamma Cygni Nebula**, is a diffuse emission nebula located in the constellation **Cygnus**, surrounding the bright star **Sadr** (**γ Cygni**). It's a visually prominent area of the night sky, often photographed with the **Butterfly Nebula** and the **Crescent Nebula**.

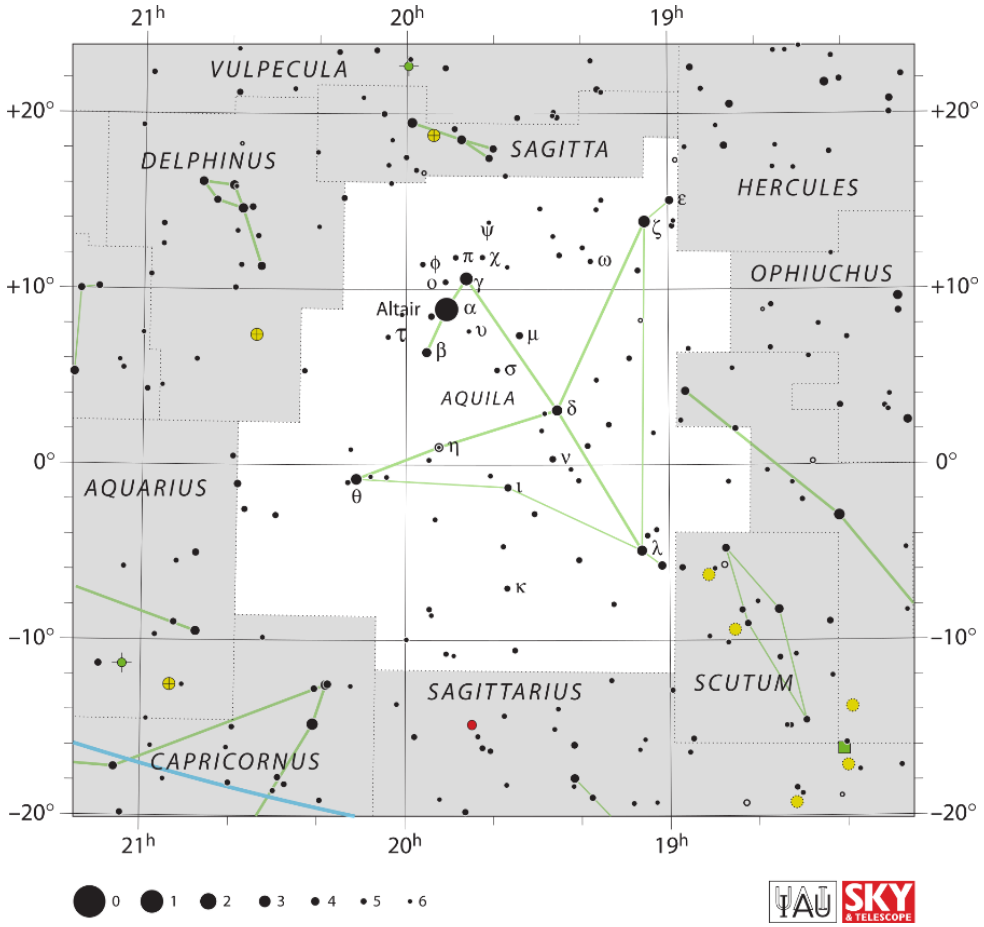


Sadr Region in **Cygnus** by Eric Wright

Sadr Region in **Cygnus** by Willie Stickley

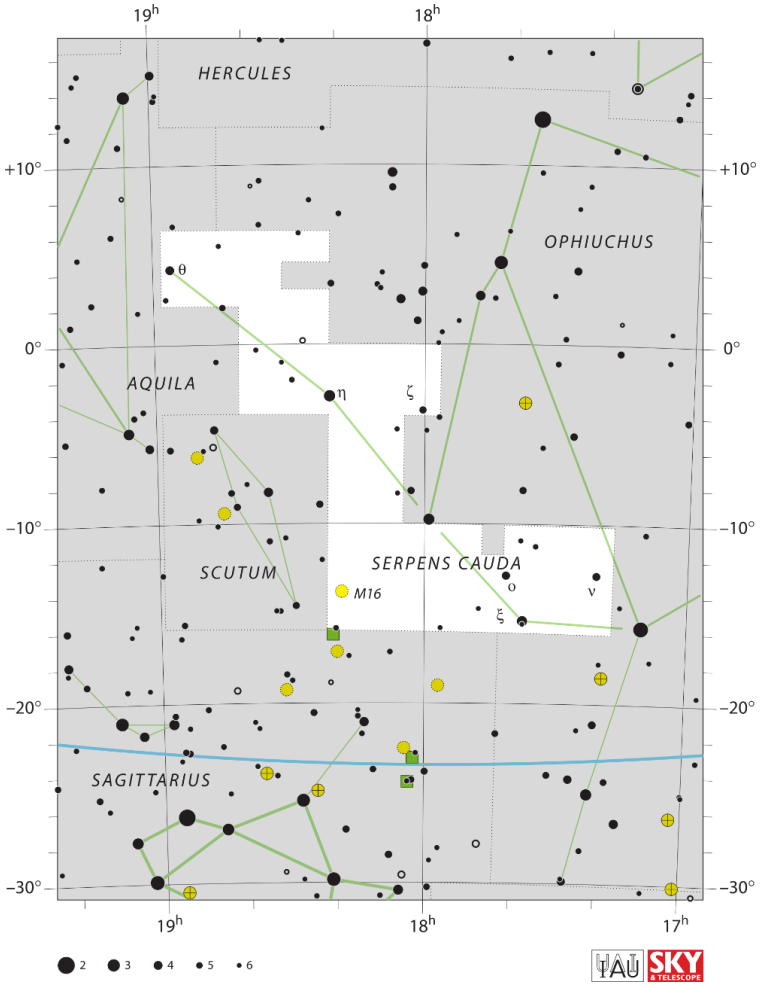
Aquila (Aql)

Aquila, also known as the Eagle, is a constellation located on the celestial equator, near the **Milky Way**. It's a summer constellation in the Northern Hemisphere and a winter constellation in the Southern Hemisphere. The constellation is known for its brightest star, **Altair**, which is part of the aforementioned **Summer Triangle** asterism. In mythology, **Aquila** is often depicted as the eagle that carries Zeus's thunderbolts.

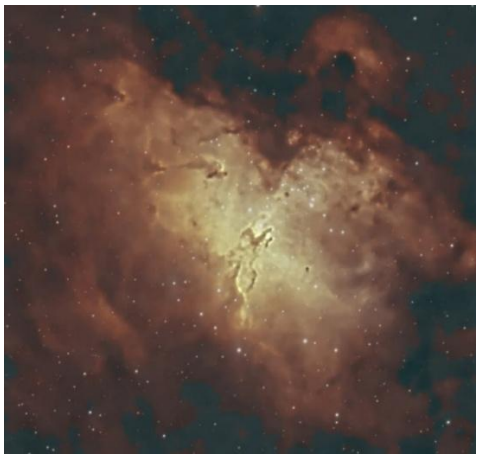


Serpens Cauda (Ser)

Serpens Cauda, meaning "tail of the serpent," is the northern portion of the constellation **Serpens**. **Serpens** is unique among the constellations in that, even though it is considered to be a single constellation, it is physically divided into two separate pieces separated by the “serpent bearer,” **Ophiuchus**. **Serpens Caput** (in last month’s sky report) represents the head, held by **Ophiuchus**. The other half of **Serpens**, designated **Serpens Cauda,** is presented this month.



Serpens Cauda contains one of the best-known nebulae in the sky, the **Eagle Nebula** (**Messier 16**), which in turn contains the **Pillars of Creation**, a star-forming region famously imaged by **NASA's Hubble Space Telescope**.

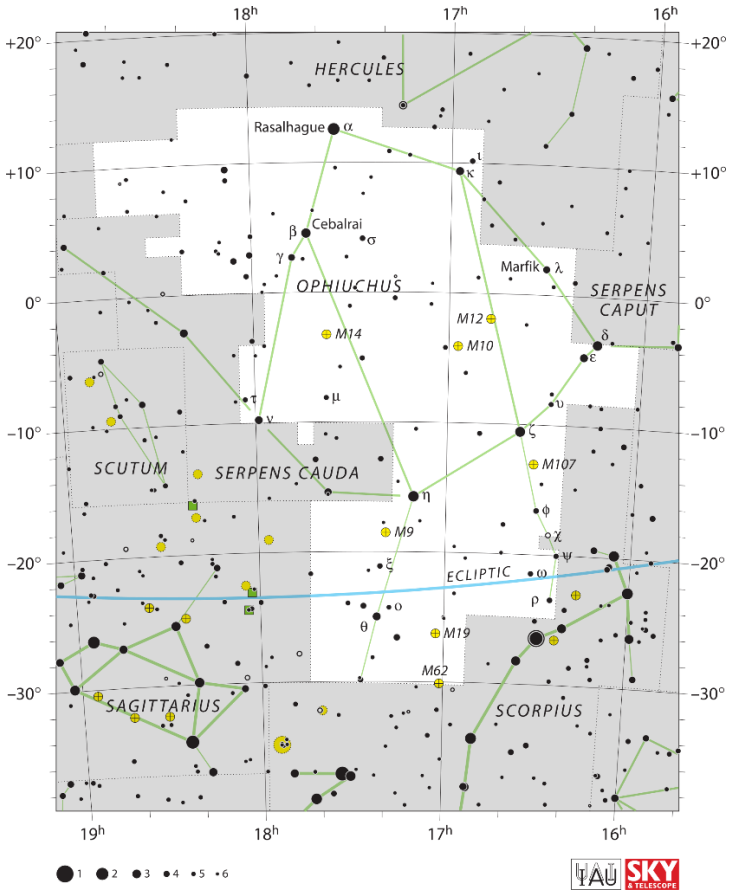


The **Eagle Nebula** (**M16**) imaged by Scott Kuntz

The Famous “**Pillars of Creation**” found in **M16** – NASA HST Team

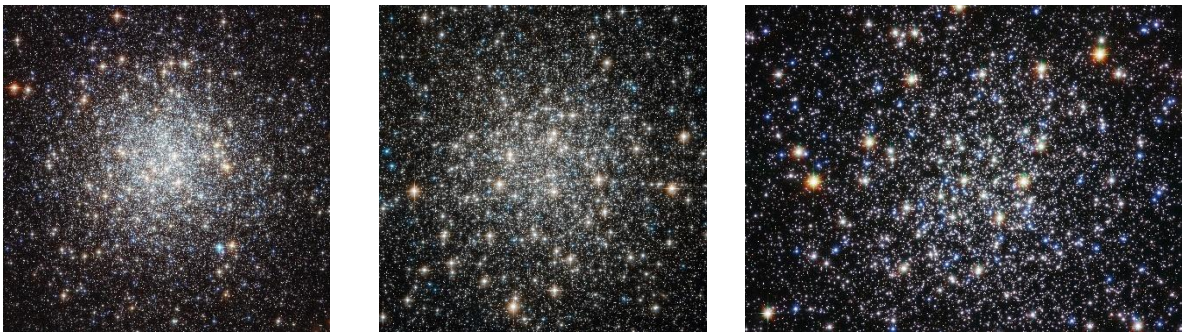
Ophiuchus (Oph)

Ophiuchus is a large constellation located near the celestial equator, often referred to as the "Serpent Bearer". It is associated with the Greek myth of Asclepius, a physician who was later deified as a god of healing.



While not one of the 12 traditional zodiac constellations, **Ophiuchus** is sometimes considered the "**13th zodiac**" constellation due to the **ecliptic** passing through it. **Ophiuchus** contains several interesting deep-sky objects, including star clusters **M9**, **M10**, **M12**, **M14**, **M19**, **M62**, and **M107** as well nebulae **IC 4604** and **NGC 6572**. This constellation also contains **Barnard's Star**, the second-closest star to our solar system. The supernova known as **Kepler's Nova**, which occurred in 1604, was also located in **Ophiuchus**.

Located only 25,000 light-years away **M9** is one of the closest globular clusters to the center of our galaxy. The stars in the globular cluster are gravitationally bound to each other, with most of the stars concentrated at the cluster's center. This large central mass pulls outer stars inward and causes globular clusters to have a spherical shape. **M9's** proximity to the much greater mass at the center of the **Milky Way** has warped the cluster's shape, though, so it appears less spherical than other objects of its kind. **M9** was discovered by Charles Messier in 1764. It has an apparent magnitude of 8.4 and can be observed using a small telescope.



Hubble Space Telescope Images of **M9**, **M10**, and **M12**, respectively – NASA

Discovered by Charles Messier in 1764, **M10** is a globular cluster roughly 15,000 light-years from Earth with an apparent magnitude of 6.4. This cluster can be spotted using a pair of binoculars.

M10 is notable for its high population of blue stragglers — stars that appear to be far younger than their neighbors. The stars in globular clusters are thought to have formed and aged together, so they should all be roughly the same age. These anomalous, bluer stars were created either by collisions between stars or other stellar interactions. Such events are easy to imagine in densely populated globular clusters, in which up to a few million stars are tightly packed together.

M12 was discovered by Charles Messier in 1764. The globular cluster, located 23,000 light-years from Earth with an apparent magnitude of 7.7 can be easily observed with a pair of binoculars. **M12** has fewer low-mass stars than expected. Astronomers suspect that gravity has ripped many low-mass stars from **M12** as the cluster passed through denser regions of the **Milky Way** during its orbit around the galaxy's center. **M12** is thought to have lost up to one million stars this way.

The **Rho Ophiuchi** cloud complex is a complex of interstellar clouds with different nebulae, particularly a dark nebula which is centered 1° south of the star **ρ Ophiuchi**, which it among others extends to, of the constellation **Ophiuchus**. At an estimated distance of about 140 parsecs, or 460 light years, it is one of the closest star-forming regions to the **Solar System**.

The **Rho Ophiuchi** cloud complex is **one of the most colorful areas of the night sky**. Therefore, it's a favorite target for astrophotographers. This cloud covers an angular area of 4.5° × 6.5° on the celestial sphere.

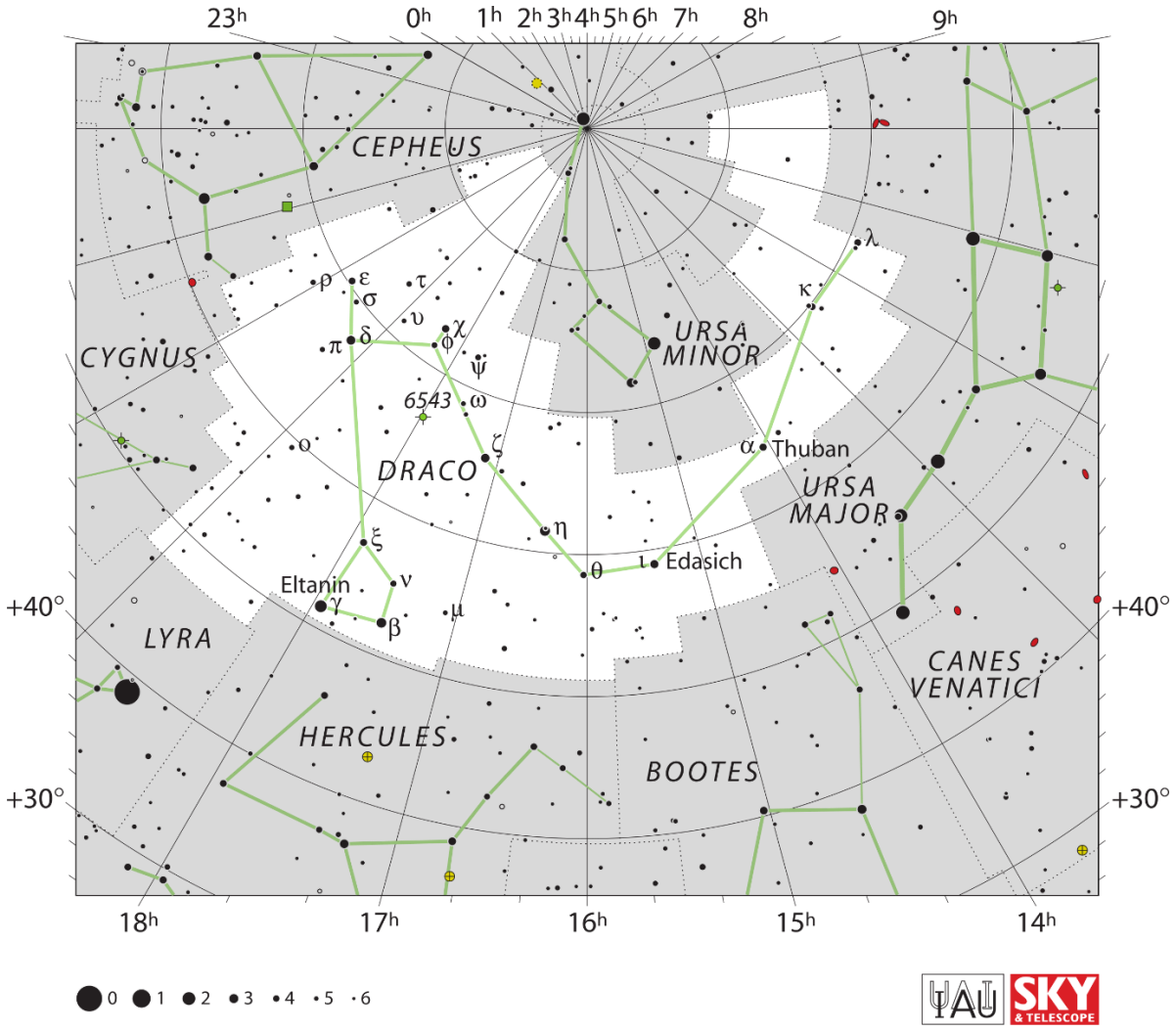
It consists of two major regions of dense gas and dust. The first contains a star-forming cloud (L1688) and two filaments (L1709 and L1755), while the second has a star-forming region (L1689) and a filament (L1712–L1729).

Image of the **Rho Ophiuchus** Cloud Complex by Adam Block

Draco (Dra)

Draco is the name of a large constellation (**extending about 70 degrees across the sky**) situated close to the northern celestial pole. As such, it is visible for most part of the year from the northern hemisphere. In English language this constellation is also known as "**The Dragon**".

Draco has nine stars with known planets and contains one Messier object, the **Spindle Galaxy** (**M102** or **NGC 5866**), as well as deep sky objects: the **Cat's Eye Nebula** (**NGC 6543**) and the **Tadpole Galaxy** (**Arp 188** or **UGC 10214**).

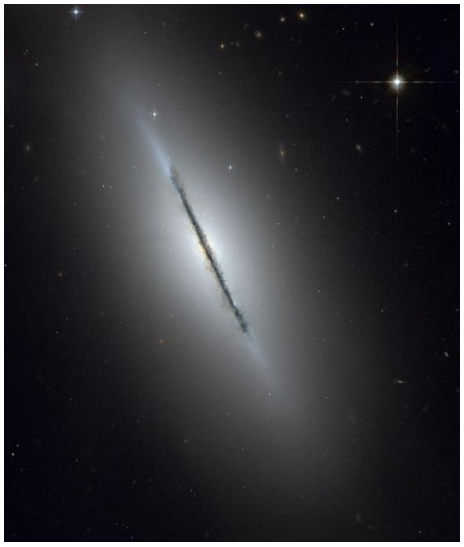


The **Cat's Eye Nebula**, also known as **NGC 6543**, is a planetary nebula, approximately 3,000 light-years away. It's famous for its complex and intricate structures, including concentric gas shells, jets of high-speed gas, and shock-induced knots. The nebula is a visual record of a dying star shedding its outer layers.

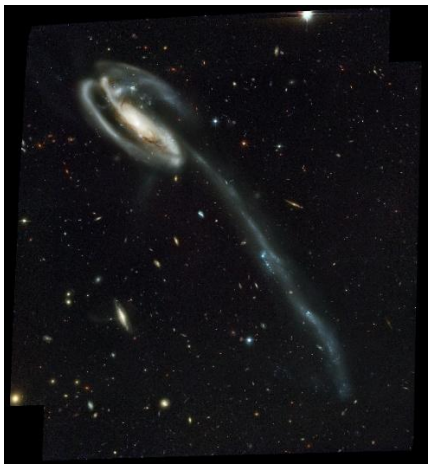
The **Cat's Eye Nebula** (**NGC 6543**) by Chris Caprette

The **Spindle Galaxy**, also known as **NGC 5866**, is a lenticular galaxy known for its edge-on view, which gives it a spindle-like appearance. It is also a likely candidate for **M102**, though this identification is debated. Pierre Méchain, Charles Messier's colleague, initially reported the discovery of **M102**. However, in a letter written two years after the catalog's publication, Méchain retracted his discovery, stating it was an accidental duplication of **M101**.

There are those that argue, however that it is more likely that **NGC 5866** was actually the original discovery. **NGC 5866** appears to closely match the description in the Messier Catalog, especially if "Omicron" is considered a misprint for "Theta," a star near **NGC 5866**. And Messier's handwritten position for **M102** in his personal copy of the catalog, while slightly inaccurate, is closer to the location of **NGC 5866** than **M101**. And finally, **NGC 5866** is bright enough (around 10th magnitude) to have been observed with the instruments available to Messier and Méchain.


Spindle Galaxy (**M102**, **NGC 5866**) by NASA

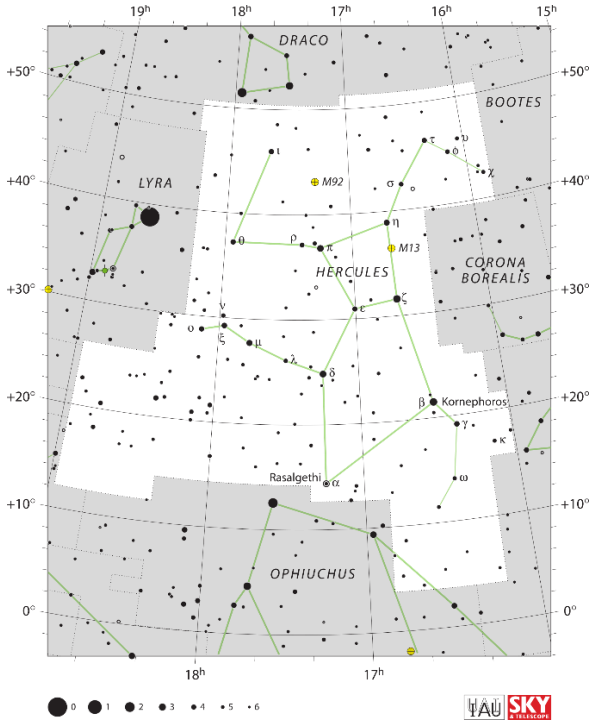
The **Tadpole Galaxy** (**UGC 10214** and **Arp 188**) is a disrupted barred spiral galaxy located 420 million light-years from Earth. Its most dramatic feature is a trail of stars about 280,000 light-years long. Its size has been attributed to a merger with a smaller galaxy that is believed to have occurred about 100 million years ago. The galaxy is filled with bright blue star clusters triggered by the merger, some containing as many as one million stars. It is the largest known disrupted spiral galaxy of its sort.



Tadpole Galaxy (**UGC 10214** and **Arp 188**) - NASA

Hercules (Her)

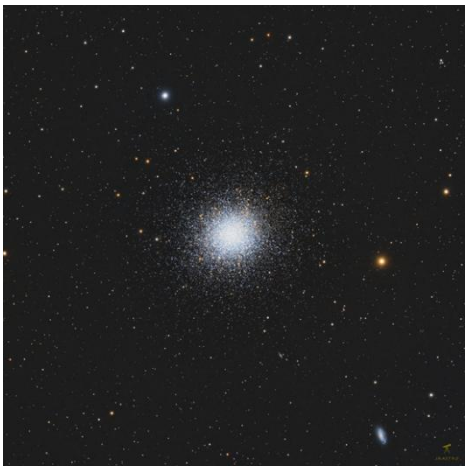
The **Hercules** constellation was named after Hercules, the Roman version of the Greek hero Heracles. Hercules is the fifth largest constellation in the sky, but has no first magnitude stars. In traditional depictions, the star **Ras Algethi** (**Alpha Herculis**) represents **Hercules'** head and a prominent asterism, the **Keystone**, marks his torso, as he stands victoriously on **Draco's** head.



Notable deep sky objects in **Hercules** include the **Great Globular Cluster** (**M13**), the globular cluster **M92**, the planetary nebulae **Abell 39** and the **Turtle Nebula** (**NGC 6210**).

There are over **100,000 stars**, whirl within the globular cluster **M13**, one of the brightest star clusters visible from the Northern Hemisphere. Located 25,000 light-years from Earth with an apparent magnitude of 5.8, this DSO can be spotted with just a pair of binoculars.

The English astronomer **Edmond Halley** discovered **M13** in **1714**. When **Charles Messier** added **M13** to his catalog in **1764**, he was convinced that the nebulous object did not contain any stars! Because they are so densely packed together, the cluster's individual stars were not resolved until **1779**. Near the core of this cluster, the density of the stellar population is so crowded that they can, at times, run into each other and even form a new star. The resulting "blue stragglers" appear to be younger than the other stars in their immediate vicinity and are of great scientific interest to astronomers.



Great Globular Cluster (**M13**) by Jeff Ratino

Located **27,000 light-years from Earth**, the **M92 globular cluster** is a ball of stars that orbits our galaxy's core like a satellite. It was first discovered by the German astronomer **Johann Elert Bode in 1777**.
With an apparent magnitude of 6.3, **M92** is one of the brightest globular clusters in the Milky Way and is visible to the naked eye under good observing conditions. It can be most easily spotted during the month of July. The cluster is very tightly packed with stars, containing roughly **330,000** stars in total.

Globular Cluster (**M92**) – NASA

Abell 39 is a low surface-brightness **planetary nebula** in the constellation of **Hercules**. It was either Abell or Albert George Wilson who discovered the nebula some time before August 1955 as part of the National Geographic Society - Palomar Observatory Sky Survey. It is estimated to be about **3,800 light-years** from **Earth**. It is almost perfectly spherical with a radius of about **1.4 light-years**.

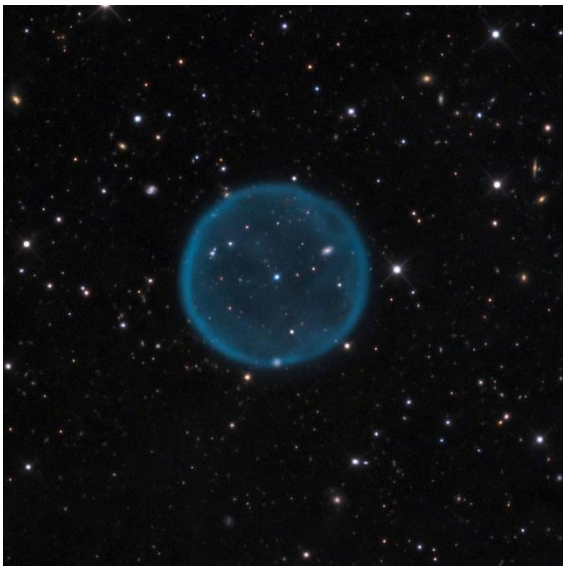


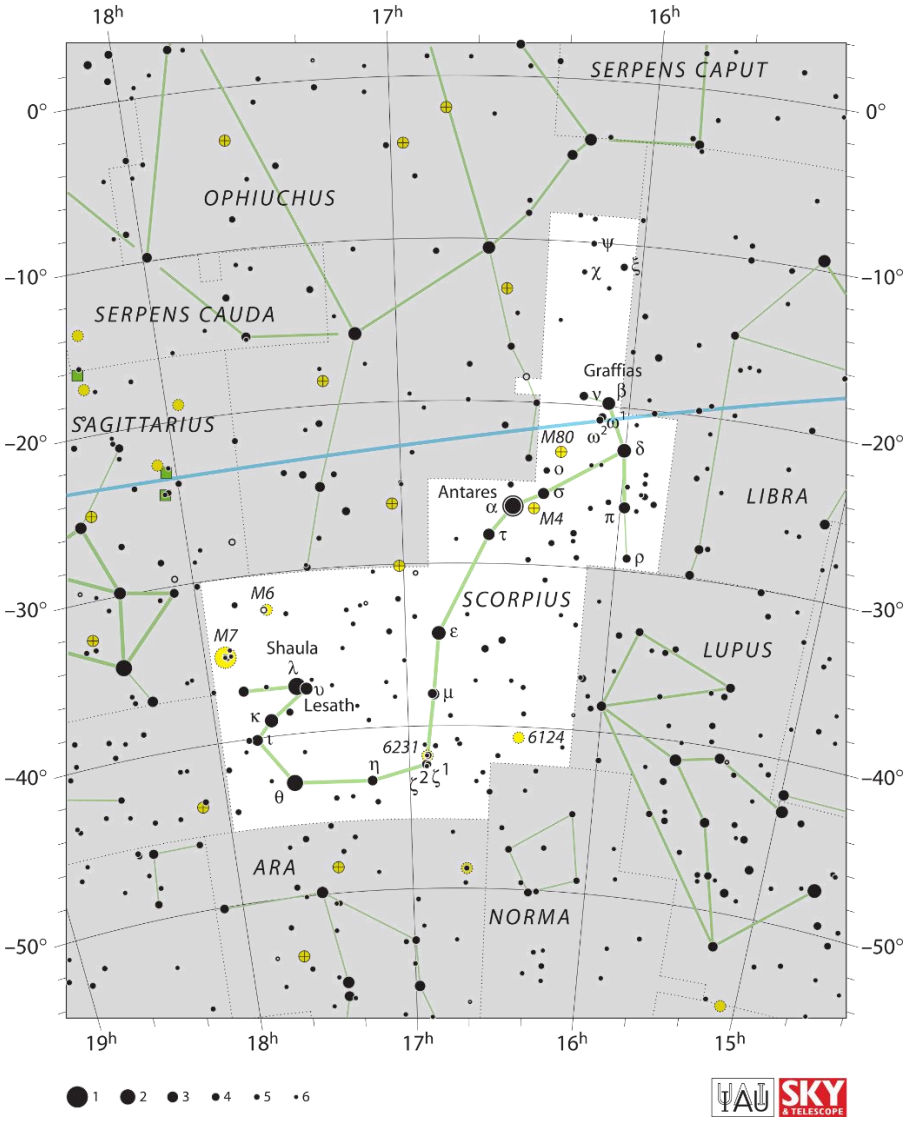
Image of planetary nebula Abell 39 by Adam Block CC by SA3.0

The **Turtle Nebula**, also known as **NGC 6210**, is a planetary nebula located in the constellation **Hercules**. It's a relatively small but bright nebula, and with the aid of telescopes, it can be observed as a bluish-green elongated disk. The nebula gets its nickname from its appearance, which some describe as resembling a turtle. The nebula is approximately 20 x 15 arc-seconds in apparent size.

Image of the **Turtle Nebula** (**NGC 6210**) by **ESA/NASA**

Scorpius (Sco)

Scorpius, also known as **Scorpio**, is a prominent zodiacal constellation in the southern celestial hemisphere, easily recognizable by its distinctive curved shape resembling a scorpion. It's one of the oldest constellations, deeply rooted in various cultures and mythologies. The constellation's stars form a distinctive "J" shape or a fish hook, with the tail of the scorpion extending from the hook.



Scorpius is rich in deep-sky objects (DSOs), including open and globular clusters, nebulae, and even a planetary nebula. Notable examples include the **Butterfly Cluster** (**M6**), **Ptolemy Cluster** (**M7**), **Messier 4** (**M4**), and **Messier 80** (**M80**). The **Cat's Paw Nebula** (**NGC 6334**) and the **Bug Nebula** (**NGC 6302**) are also located within this constellation. Due to its southerly declination, **Scorpius** can be difficult to observe in **NE Ohio**, particularly if there any significant sky glow to the south. It is best to consider low-lying fields without tall trees or buildings along the southern horizon if possible.

Messier 6 (**M6**), also known as the **Butterfly Cluster**, is an open cluster of stars located in the constellation **Scorpius**. It was first recorded before **1654** by **Giovanni Battista Hodierna** and later included in **Messier's** catalog in **1764**. The cluster is characterized by its butterfly-like shape formed by its stars and is estimated to be about 1,600 light-years away from **Earth**.

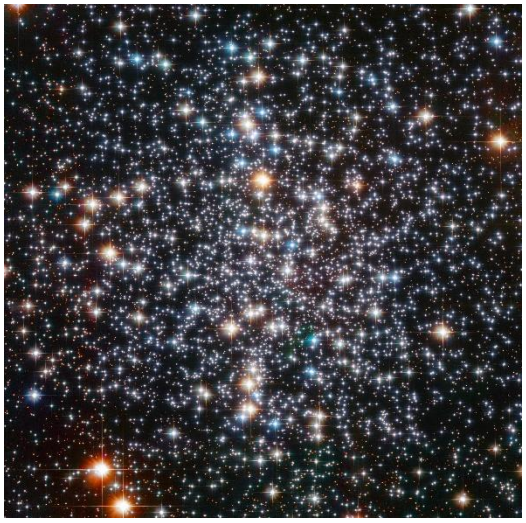
Image of **Butterfly Cluster** (**M6**) by Ole Nielsen

Visible right next to the stinger of the scorpion in the constellation **Scorpius**, **M7** is an easy naked-eye target for stargazers in southern latitudes. The second-century astronomer **Claudius Ptolemy** first recorded this **open star cluster** in **130 AD**, earning it the nickname **Ptolemy's Cluster**.

Open star clusters contain stars formed from the same initial cloud of gas and dust and are typically irregular in shape. Over time, as open clusters revolve around a galaxy, gravitational disruptions from other cosmic objects can disperse the stars. **Ptolemy's Cluster** is one of more than a thousand open clusters in the **Milky Way** and contains about 80 stars. Residing about 980 light-years from **Earth**, **M7** likely formed about 220 million years ago.

Image of M7 by NASA

Messier 4, located in the constellation **Scorpius**, is a huge, spherical collection of stars known as a globular cluster. At just 5,500 light-years away, it is the **closest globular cluster to Earth**, making it a prime object for study. Because of its apparent **magnitude of 5.9** and proximity to the orange-red star **Antares**, one of the brightest stars in the night sky, **M4** is relatively easy to find with a small telescope.



Hubble Image of Globular Cluster **M4** by NASA

M80 is one of the densest of the approximately 150 known globular clusters in the **Milky Way Galaxy**. Located about 28,000 light-years from **Earth** in the constellation **Scorpius**, the cluster contains hundreds of thousands of stars held together by their mutual gravitational attraction. **M80** has an apparent **magnitude of 7.9** and was discovered by **Charles Messier** in **1781**. It is visible with a small telescope or binoculars.

Image of **M80** Globular Cluster by Laz Ilyes

The **Cat's Paw Nebula** (**NGC 6334**) is a vast region of star formation. **NGC 6334** is one of the most active nurseries of massive stars in our galaxy and has been extensively studied by astronomers. The nebula conceals freshly minted brilliant blue stars — each nearly ten times the mass of our **Sun** and born in the last few million years. The region is also home to many baby stars that are buried deep in the dust, making them difficult to study. In total, the **Cat's Paw Nebula** could contain several tens of thousands of stars.

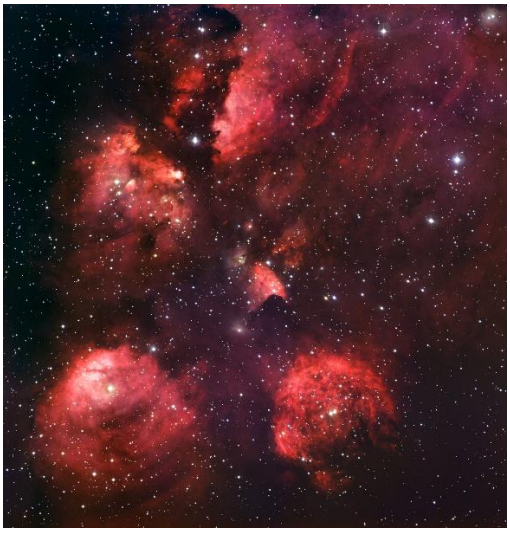


Image of the **Cat's Paw Nebula** (**NGC 6334**) by European Southern Observatory

The **Bug Nebula** (**NGC 6302** or **Caldwell 69**) is a bipolar planetary nebula in the constellation **Scorpius**. The structure in the nebula is among the most complex ever seen in planetary nebulae. It's notable for the high temperature of its central star, which is hidden within a dense ring of dust. The nebula is shaped like a butterfly, with "wings" of roiling gas heated to over 36,000 degrees Fahrenheit! It has an apparent **magnitude of 9.5** and is located **3,392 light-years** from **Earth**.

Hubble Space Telescope Image of the **Bug Nebula** (**NGC 6302**) by NASA

Epilogue

T CrB

At the time of writing this, **T CrB** has still not gone nova (despite the many forecasts seen in the press). Keep your eyes peeled for news of the event if it should occur this month. We will try to notify you by email should there be any updates.

Hubble's Night Sky Challenge

As mentioned in previous sky reports, you can be recognized for your observing in 2025. Here are links:

https://science.nasa.gov/mission/hubble/science/explore-the-night-sky/hubbles-night-sky-challenge/

https://www.astroleague.org/nasa-observing-challenges-special-awards/

https://www.astroleague.org/wp-content/uploads/2024/12/Hubble-35-v2.pdf

If you completed requirements for the **June challenge** then the deadline for submitting your is **July 31, 2025**. For a list of NASA's **July** targets please refer to the latest updates. You will have until **August 31, 2025** to submit your **July** observation(s).

Special thanks to **Scott Kuntz**, **Jeff Ratino**, **Willie Stickley**, and **Eric Wright** for sharing their fine observations on our Facebook Group site, which has also helped to enhance the content in this Sky Report. And big thanks to **Scott Kuntz, Connie Meier** and **Russ Swaney** for getting the report to all of you.

Clear Skies and Excellent Observing!

Laz