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SKY GUIDE

Astronomical guide for March 2026

The most up-to-date guide to planetary and lunar activity, comet news and deep space wonders.

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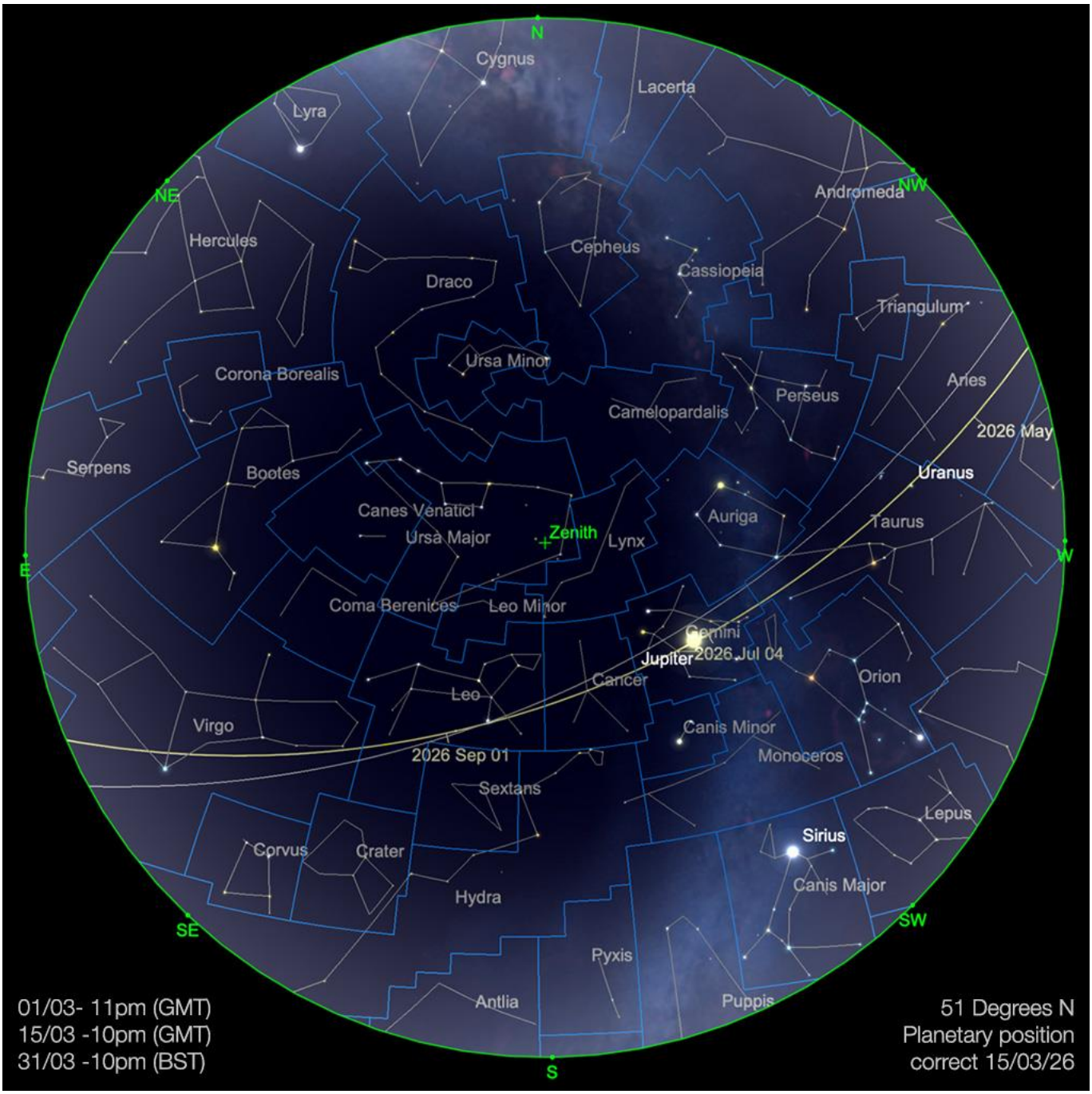
Expand your horizon



March marks the transition of the Sun from the southern to the northern celestial hemisphere, bringing the Spring Equinox on Friday, 20th March. This signals the official start of spring, though seasonal changes are gradual and complex. The Spring Equinox, or Vernal Equinox, occurs when the Sun crosses the celestial equator from south to north, marking the start of spring in the northern hemisphere and autumn in the southern. The term "equinox" comes from Latin, meaning equal night, as day and night are approximately the same length worldwide. Earth's 23.5° axial tilt causes seasonal changes as it orbits the Sun. During the equinox, the Sun is directly above the celestial equator, resulting in nearly 12 hours of daylight and 12 hours of night globally. After this, the northern hemisphere tilts towards the Sun, bringing longer days, while the southern hemisphere moves into shorter, cooler days. The Autumnal Equinox in September marks the reverse process.

Those at mid northern latitudes who spend time outdoors during the crepuscular hours will already have noticed the steady extension of daylight as March progresses. In 2026 the

clocks advance by one hour across much of Europe on Sunday 29th March, ushering in lighter evenings and marking the shift to summer time. Although the European Union voted in 2019 to discontinue the twice yearly clock change, implementation remains deferred and the seasonal adjustment continues in practice.

In North America, both the United States and Canada move their clocks forward earlier in the month, on Sunday 8th March 2026. Australia and New Zealand will make their corresponding autumn change in early April, returning to standard time as daylight shortens in the Southern Hemisphere.

It remains the case that many countries do not alter their clocks at all. Regions closer to the equator experience relatively modest seasonal changes in day length and therefore derive little practical benefit from time adjustments.

As ever, wherever you find yourself, there's plenty to see in the skies above us this coming month.

The Solar System

The Sun

Solar activity over the past month has shifted from heightened flare production to noticeably quieter conditions, according to data from the NOAA Space Weather Prediction Center and associated solar monitoring networks.

In early February 2026 the Sun remained relatively active. Magnetically complex active regions produced several strong flares including X class events, accompanied by coronal mass ejections that triggered minor to moderate geomagnetic disturbances at Earth. These events briefly disrupted high frequency radio communications and enhanced auroral displays at higher latitudes. Sunspot numbers during this period were consistent with the still elevated phase of Solar Cycle 25 which reached its broad maximum during 2024 and 2025.

By mid to late February activity declined markedly. Daily sunspot counts fell and at least one spotless day was recorded, the first such occurrence for several years. Flare output during this quieter interval was dominated by lower energy C class events with few significant M

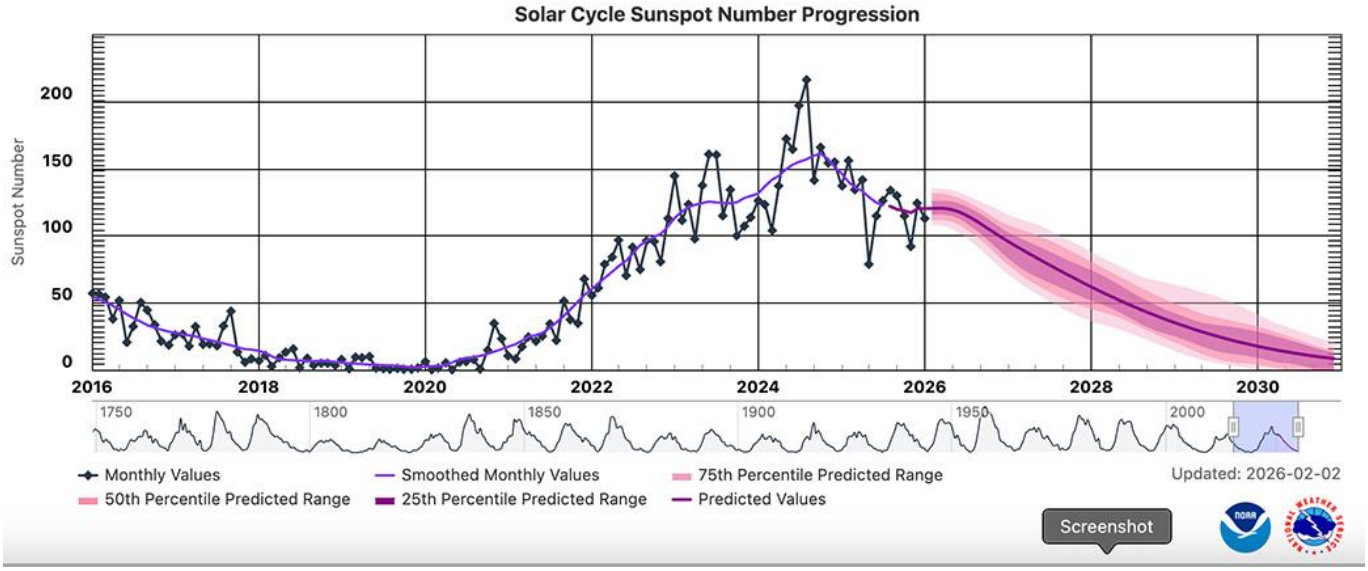
class flares and no major Earth directed coronal mass ejections. Geomagnetic indices correspondingly returned to generally quiet levels.

Large prominences and filament structures have continued to appear around the solar limb as part of the Sun's normal magnetic evolution. However, without strongly complex sunspot groups these features have not generated major flaring episodes.

Overall the recent trend suggests a temporary lull within the broader declining phase of Solar Cycle 25 rather than an abrupt transition toward solar minimum. Periods of calm can still be interrupted by renewed activity but the frequency and intensity of major flares over the past month have been lower than earlier in the cycle.

For those who wish to follow day to day solar behaviour more closely, established services such as Spaceweather.com provide clear summaries of sunspots, flares and coronal mass ejections. Michel Deconinck's Aquarellia Observatory newsletter also offers a concise monthly overview of solar, heliospheric and geomagnetic conditions which complements official output from the NOAA Space Weather Prediction Center.

Observers particularly interested in auroral activity should consider the AuroraWatch UK service from Lancaster University. Its app and alert system use real time geomagnetic data to provide timely warnings and remain among the most reliable tools in the United Kingdom for anticipating potential auroral displays when solar conditions permit.



Latest NOAA Sunspot data. Public Domain.

The Moon

The Moon begins March 2026 nearly at full phase in the constellation of Cancer, shortly to cross over the border into neighbouring Leo. On 2nd and 3rd March, the waxing gibbous Moon comes flanks the brightest star in Leo, Regulus and then reaches Full Moon late on 3rd March. This event coincides with a total lunar eclipse that places the fully illuminated lunar disc in Earth's shadow. At this phase the Moon sets close to sunrise and rises around sunset. Sadly, the eclipse itself is not visible from Europe (as it occurs in daylight hours), with those around the Pacific rim getting the best of the event, which will be seen in full from Australia, New Zealand and much of Eastern Asia and the Western part of North, Central and South America. The Full Moon will still be striking, riding reasonably high in the early evening sky in the lead up to this, on the Leo/Sextans borders. Eclipse aside, the early parts of the month will not be ideal times for those wishing to view or photograph fainter deep sky objects, due to the prominence of the generously-illuminated Moon in the night sky.

After the eclipse and Full Moon, the Moon begins to wane and descend the ecliptic. Over the next few nights it moves out of Leo and into Virgo, appearing as a waning gibbous object that still dominates the late evening sky, but its illuminated portion will be shrinking each night. Around 6th and 7th March it passes close to the blue-white principal star in Virgo, Spica.

The 8th to 11th March, the Moon enters Libra, Scorpius and then the non-zodiacal Ophiuchus, where it reaches Last Quarter on 11th March. At this half-illuminated phase the lunar terminator runs down the centre of the disc, providing enhancements in contrast that are well-suited to telescopic study of surface relief. The Moon rises later in the night compared with earlier in the month and remains visible into the early morning hours.

Following Last Quarter the waning crescent Moon continues eastwards. From 12th to mid-month it traverses Sagittarius and Capricornus and appears increasingly low in the pre-dawn sky. On 17th March the slender lunar crescent makes a reasonably close pass with Mercury and with Mars in Aquarius, though the very thin phase near the Sun's glare and relatively faint showing of both the planets at the present time, will make these conjunctions challenging to observe without an unobstructed eastern horizon.

New Moon occurs in the early hours of 19th March, from European locations, with the Moon passing to the north of the Sun, in Pisces. At this stage the lunar disc is effectively invisible, making the nights before and after ideal for deep sky observing and astrophotography, under dark skies.

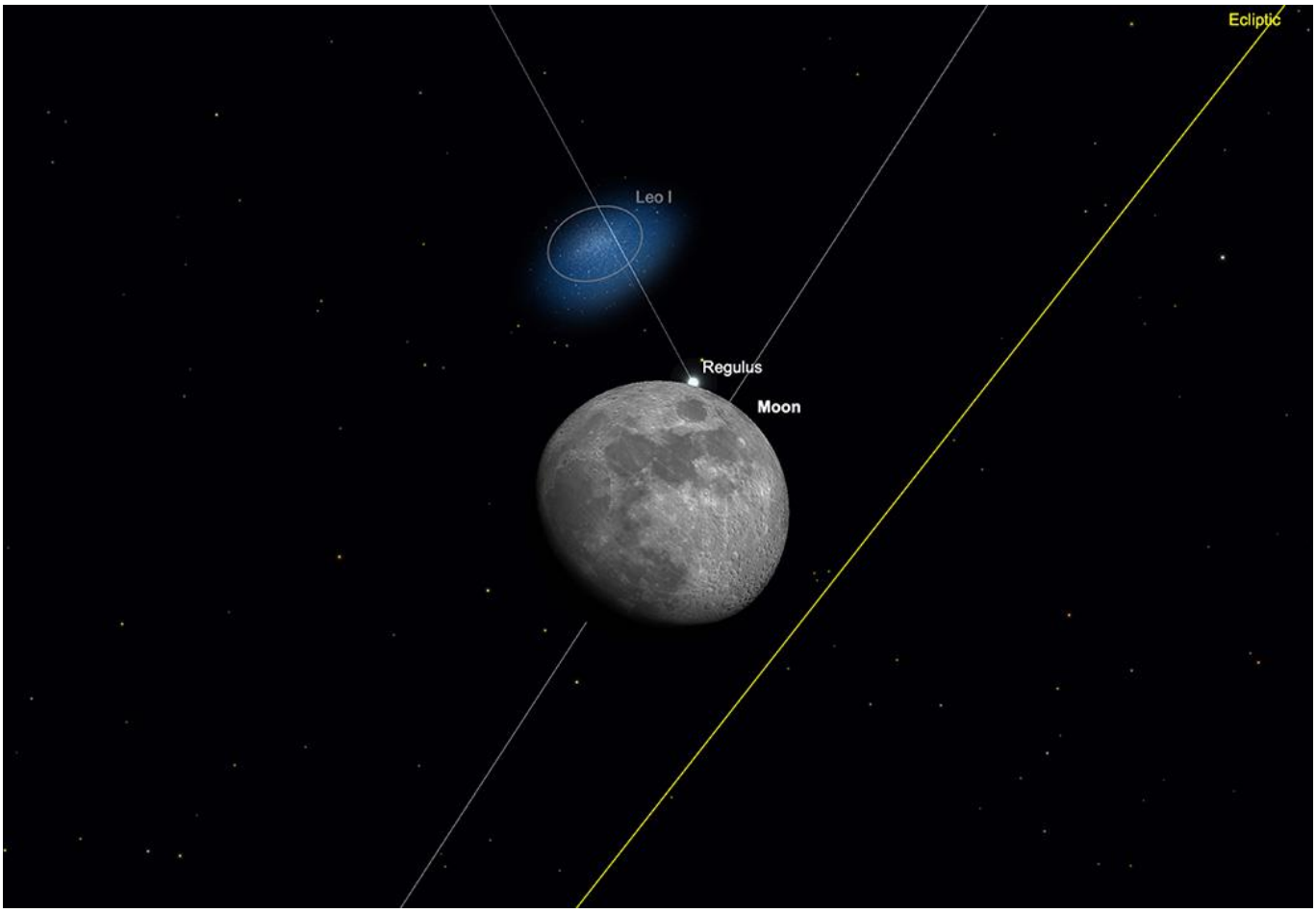
After New Moon the Moon reappears as a waxing crescent in the western evening sky. Over the next few days it climbs above the horizon after sunset and moves through Pisces into Aries and then Taurus. Around 20th March the thin crescent may be seen in proximity to Venus, low above the western horizon soon after sunset, offering a pleasing early spring conjunction.

This evening crescent cycle is one of the “High Spring Crescent” phases of lunar activity, where the Moon is seen at a particularly elevated position above the horizon in the temperate northern hemisphere, which leads to excellent telescopic observing opportunities, particularly along the terminator line between the light illuminated side and the dark area still in shadow.

By 22nd to 23rd March the waxing crescent has entered Taurus and approaches the Pleiades star cluster, providing an attractive pairing as twilight fades. Soon after, on 25th March the Moon reaches First Quarter in Gemini, rising in the late afternoon and visible high in the sky around early evening. This phase continues to deliver favourable conditions for telescopic examination of the terminator region.

In the final days of March the Moon continues its eastward progression through Gemini and then into Cancer. On 26th March it appears near Jupiter and flanked to the north by Geminis principal stars, Castor and Pollux. Close to the end of the month, around 28th, the waxing gibbous Moon is found near to the Beehive Cluster (M44) in Cancer. Once more the Moon approaches Regulus in Leo, before occulting it in the early evening of the 29th March. Those with binoculars and telescopes in Northern Europe can watch the re-emergence of the star from behind the Moon at a little after 8pm (BST). Lunar occultations have long held both historical and scientific significance. Careful timing of a star’s disappearance and reappearance behind the Moon has enabled astronomers to refine the Moon’s orbital parameters, chart the irregular profile of its limb including mountains and valleys and improve the positional accuracy of stars. Such observations have also revealed close binary systems, placed limits on stellar diameters and contributed to measurements of variations in the Earth’s rotation.

We end March with the Moon back in Virgo, just a couple of days from Full again. As before, the end of the month will be a sub-optimal time for deep sky observation and imaging as a result.



The Moon with Regulus reemergence from occultation 8.19pm, March 29th. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

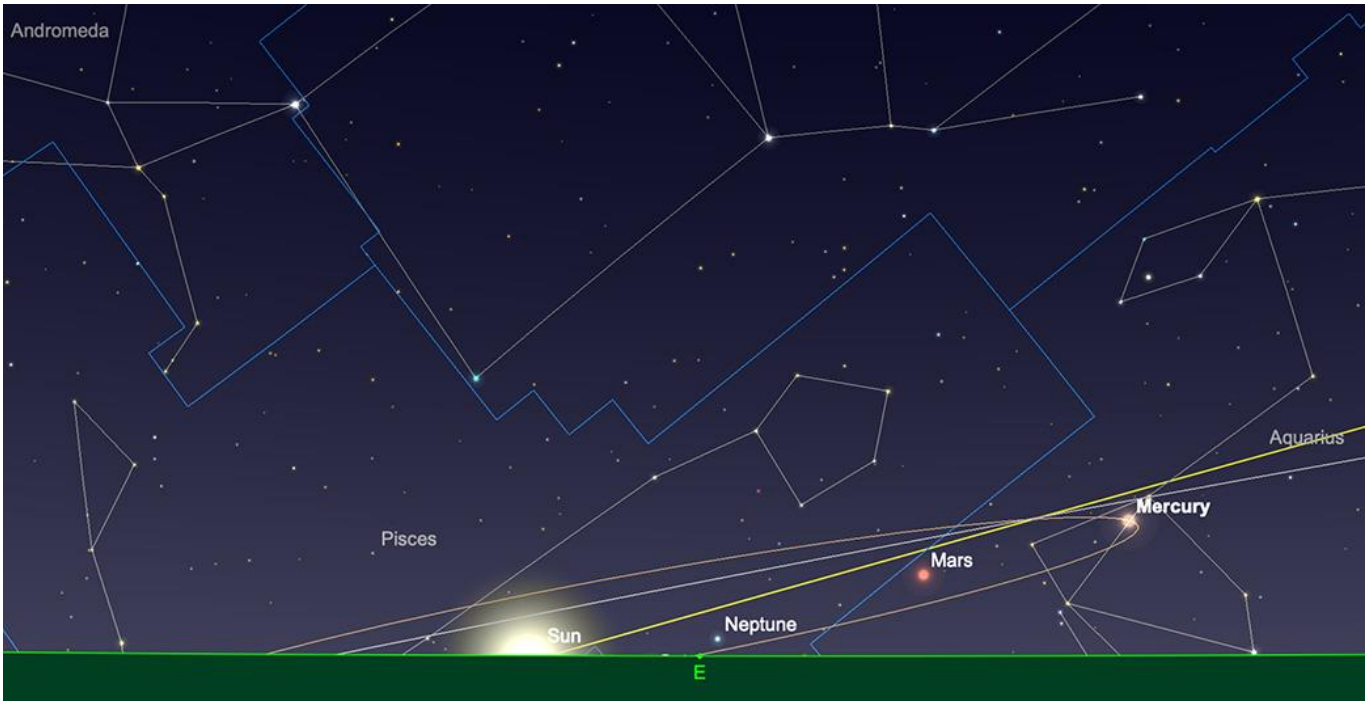
Mercury

Mercury begins March 2026 as an evening object low in the western sky, following its greatest eastern elongation in February. At the start of the month it lies in the constellation Pisces, moving eastward against the background stars but drawing closer to the Sun in angular separation. It is around magnitude 2.4 and shows a shrinking gibbous phase. Although a reasonable altitude above the horizon (+10 degrees, as observed from from 51° N) after sunset, will be so faint by this point to be practically unobservable for observers at mid northern latitudes and twilight increasingly interferes with views.

During the first week of March, Mercury continues to dip towards the Sun, eastward through Pisces and fades steadily as its illuminated fraction decreases. By 7th March Mercury reaches inferior conjunction with the Sun, passing between the Earth and the solar disc. At this point it transfers from the evening sky to the morning sky and is entirely lost in solar glare. Its phase is then an extremely thin crescent and its brightness temporarily subdued.

In the third week of March Mercury re-emerges before sunrise in the eastern sky, now west of the Sun. Initially very low and challenging to detect, it brightens quickly as its phase thickens. By 24th to 26th March it shines at approximately magnitude +0.7 in the constellation Aquarius, displaying a slender crescent of roughly one quarter illumination. Its altitude is still low - roughly 5 degrees at sunrise (from from 51° N). The reason for this is the very shallow angle the ecliptic rises at during this time of year, for temperate northern hemisphere observers - though those in equatorial regions will be in a better position to observe the innermost planet at reasonable separation from the horizon.

During the final days of March Mercury climbs fractionally higher in the dawn sky as it moves eastward from Aries toward Taurus. By 30th and 31st March it approaches magnitude +0.4 and shows a broader crescent phase, around 44% illumination, though with an apparent diameter slightly smaller than earlier in the month. Although never especially high for observers near 51 degrees north, Mercury can be found in bright morning twilight, as long as sky conditions and horizons are clear enough.



Mercury at sunrise, 13st March. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

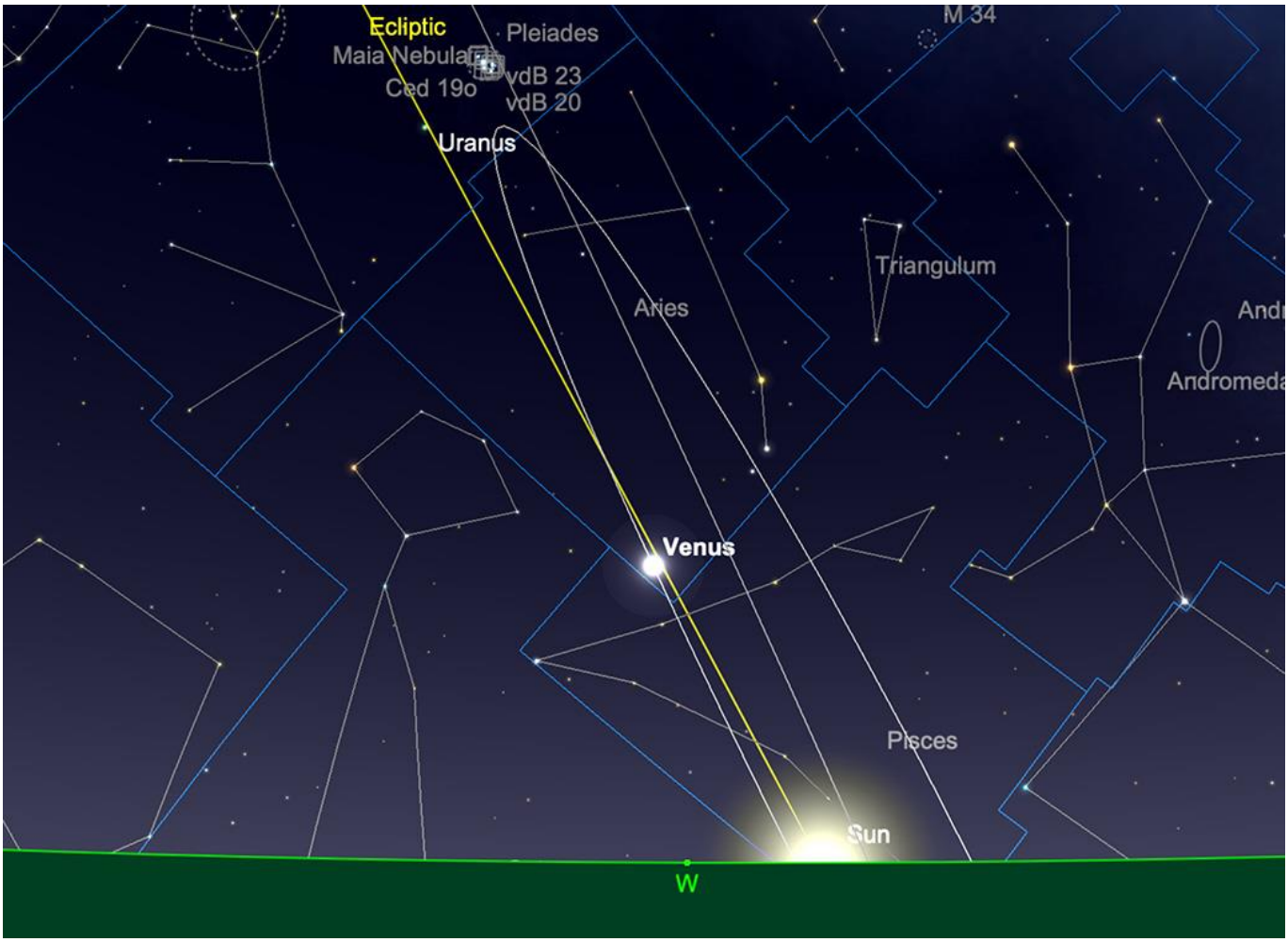
Venus

Venus continues its post-superior conjunction emergence during March 2026, having passed behind the Sun on 6th January. At the start of the month it remains a low evening object in the western sky after sunset, situated in the constellation Aquarius. Although still close to the Sun in angular separation it shines prominently at about magnitude –3.9, unmistakably bright against the fading twilight for observers with a clear and level western horizon. Through a telescope it presents a small, almost fully illuminated gibbous disc, roughly 90 per cent lit, with an apparent diameter of a little over 10 arc seconds.

During the first half of March Venus moves steadily eastward from Aquarius into Pisces, increasing its elongation from the Sun and gaining altitude at sunset. By mid month it sets noticeably later than it did in February and becomes easier to locate with the unaided eye as twilight deepens. Its brightness stays static at magnitude –3.9, while its phase decreases marginally from near full to a distinctly gibbous form, the illuminated fraction slowly shrinking as its apparent size increases.

As March progresses into its latter half, Venus advances further through Pisces. Each evening it stands higher above the western horizon at a given stage of twilight, improving observing conditions from mid northern latitudes. By 31st March it still shines at magnitude –3.9 and shows a gibbous phase of roughly 94% illumination, with an apparent diameter approaching 10.6 arc seconds. The growing separation from the Sun makes it increasingly conspicuous as the dominant object in the early evening sky.

By the end of March Venus has become firmly established as the brilliant evening star of spring, now in Aries and continuing its eastward motion along the ecliptic. Its steady increase in altitude after sunset signals the beginning of a far more favourable observing season in April and May, when it will climb even higher and remain visible for longer in a darkening sky.



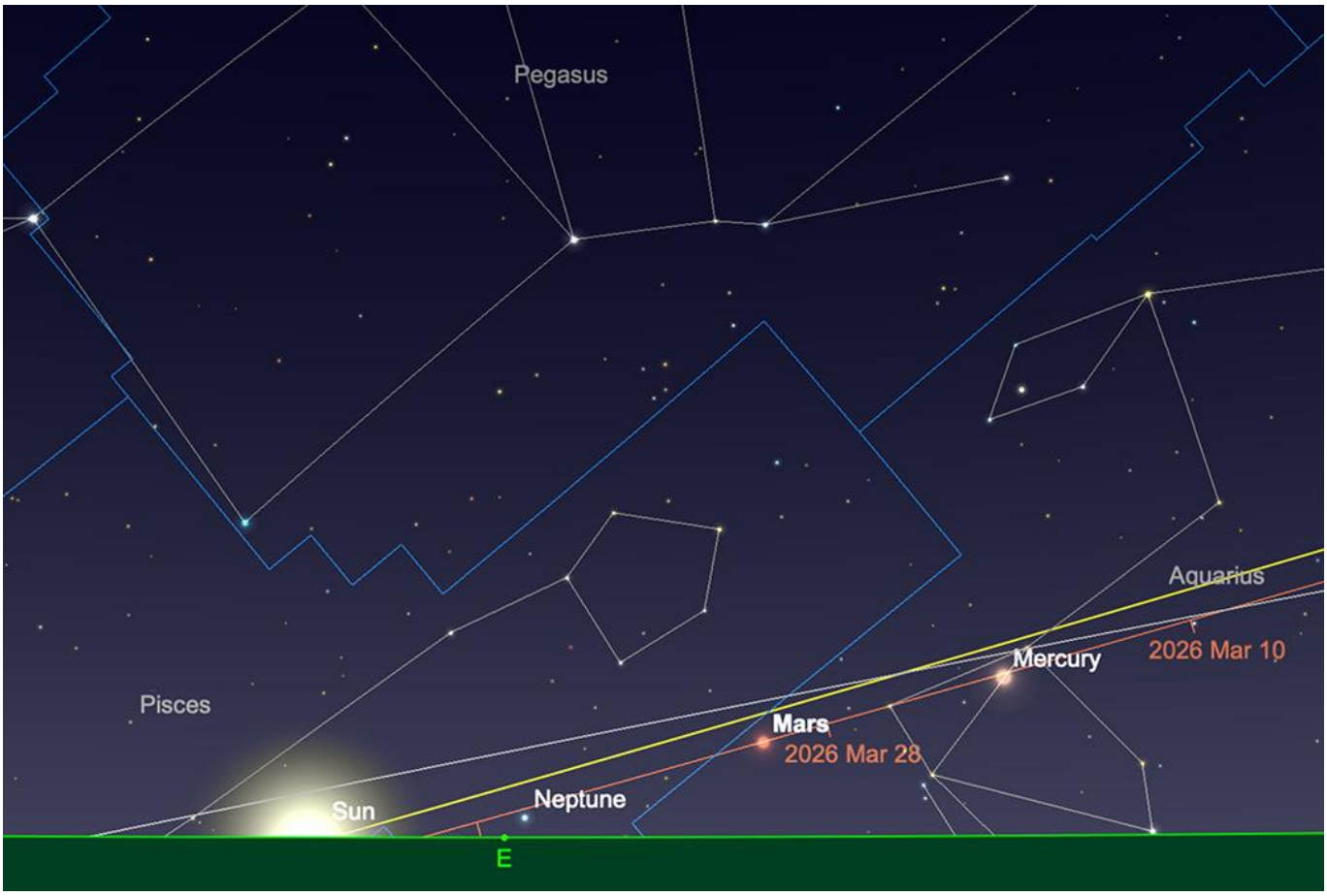
Venus at sunset, 31st March. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Mars

Having just passed solar conjunction in January, the Red Planet is only beginning its long, slow ascent into the morning sky. For observers in the temperate northern hemisphere, Mars will remain an extremely challenging, if not impossible "early bird" object, pretty much invisible in the pre-dawn twilight. On 1st March, the planet is situated in the constellation Aquarius with a visual magnitude of +1.2. This subtle brightness makes it difficult to distinguish from the surrounding sky in the morning twilight, especially as the ecliptic is currently at a shallow angle for northern hemisphere observers.

Mars remains pretty much unobservable as it transitions from Aquarius into the constellation Pisces. On 16th March, Mars participates in a conjunction with Mercury, with the two planets separated by approximately 3 1/2 degrees. Mercury will appear even fainter than the diminutive Mars, at magnitude +2, making binoculars a necessary tool for most observers to have any hope of separating the pair against the brightening sky. In truth, this is a poor event and while both planet’s separation from the Sun is reasonable, their altitude for northern hemisphere observers is anything but. This alignment is followed by a picturesque scene on the morning of 18th March, when a slender 2% illuminated waning crescent Moon joins the two planets. This grouping provides an excellent navigational aid for locating Mars, which by this date remains static at magnitude +1.2.

In the final week of March 2026, Mars reaches its perihelion on the 26th, marking its closest physical approach to the Sun during its orbit. While this is a significant orbital milestone, the planet's apparent diameter remains a diminutive 4.0 arc seconds. This, compounded with the still extremely disappointing altitude of Mars at present, means that even high-quality telescopes will struggle to reveal any surface details at all. By the month's end, Mars rises nearly ninety minutes before the Sun, though you will need an unobstructed eastern horizon and clear atmospheric conditions to have any chance of even identifying it at present.



Mars, sunrise, 31st March. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

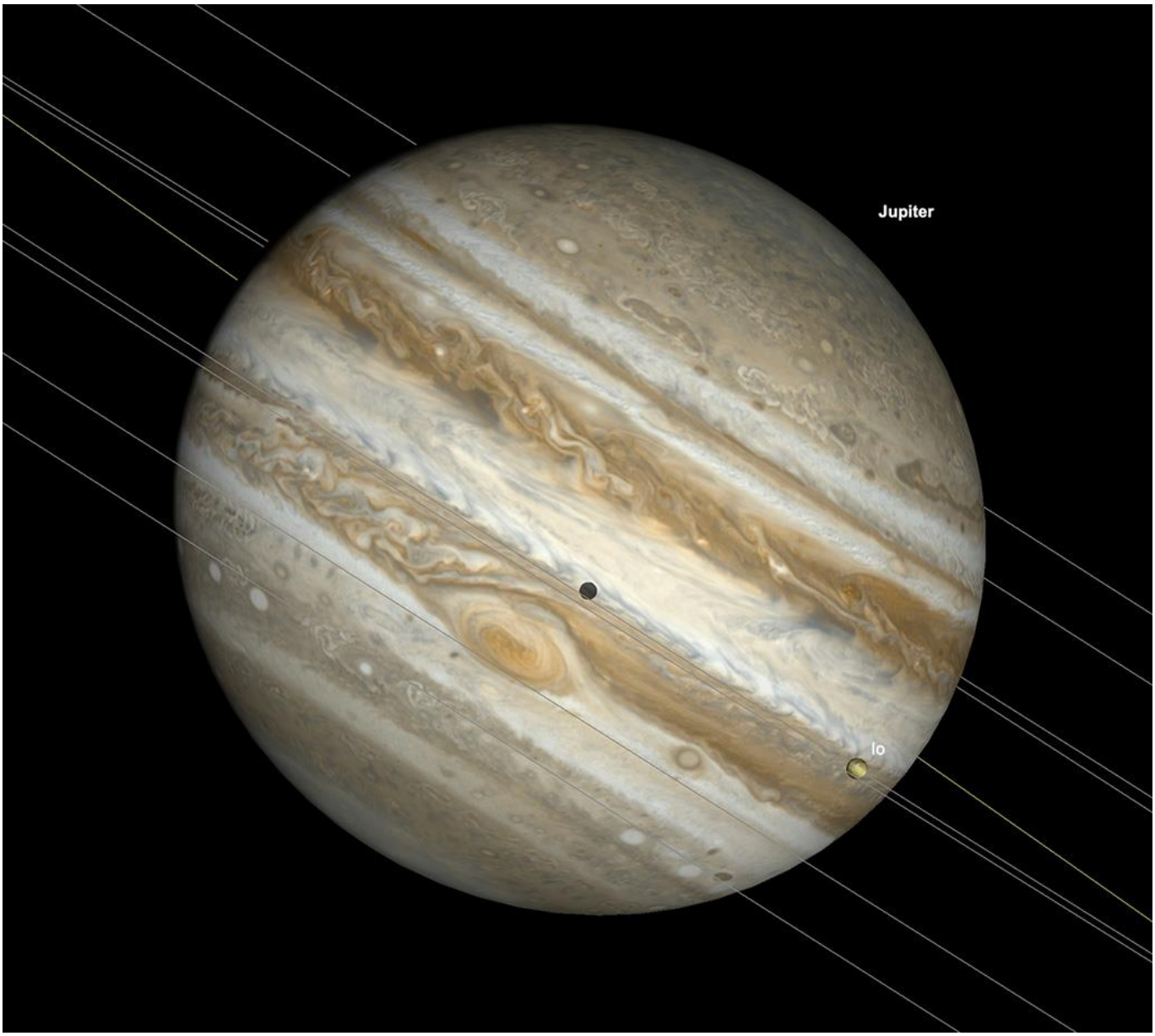
Jupiter

Following its opposition in early January 2026, Jupiter remains an exceptionally dominant feature of the evening sky throughout March and continues to occupy a prime position within the constellation Gemini. At the beginning of the month, the planet shines with a commanding magnitude of -2.4, easily outstripping every star in the sky (bar the Sun) and remaining clearly visible, even from bright urban centres. Its angular diameter measures approximately 42 arc seconds, which ensures that even modest binoculars or small telescopes will reveal a distinct pale disk accompanied by the four Galilean moons—Io, Europa, Ganymede and Callisto—aligned like jewels on either side of the gas giant. Because the planet culminates high in the southern sky during the early evening, observers can enjoy several hours of stable viewing conditions before the atmospheric turbulence increases towards the horizon.

As the month progresses into its middle stages, Jupiter's brightness and apparent size diminish only slightly as the distance between Earth and the giant planet gradually increases. By mid-March, its magnitude sits at approximately -2.3 and its angular diameter contracts to roughly 40 arc seconds. Despite this slow retreat, it remains the undisputed king of the night sky and continues to offer superb opportunities for telescopic study of its cloud belts and the Great Red Spot.

While there are no significant planetary conjunctions with Jupiter during this period, the celestial highlight occurs toward the end of the month when the waxing gibbous Moon makes a close approach. On the nights of 26th and 27th March, the Moon will sit in close proximity to Jupiter and provide a striking visual pairing for naked-eye observers. By the close of March, Jupiter still sets well after midnight and still grants northern observers ample time to appreciate the planet's intricate atmospheric details during the lengthening spring evenings. It will have faded a little to -2.2 magnitude by this time and now displays a still-healthy 38.9 arc second diameter.

Fans of transit watching will find a few events worth saving for the diaries. The evening of the 1st sees a Great Red Spot and Io mutual transit, starting at a little before 10 pm (GMT). There’s another mutual transit of Europa and the GRS in the early hours of March 6th. There’s another Io and GRS transit which begins at around 11:30 pm (GMT) on March 8th. There’s a dual transit of Io and Callisto which begins at a little before 8 pm on March 17th. A mutual Ganymede, Io and GRS transit begins at around 6:30 pm March 26th. The month is rounded out by another GRS and Europa transit which begins at around 9:30 pm March 30th.



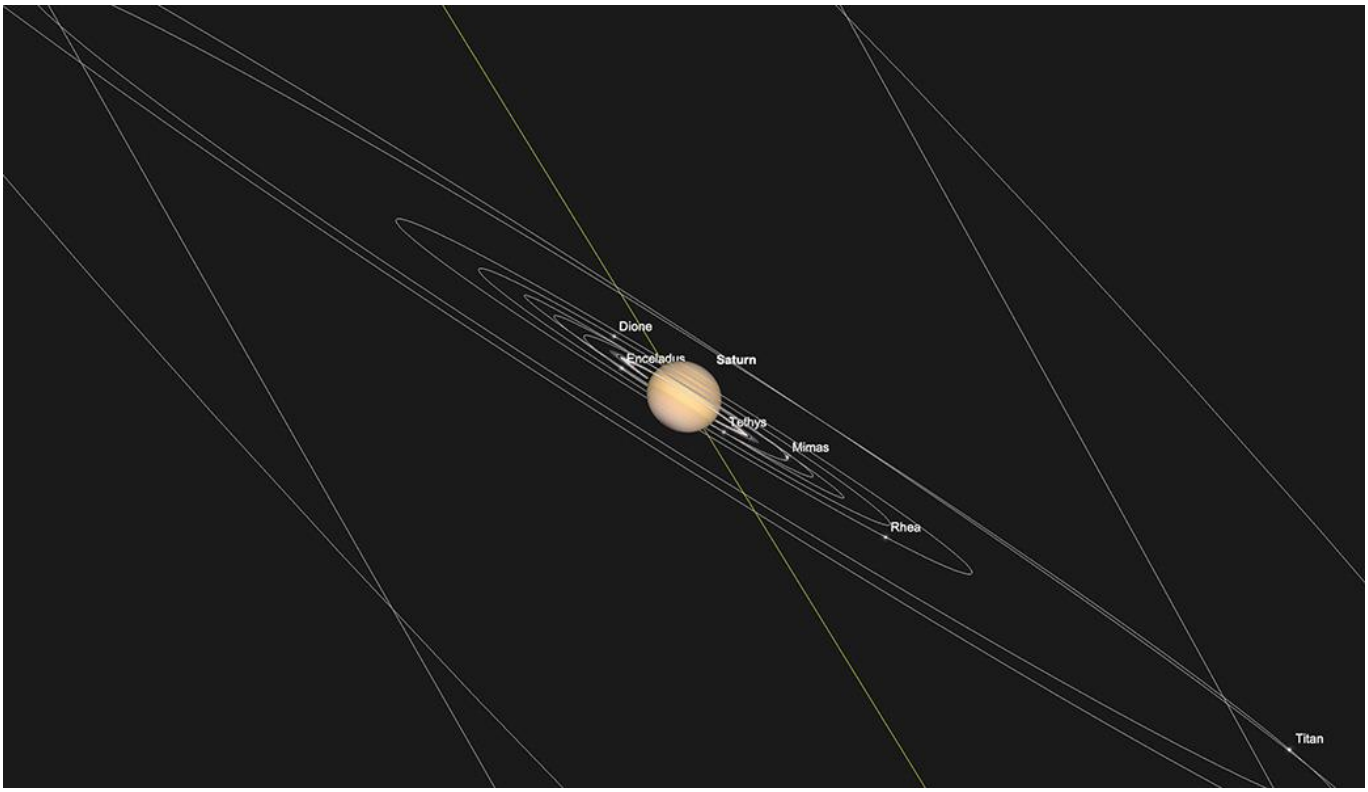
Jupiter with Great Red Spot and Io mutual transit, early evening, 1st March. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Saturn

Saturn continues its descent into the evening twilight throughout March 2026 and becomes progressively more difficult to observe from mid-northern latitudes. At the beginning of the month it remains in the western part of Pisces, moving only slowly eastward against the background stars. Its brightness holds steady at about magnitude +1.0, leaving it modest but still clearly brighter than most stars in its immediate vicinity. For observers near 51° N it is visible only briefly after sunset, standing low in the south-west as twilight fades. Its altitude at the end of civil twilight is already reduced compared with February and it sets before full darkness is established, making early observation essential.

As the month advances, Saturn draws ever closer to the Sun in angular separation. By mid-March it is setting little more than an hour after the Sun and is increasingly immersed in bright twilight. Although its intrinsic brightness remains near magnitude +1.0 there is little practical reason to now attempt observations, due to its very low elevation and the effects of atmospheric extinction near the horizon. Telescopic observation at the present time is extremely frustrating, with atmospheric turbulence degrading the view. Saturn's rings remain presented at a shallow angle to our line of sight following the recent ring plane crossing, so their visual prominence is still reduced and the system appears comparatively narrow at modest magnifications.

During the latter part of March Saturn sinks deeper into the solar glare while continuing its slow eastward motion through Pisces. By the final week of the month it is extremely low in the west after sunset and will be lost altogether for many observers at mid-northern latitudes. Its eventually succumbs to Superior Conjunction on the 25th.



Saturn at sunset, 1st March. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

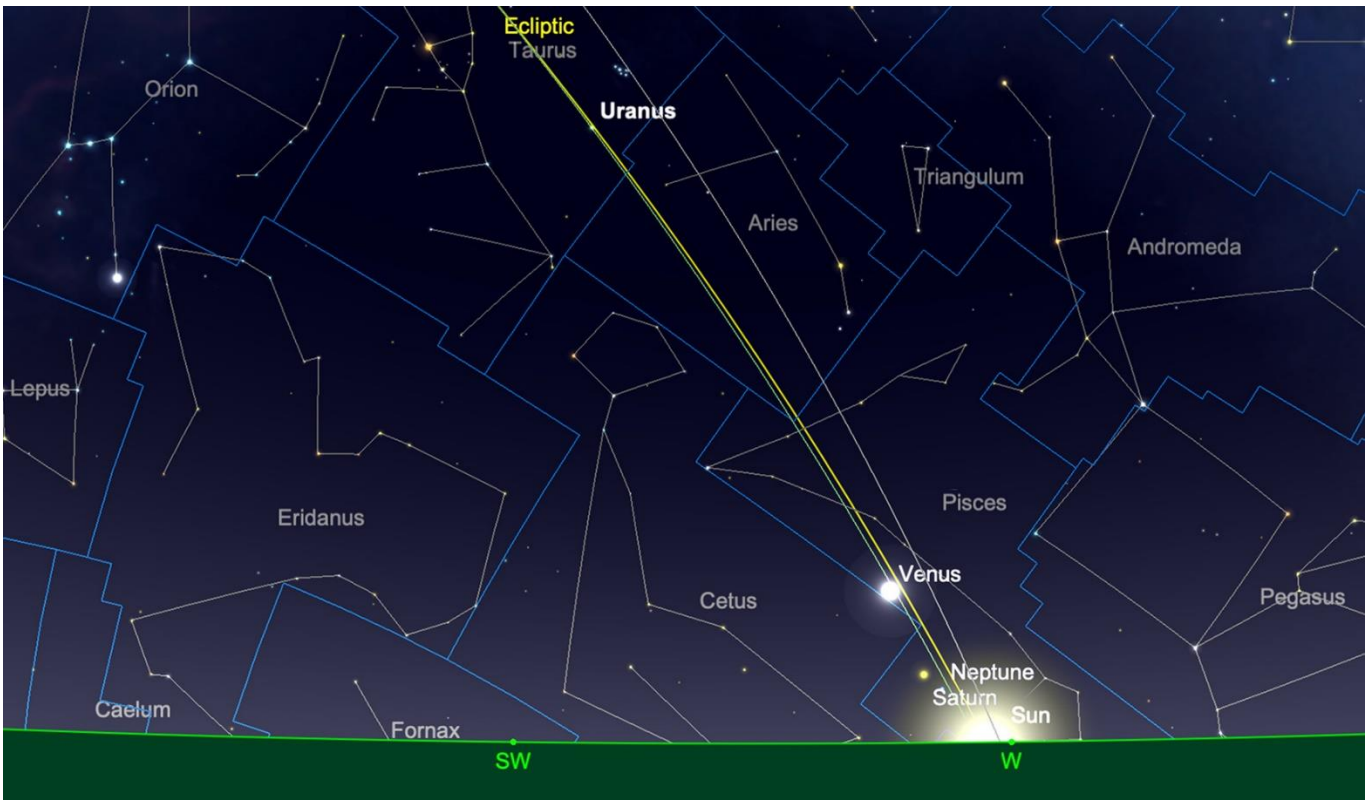
Uranus and Neptune

Neptune, sitting very close to Saturn, in Pisces, is now lost in the evening twilight. The Planet will reach Superior Conjunction on the 22nd March and there will then be a slow process of its re-emergence as a morning target.

Uranus remains the only accessible of the two outer planets during March 2026, though it too is declining in the western sky. It lies in Taurus, just under the famous Pleiades star cluster, and continues a slow eastward motion along the ecliptic. It shines at about magnitude +5.8 and presents a small disc roughly 3.5 arc seconds across. From very dark rural sites it is theoretically visible to the unaided eye, but binoculars make identification far easier. In the early evenings it is already well placed once darkness falls though lower than it was in mid-winter.

As March progresses, Uranus sets progressively earlier. By mid-month it is best observed soon after astronomical twilight ends when it stands at a moderate altitude in the west - still above the “magic” 30 degree elevation for those around 51° N. Its brightness and apparent size change very little over the course of the month, as its distance from Earth alters only slightly. At moderate telescopic magnifications it shows a distinct non stellar appearance and a subtle greenish hue.

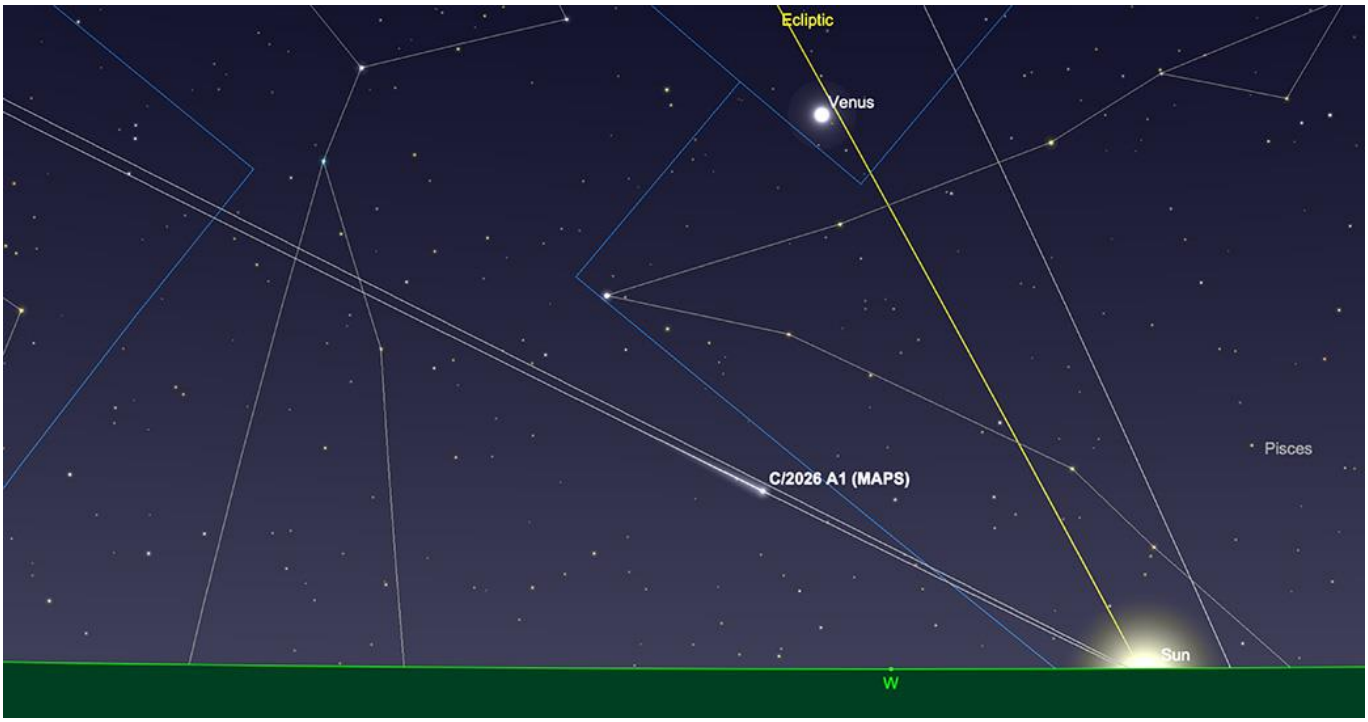
By the end of March Uranus is becoming a shorter lived evening target though still observable under clear skies. It remains in Taurus and close to magnitude +5.8 but its altitude at the end of twilight is now noticeably reduced compared with earlier in the season. While Neptune has effectively slipped from view, Uranus continues to offer a realistic and rewarding outer planet observation for those prepared to observe promptly after sunset before it too gradually retreats into the solar glare.



Uranus and Neptune relative positions, sunset, 15th March. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Comets

The most noteworthy comet this month is C/2026 A1 (MAPS), a member of the Kreutz sungrazer family that was discovered in January 2026 and will come very close to the Sun in early April. At the start of March it is still very faint (magnitude ~14–12) and located well south the sky as seen from most northern observers' locations, moving through constellations Eridanus, moving into neighbouring Cetus after the 4th. Under dark rural skies with a moderately large telescope it may become detectable late in March as it brightens slowly on its approach toward perihelion, but it will remain close to the Sun's position in the sky and very difficult to observe from mid northern latitudes before it rounds the Sun. Its low declination and proximity to the Sun mean that any detection this month will demand excellent conditions and an instrument capable of tracking very low objects in bright twilight; the best chances occur in the final days of March as it brightens further before its April perihelion. Predictive models estimate that significant brightening may occur after perihelion in April, but for March the comet remains beyond naked-eye reach and only a challenging telescopic or larger binocular target. Some of the upper ranks of magnitude prediction are in the minus figures close to perihelion in early April, but as the comet is a sungrazer, it stands a very real change of disintegration. Peak brightness is only predicted to last for a very brief window around perihelion, before the comet returns to distinctly more modest magnitudes.



Comet MAPS, sunset, 31st March. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

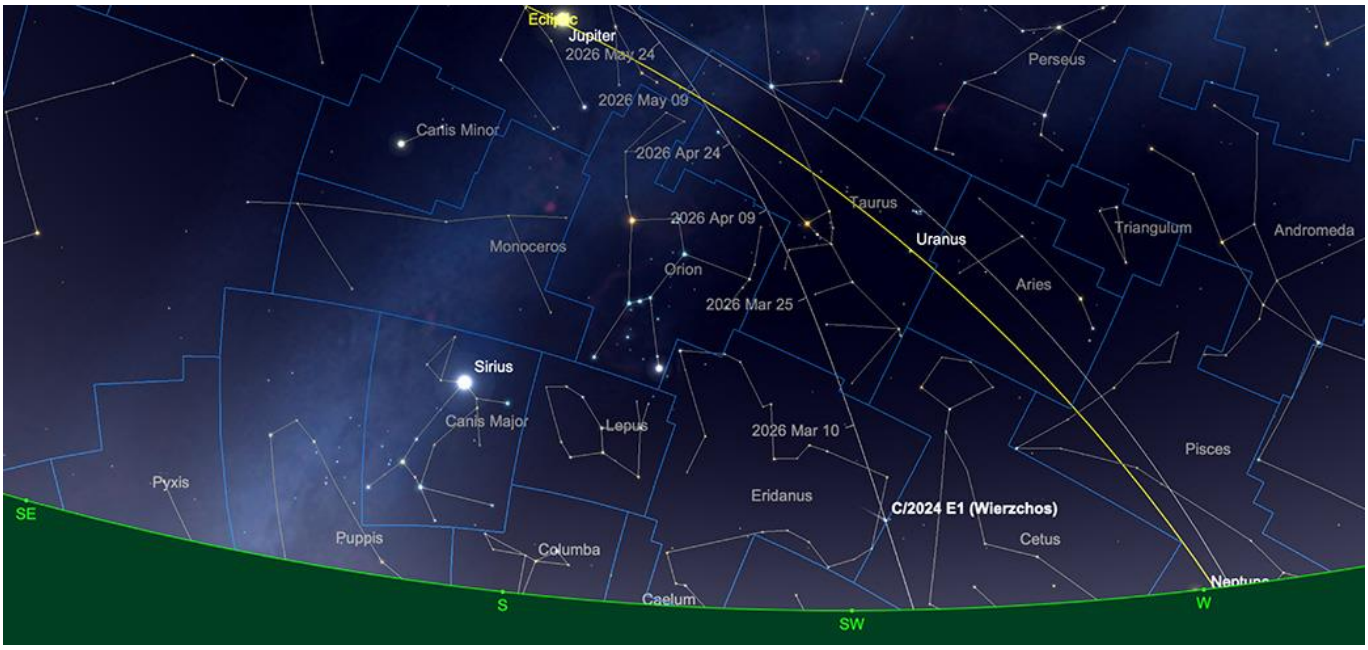
C/2024 E1 (Wierzchos) continues its post-perihelion evolution during March 2026 and becomes steadily fainter for observers, as it climbs higher into the northern hemisphere of the sky towards the end of the month Having passed perihelion on 20th January 2026 and made its closest approach to Earth in mid February, it is now receding from both the Sun and the Earth.

At the beginning of March the comet is positioned in the western evening sky in the constellation of Eridanus, moving gradually north-eastward against the background stars. Its elongation from the Sun is slightly improved compared with early February, but it remains low after sunset. Predictions indicate a total magnitude around +7.3, possibly a little fainter depending on how rapidly its activity declines. This may place it within binocular reach for most observers from dark sky sites and firmly in small telescope territory. Even then, the combination of low altitude and bright twilight significantly restricts the observing window to a short period at the end of civil twilight from sites with a flat, unobstructed western horizon.

By mid March C/2024 E1 has drifted eastward toward Taurus and continues to climb slowly north in declination, which marginally improves its geometric placement for Northern European observers. However, this improvement is offset by continued fading as the comet moves farther from the Sun and its activity diminishes. Predicted magnitudes are now around +9 and the coma is likely to appear faint and diffuse with little central condensation. Under dark rural skies a moderate aperture telescope will be required to detect it reliably and careful star charting or precise coordinates will be essential to distinguish it from background field stars.

Toward the end of March the comet advances further into Taurus while maintaining its slow north-easterly motion. Although it now sets slightly later relative to the Sun than it did earlier in the year its intrinsic brightness is expected to have declined to around magnitude +10 to +11. At these levels it becomes a challenging telescopic object, particularly given its modest altitude in the early evening sky. The coma is likely to be small and faint with little or no obvious tail structure visually.

Throughout March 2026 the overall trend is therefore one of gradual geometric improvement in position but continued photometric decline. For mid northern observers the best opportunity remains earlier in the month under very clear transparent skies with careful timing shortly after dusk. By month’s end C/2024 E1 (Wierzchos) is fading into the background as a specialist telescopic target rather than a practical object for casual observation..



C/2024 E1 path during March 26. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Meteors

There are no major meteor showers with strong activity visible during March 2026 from the United Kingdom or mid-northern latitudes. The well-known annual showers that produce notable rates of meteors, such as the Lyrids in April and Eta Aquariids in May, do not begin until later in the spring.

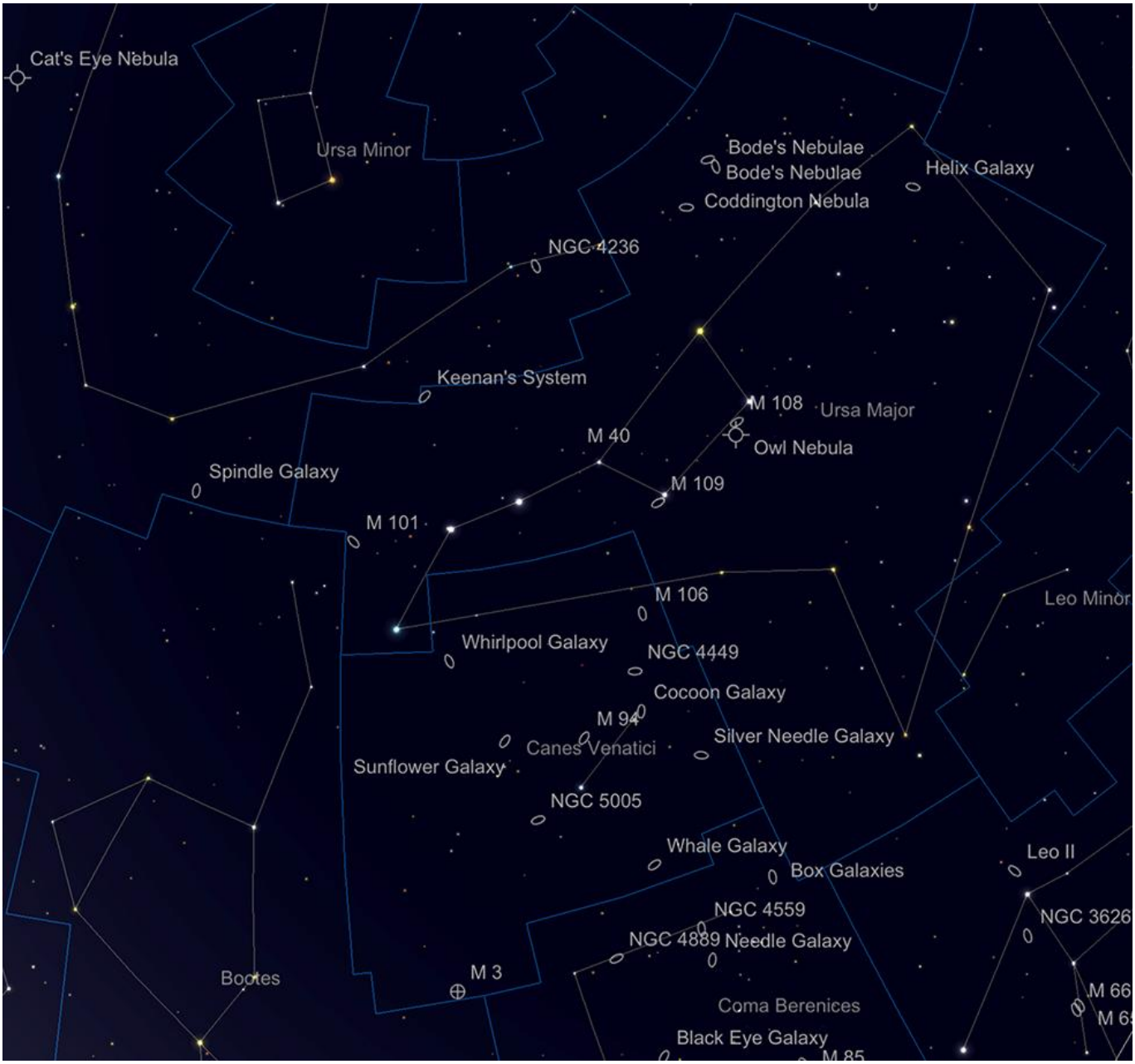
Deep Sky Observation - Welcome to Galaxy Season

Part 1: Ursa Major and Canes Venatici

Springtime is traditionally seen as Galaxy Season, so for the next three months, we'll be concentrating on the rich area of the heavens that runs from Ursa Major and Canes Venatici in the North, through Coma Berenices, on into the Zodiacal constellations of Leo and Virgo. This area of sky is well removed from the sweep of our Milky Way's axis and is a major "window" from our perspective out into extra-galactic space. The arc we will be covering, from M81 and M82 in the North of Ursa Major to M104, the Sombrero Galaxy in the South of Virgo takes in 90 degrees of sky and is full of easily-found and observed galaxies.

We start in the far Northern part of this arc (with suitable apologies to readers in the Southern Hemisphere), in the large and imposing constellation of Ursa Major, the Great Bear.

Known the world over for the distinctive question mark-shaped asterism of the Plough or the Big Dipper, Ursa Major actually extends over a much larger area. As such, it is actually the third largest constellation of all, after Hydra and Virgo.



Ursa Major and Canes Venatici. Image created with SkySafari 5 for Mac OS X, ©2010-2016 Simulation Curriculum Corp., skysafariastronomy.com.

Ursa Major is rich with deep sky objects, the first of which we shall cover is one of the fainter members of this group, NGC2685, the Helix Galaxy. At +11.30 mag and 4.6 x2.5 arc minutes across, the Helix Galaxy is hardly bright or indeed large, but still worth searching out. It can be found in the extreme west of Ursa Major, some 3 3/4 degrees SE of Muscida, Omicron Ursae Majoris - the star that marks the Great Bear's nose. NGC2685 is what's known as a Polar Ring Galaxy, a curious formation caused by the collision and/or interaction between two large galaxies. This causes great loops and rings of stars to form around the exterior of a central galaxy complex. These filament-like structures of gas and star material are often extremely attractive and NGC2685 is a prime example of this. This galaxy is also of the Seifert type, meaning it is energetically emitting radiation, probably as a result of the collision which formed its outer Helix-like structure. It is only in very large telescopes that it is possible to see the delicate ring structures, but they appear as very evident in long duration astrophotographs. The Helix is thought to lie around 42 million light years from Earth.

NGC2685 by Ken Crawford
http://www.imagingdeepsky.com/Galaxies/NGC2685/NGC2685.htm - Creative Commons

12 degrees or so to the NE of the Helix lie two of the most celebrated objects in the sky and one of the great astronomical "odd couples" (another of which later): M81 and M82. These two galaxies are separated by just over half a degree, but are quite different-looking

objects. Of the two, M81 is the dominant - a marvellous sweeping spiral, almost perfectly presented to our perspective, with two major arms, surrounding a large, bright core. At +6.90 mag and 24.9 x 11.5 arc minutes dimensions, M81 can easily be seen in telescopes and binoculars of all sizes - some keen eyed observers have even reported being able to see it with the naked eye under perfect conditions. If this is the case, at 12 million light years distance, it must be the most distant object visible to humans unaided. The M81 group of galaxies are thought to be the nearest collection of galaxies to our own local group. Indeed, some sources suggest that we should actually see our local group of galaxies and the M81 group as a larger collective, as there is some evidence of gravitational interaction between the two.

M81 was discovered by Johann Bode in 1774, along with neighbouring M82. As such both objects are often rather confusingly known as Bode's Nebula. Pierre Mechain independently discovered it in 1779 and Messier added both M81 and M82 to his catalogue two years later. In a telescope of 8-inch aperture and above, the true Spiral nature of M81 really begins to reveal itself - indeed it is one of the few spirals that show real evidence of its shape at such apertures. In long duration images, M81 practically leaps out of the darkness and given it and M82's proximity to one another, it is hardly surprising that these two objects are amongst the most photographed in the entire sky.

M82 by contrast is a very unusual object - otherwise known as the Cigar Galaxy (for very obvious reasons). This galaxy is somewhat fainter than its neighbour at +8.39 mag, but is also considerably smaller in area at 11.2 x 4.3 arc minutes dimensions. Subsequently, the surface brightness of M82 is not dissimilar to M81's. M82 is thought to have been somewhat deformed from a regular spiral structure by interaction with M81 and is bisected by a deep red lane of heavy star forming material. This bisection is clearly visible in telescopes and spectacularly revealed in even modest length exposures . This region looks almost organic in images, with feathery, root like structures shooting in both directions perpendicular to the galaxy's major axis. The power behind this structure seems to be Supernovae, which have been thought to have occurred in M82 with almost metronomic regularity - estimates put the figure at once every decade, though not all of these have been directly observed. The last Supernova event, a type Ia, in M82 was observed in January 2014 and brightened to +8 mag - it was the closest and brightest observed Supernova since the LMC Supernova in 1987.

M81 and 82 by Mark Blundell. Image used with kind permission.

In addition to M81 and M82, a smaller outlying galaxy, NGC 3077, which is a 5.2 x 4.7 arc minute +9.89 mag object, forms a sort of equilateral triangle with its two more dominant neighbours. This is a little more difficult from a visual perspective, though shows up well in images.

You don't need a large telescope to observe these galaxies, binoculars and a reasonable sky will show them, but the beauty of M81 and the mysterious nature of M82 are a joy to behold in a medium to large-sized telescope.

The curious Coddington's Nebula, IC 2574, lies around 3 degrees to the E of M81 and M82 in the direction of Dubhe, Alpha Ursae Majoris. This galaxy is an outlying member of the M81 group too. At +10.39 mag and 13.2 x 5.4 arc minutes area, it is somewhat low in surface brightness and not nearly as conspicuous as its neighbours - subsequently it was overlooked until Edwin Foster Coddington discovered it in 1898.

Follow Duhbe down the "Bowl" of the Big Dipper to Merak, or Beta Ursae Majoris. A degree and a half E of Merak lies another "odd couple" - the galaxy M108 and the planetary nebula, M97, otherwise known as the Owl Nebula. Both were discovered by Pierre Mechain in the early 1780s, though M108 was not officially added to the Messier list until the 1950s. M108 is a fine spiral galaxy, viewed nearly edge on and showing a distinct mottling in its texture. At +10 mag and 8.6 x 2.4 arc minutes, M108 can be seen fairly easily in most small telescopes and shows some notable H II nebulous regions with a UHC filter or similar in larger scopes. This galaxy is thought to be an outlying member of the M81 group and lies some 35 million light years away.

M97, or the Owl, is much closer at 1900 light years away and is very much a part of our galactic neighbourhood - its association with its neighbour is merely a lucky line of sight event and has no further significance than that. Unlike M108, the Owl was originally classified by Messier in 1781. When one observes the Owl through a reasonable sized telescope, most successfully when using an OIII filter, the reason for its nickname become apparent. This Planetary shows two distinct dark "eyes" like the face of an owl looking out through the cosmic gloom. These eyes are simply regions in the toroidal structure of the nebula where there are voids of gas - these are quite common features of many Planetary nebulae - the less material in these sections leads to a lower contrast area. The Owl has a central star, which is difficult to observe in smaller telescopes.

M97 and 108 by Mark Blundell. Image used with kind permission.

This pair of lovely objects, much like M81 and M82 is understandably a perennial subject for imagers.

Moving East along the bowl of the Dipper, or the blade of the Plough, we come to Phecda, or Gamma Ursae Majoris. Some 38 arc minutes to the E of Phecda is the stunning galaxy M109. Like M108, this is a latter addition to the Messier list, though discovered by Mechain in 1781. M109 is a +9.80 mag, 7.5 x 4.4 arc second target and one of the most beautiful Barred Spiral Galaxies in the entire sky. It can be spotted in binoculars under good conditions, though larger telescopes are needed to show evidence of its spiral arms and prominent central bar. M109 has three major arms which become evident under higher magnification in larger telescopes, though suffered the indignity of being incorrectly classified as a Planetary nebula by Sir William Herschel. Under lower magnification, M109 looks distinctly egg-shaped, so this might go some way to explaining the great Astronomer's error! Lying around 75 million light years away, M109 is the most prominent member of the larger Ursa Major group of galaxies, which are distinct from the closer M81 group.

M109 by Mark Blundell. Image used with kind permission.

From M109, we now travel up the bowl of the Big Dipper, along the handle, passing Megrez, Alioth and the double star Mizar and Alcor. If we continue to trace a line from Alioth, through Mizar, to the point where this line would be bisected by a perpendicular line moving up

Northward from the last star in the handle, Alkiad, we come to the location of the last of the galaxies in Ursa Major we will cover this month: the face-on spiral M101.

M101 is a large galaxy, taking up an area 28.8 x 26.9 arc minutes across - much larger than even M81. Although its brightness is listed as around +7.9 mag, due to its face-on presentation, this brightness is spread over a very wide area, leading to quite a dim overall target. This galaxy was discovered by Mechain in 1781 and is one of the final original Messier objects, as it was added to the list by Messier later in the same year. Although studied by many astronomers in the interim period, it was only when Lord Rosse turned his 72-inch Leviathan of Parsonstown Reflector towards it in 1851 that its true spiral nature was revealed. Although some observers claim to have seen the first suggestion of spiral structure with instruments as small as 4 inches aperture, it will take exceptional sky conditions to be able to achieve this - or a much larger telescope. Larger telescopes, when combined with UHC, or similar Hydrogen-responsive filters, will start to reveal some of M101's remarkably rich HII regions, where star formation is rife. Indeed, M101 is somewhat of a monster in size, as it is estimated to be twice the diameter of our own Milky Way. It lies around 22 million light years away.

M101 by Mark Blundell. Image used with kind permission.

Somewhat confusingly, M101 is one of the three galaxies in the sky known by the nickname "The Pinwheel" - M33 in Triangulum and M99 in Coma Berenices also share this title.

Moving on from Ursa Major, we dive South into neighbouring Canes Venatici - the hunting dogs. Whereas Ursa Major is a large constellation with prominent stars, Canes Venatici is exactly the opposite - but what it lack is bright stars, it certainly makes up for in galaxies!

The first and best-known of all these is the remarkable M51 - the Whirlpool Galaxy. The Whirlpool is possibly the archetypal face-on spiral galaxy. Whereas M101 is large and relatively faint, M51 at +8.39 mag and 11.2 x 6.9 arc minutes area is more compact and brighter. This galaxy has two massive spiral arms, bound around one another. On the tip of the Northern arm, is a companion galaxy, NGC5195, which is in the process of heavy tidal interaction with M51.

M51 is a true Messier object - it was discovered by him in 1773, though Pierre Mechain discovered NGC5195 later in 1781. Lord Rosse made a famous sketch of M51 through is 72 inch reflector in 1845, which clearly showed M51's Spiral and its satellite - it is this sketch that gave rise to the nickname "Rosse's Question Mark" - for obvious reasons.

Although M51 can be found relatively easily in binoculars, a dark sky will be needed to active this. Small telescopes will show M51's core easily and the first suggestion of a halo surrounding this. However, once the 12-inch barrier is broken in terms of aperture, then M51, really begins to come into its own. This aperture and above will show the Whirlpool in all its glory - and notable features such as the bridge between M51 and NGC5195 and M51's numerous H II regions really begin to stand out. However, it is in long duration images that M51 really reveals all - and in this respect is a constant source of inspiration to astrophotographers.

M51 by Mark Blundell. Image used with kind permission.

M51 is thought to be of a similar size to both our galaxy and M31, the Andromeda Galaxy, and lies around 27 million light years away.

Just under 40 arc minutes to the S of M51 lies the elliptical galaxy NGC5173, otherwise known as the Southern Integral Sign. Although +12.19 mag in brightness, it is relatively compact at just 1 x 0.9 arc minutes dimensions and is thus quite evident in small telescopes, though rather disappointingly bland in relation to the many spirals that surround it.

Just under 6 degrees to the South of M51 lies the lovely M63, the Sunflower Galaxy. This is a truly beautiful object - a tightly packed spiral with a bright core and fainter outlying arms. It certainly does look distinctly flower-like in long duration images.

The Sunflower has the distinction of being the first discovery made by Pierre Mechain - Charles Messier's partner and major contributor to his list. At +8.6 mag and 12.6 x 7.2 arc minutes across, M63 makes for a relatively straightforward target in most small telescopes,

though larger instruments will be needed to make out the spiral structure. This was first noted by Lord Rosse during his survey of spiral nebulae during the 1840s.

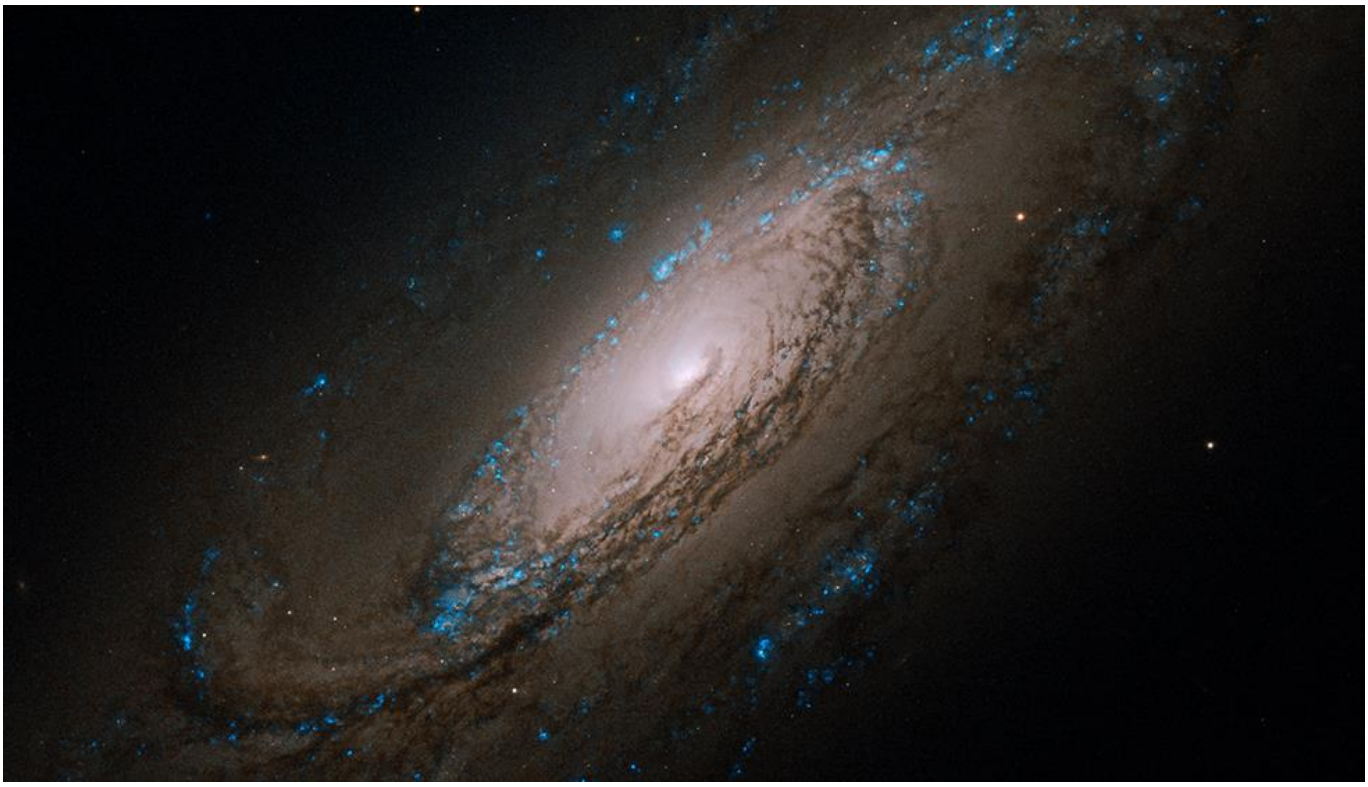
M63 by Mark Blundell. Image used with kind permission.

M63 is thought to lie around 34 million light years from us and is part of the group of galaxies in this area of sky of which M51 is the dominant gravitational member.

4 and 3/4 degrees to the W of M63, we find the distinct galaxy M94, which was another discovery of Mechain in 1781 - and was added to the Messier list in the same year. M94 is, like its major neighbours, a spiral galaxy - albeit a rather unusual one. At +8.19 mag and 14.1 x 12.1 arc minutes area, M94 lies about half the distance from us - 14 million light years - than either M51 and M63. Its structure is notable - a tight compact, very bright spiral core, surrounded by two concentric fainter rings of stars. It is due to this structure that it has gained the nickname in some circles of the Cat's Eye Galaxy. This suggestion of spiral structure shows up well in even small telescopes, though instruments of 8-inches aperture + are needed in order to see much of the outer rings. M94 can be found in binoculars, if sky conditions are kind though a telescope is definitely needed to see anything more than a faint smudge. When imaged, M94 gives up considerable detail, especially in its outer ring.

M94 by Mark Blundell. Image used with kind permission.

Just over 5 1/2 degrees further S from M94, lies NGC5005 - yet another spiral galaxy. At +9.80 mag and 5.8 x 2.9 arc seconds area, this object has a really bright nucleus, surrounded by a much darker, almost sooty-looking outer arms. In larger telescopes, the elongated aspect of NGC5005 really begins to reveal itself, though in truth, this galaxy is a rather disappointing object in smaller instruments and binoculars.M94 by Mark Blundell. Image used with kind permission.

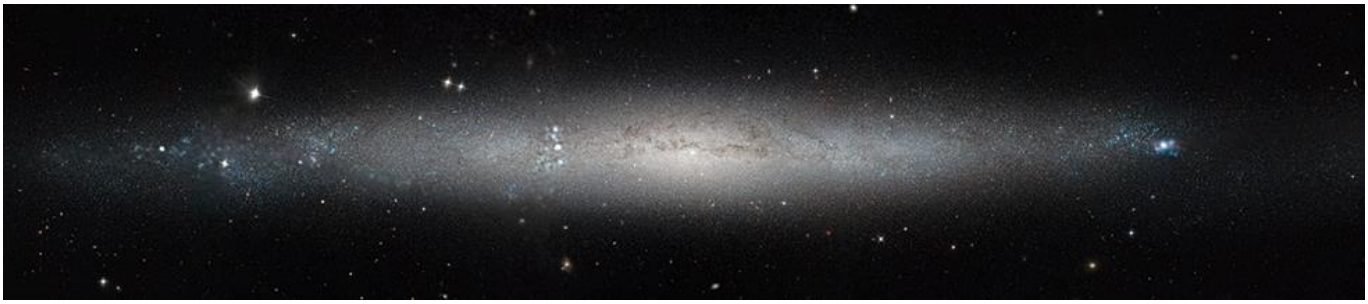


NGC5005 - HST Image. Public Domain.

Under 7 1/2 degrees to the SW of NGC5005, sits the slightly easier to observe NGC4631, otherwise known as the Whale Galaxy. This +9.19 edge-on spiral galaxy does indeed resemble a galactic whale swimming through the cosmos. At 15.2 arc minutes long by just 2.8 arc minutes wide, the Whale has quite high surface brightness and is therefore a relatively easy object in most large binoculars and small telescopes. A companion galaxy, NGC4657, sits to the N of the Whale and is thought to be responsible for some of the larger galaxy's elongation. Both objects lie around 25 million light years away and were discovered by Sir William Herschel in 1787. To the SE of the Whale, by around half a degree, sits another spiral galaxy, NGC4656, otherwise known as the Hockey Stick. Photographic evidence reveals why, as one edge of NGC4656 appears bent - just like a hockey stick. Just like NGC4631, the Hockey Stick was discovered by Herschel, though lies a little further from us than its neighbour, at 30 million light years away.

NGC4631 and 4656 by Mark Blundell. Image used with kind permission

Under 8 degrees to the NW of the Whale, lies the superficially very similar NGC4244 - the Silver Needle Galaxy. This is another spiral which lies edge-on to our perspective and although a little fainter at +10.6 mag than its neighbour is well worth seeking out. At 16.6 x 1.9 arc minutes in area, the Silver Needle has a somewhat lower surface brightness that the Whale, but is impressive enough in larger telescopes. Although difficult to see from our point of view, NGC4244 is thought to be a barred spiral structure with two wide arms. Sources differ as to the distance this galaxy lies from us, with most seeming to favour the 14 million light years mark, though some putting it as close as 6.5 million light years away. If the latter is closer to the truth, NGC4244 is possibly an outer member of our own local group rather than a galaxy belonging to the Canes Venatici family.



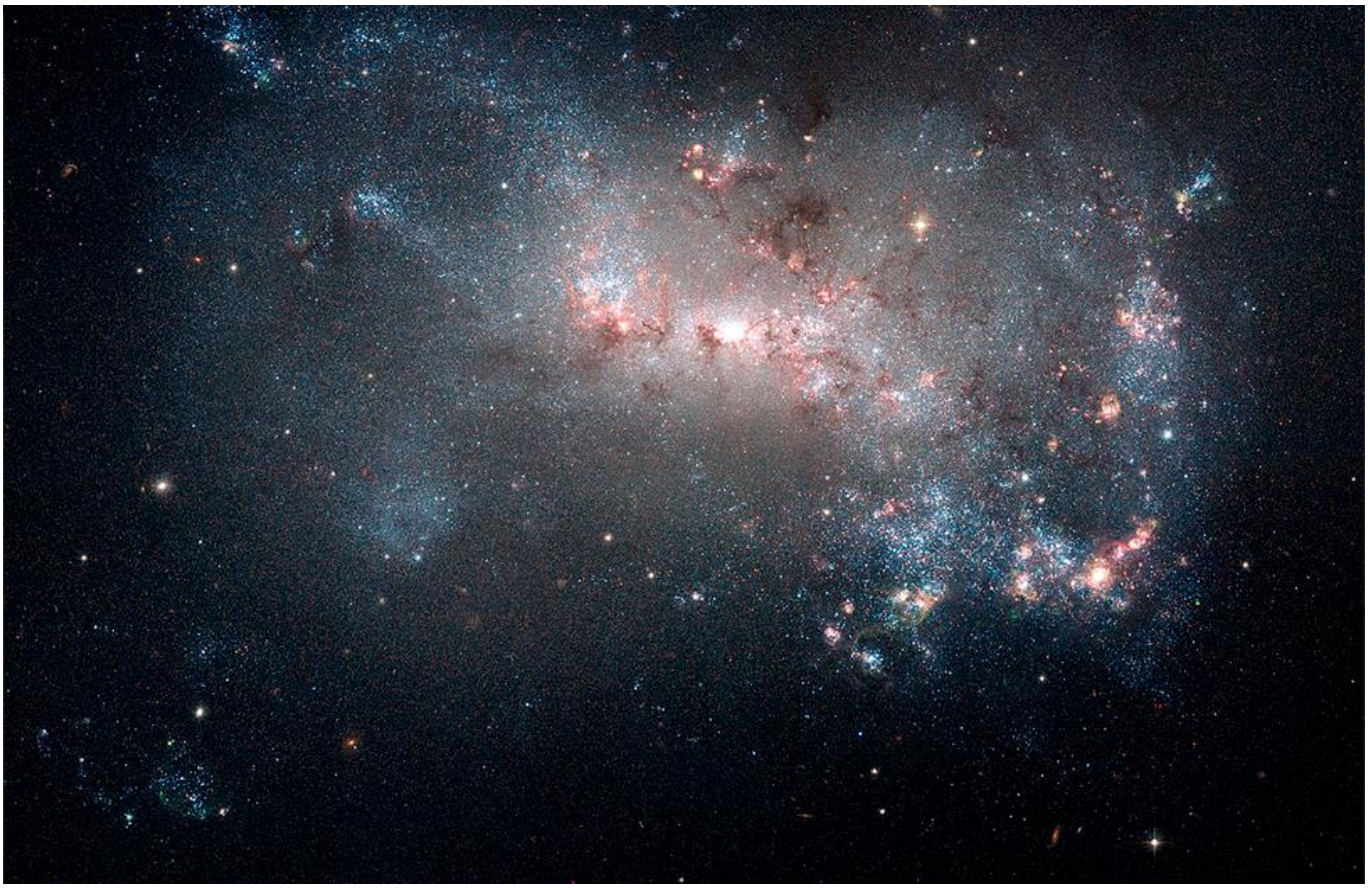
NGC4244 - HST Image. Public Domain.

4 1/2 degrees to the NE of NGC4244 sits two interaction galaxies, NGCs 4485 and 4490 - otherwise known as the Cocoon. These 6.4 x 3.2 arc minute objects have a cumulative magnitude of +9.80 and have undergone a catastrophic interaction with each other - much as the Milky Way and M31 are thought to experience in the far future. Although both galaxies are now moving away from each other, there are some remnants of spiral structure left in a massive arc of stars and material stretching 24000 light years in length between both objects. This seemingly destructive interaction, as it often does, has sparked a huge amount of star formation in this region. Both galaxies - or what's left of them - are thought to lie some 31-50 million light years away from us.

NGC4485 and 4490 - HST Image. Public Domain.

2 1/2 degrees to the N of the Cocoon, sits NGC4449. This galaxy is something of a rarity in this part of the sky, being of an irregular, rather than a spiral structure.

NGC4449 was discovered by Sir William Herschel in 1788 and is +9.6 mag in brightness and 6.4 x 4.4 arc minutes in size. NGC4449 is superficially very similar to the larger of our two satellite galaxies, the Large Magellanic Cloud, though observations of this diminutive galaxies in radio wavelengths have revealed that the visible part of NGC4449 is dwarfed by a huge, optically invisible halo of gas, which is 14 times its diameter. NGC4449 is easily enough found in larger telescopes, and the mottling of its HII regions is impressive if enough aperture is directed its way - though admittedly this galaxy does lack some of the glamour of its neighbours.



NGC4449 - HST Image. Public Domain.

Just over 3 1/2 degree to the N of NGC4449, lies the last galaxy in our epic jaunt around this area of sky - M106. This +8.39 mag spiral galaxy was discovered by Mechain in 1781, but was not added to the catalogue by Messier at the time. M106 is, like some previously mentioned galaxies, a later, 20th century addition to the original list. M106 is a fine galaxy - well presented from our perspective and bright enough to be seen in diminutive telescopes. However, a 12-inch + class of telescope will really start to reveal the two massive bound spiral structure of the arms and the darker material that lies between. At 18.6 x 7.2 arc minutes, M106 is a healthy size for a galaxy - larger than M51 and as such, should probably get a little more attention than often does.

M106 by Mark Blundell. Image used with kind permission.