




The Binocular Sky

November
2013

Newsletter

Introduction

Welcome to the ***Binocular Sky*** Newsletter of November 2013. The intention of this monthly offering is to highlight some of the binocular targets for the coming month. It is primarily targeted at observers in the UK, but should have some usefulness for observers anywhere north of Latitude 30°N and possibly even further south. For this Newsletter to be a useful tool, it needs to have the information that **YOU** want in it; therefore please do not be shy about making requests – if I can accommodate your wishes, I shall do so.

If you would like me to email this newsletter to you each month, please complete and submit the [subscription form](#). You can get “between the newsletters” alerts, etc. via  and .

The Deep Sky (*Hyperlinks take you to charts and more information*)

As the sky darkens at twilight, in the North are [NGC 457](#) (the Owl Cluster) and [NGC 633](#) in Cassiopeia and the [Perseus Double Cluster](#). To the East of them lie [M34](#) in Perseus and the often-overlooked [NGC 752](#) in Andromeda. Rising in the north-east is the trio of Auriga clusters, [M36](#), [M37](#) and [M38](#) and, later, [M35](#) in Gemini. While you are looking at M35, also see if you can identify two smaller open clusters, [NGC 2158](#), which is half a degree to the SE, and the slightly more difficult [IC 2157](#), which is a degree to the ESE. To the south of them, the Pleiades and Hyades are getting higher in the evening skies. Also look out for

the nearby NGC1647.

Open (also called 'Galactic') Clusters are loosely packed groups of stars that are gravitationally bound together; they may contain from a few dozen to a few thousand stars which recently formed in the galactic disk.

In November, the Milky Way is overhead in the mid-to-late evening. This means that those objects (globular clusters and galaxies) that are outside our galaxy are not as well placed for observation as they are when the Milky Way is low in the sky. Although the bright M81 (Bode's Nebula) and M82 (The Cigar Galaxy), are still relatively easy to observe, even in a 50mm binocular, their altitude is such that you are unlikely to get neck-strain when you do so with straight-through binoculars. M81 and M82 can be used as a good demonstration of averted vision: if you have them both in the same field of view, you may see that the core of M81 becomes more apparent if you look at M82. M51 (The Whirlpool) and M101 are becoming much more difficult owing to their lower altitudes; if you wish to see them this month, you should look as soon as the sky is dark.

Two notable exceptions to the generalisation of galaxies being poorly placed on November evenings are The Great Andromeda Galaxy, M31 and M33 (The Pinwheel), both of which are close to the plane of the Milky Way. M31 in particular is very easily visible this month and is a naked eye object in moderately dark skies. It is large and bright enough to be able to withstand quite a lot of light pollution (making it available to urban observers). M33 has a low surface-brightness and benefits from lower magnification. This generally makes it easier to see in, say, a 10x50 binocular than in many "starter" telescopes.

It is in November evenings that the Sculptor Galaxy, NGC 253, becomes observable before midnight.

Galaxies are gravitationally bound "island universes" of hundreds of billions of stars at enormous distances. The light that we see from M31, for example, left that galaxy around the time our ancestors of the genus Homo were just evolving!

Although the two Hercules globulars, M92 and the very impressive, and very easy to find, M13 are still observable, but their altitude becomes less favourable as the month progresses. M15 and M2 are both better placed. This is also the best time of year to observe NGC 288 in the evening.

Globular clusters are tightly-bound, and hence approximately spherical, clusters of tens, or even hundreds, of thousands of stars that orbit in a halo around almost all large galaxies that have been observed. They are important for two reasons: Firstly, they contain some of the oldest stars in the galaxy, so studying them helps us understand the evolution of stars. Secondly, they are useful as "standard candles" in establishing a distance scale of the Universe, based on the assumption that the brightest stars in any globular cluster will be approximately the same brightness and that the brightest globulars in a galaxy will be approximately the same brightness.

The easiest planetary nebula, M27 (the Dumbbell Nebula – although I insist that it looks more like an apple core than a dumbbell!) – is visible in the evening skies in even 30mm binoculars. The Helix Nebula, NGC 7393 is becoming less easy to observe, and is another object that you need to attempt as early as possible in the evening.

Planetary Nebulae are short-lived (generally a few tens of thousands of years) masses of gas and plasma that result from the death of some stars. They have nothing to do with planets, but get their name from the fact that, in early telescopes, they had the disc-like appearance of planets.

Variable Stars

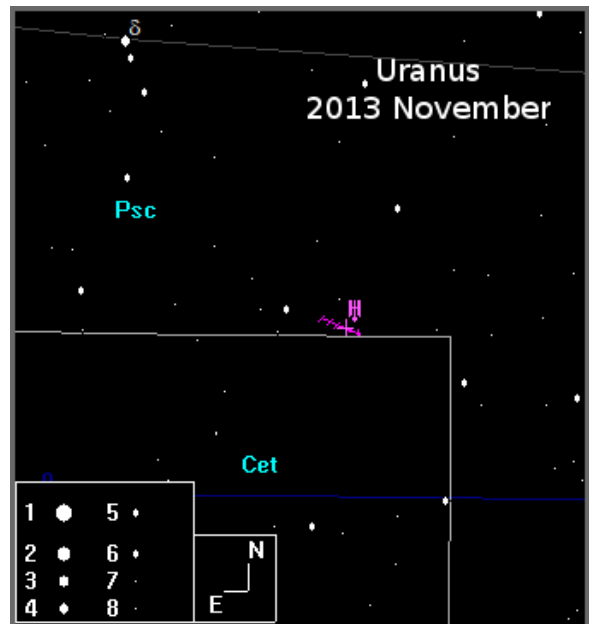
| Mira-type stars near predicted maximum (mag < +8.5) | | |
|---|------------------|----------------------|
| Star | Mag Range | Period (days) |
| W And | 7.4-13.7 | 396 |
| V CrB | 7.5-11.0 | 358 |
| W CrB | 8.5-13.5 | 238 |
| RU Her | 8.0-13.0 | 485 |

| Selection of binocular variables (mag < +8.5) | | | |
|---|------------------|----------------------|------------------|
| Star | Mag Range | Period | Type |
| XY Lyr | 5.8-6.4 | Irreg | Irregular |
| R Sge | 8.0-10.4 | 71d | RV Tauri |
| U Sge | 6.5-9.3 | 3.38d | Eclipsing binary |
| U Vul | 6.7-7.5 | 7.99d | Cepheid |
| SU Cyg | 6.4-7.2 | 3.84d | Cepheid |
| U Del | 7.0-8.0 | ca. 110d | Irregular |
| V Aqr | 7.6-9.4 | ca. 244d | Semi-regular |
| TW Peg | 7.0-9.2 | ca. 90d | Semi-regular |
| U Cep | 6.8-9.2 | 2.5d (increasing) | Eclipsing binary |
| EK Cep | 8.2-9.5 | 4.3d | Eclipsing binary |
| T Cep | 6.0-10.3 | 388d | Mira |
| SS Cep | 6.7-7.8 | ca. 190d | Semi-regular |
| RZ Cas | 6.2-7.7 | 1.195d | Eclipsing binary |

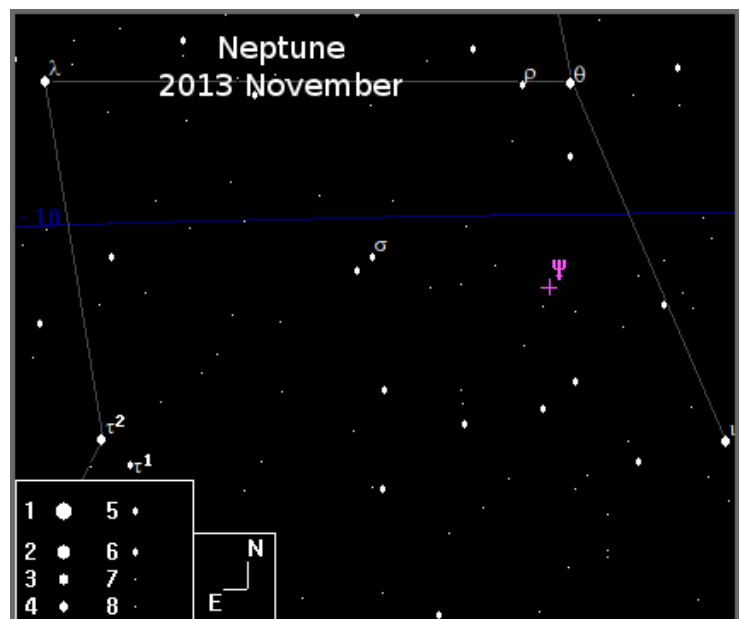
The Solar System

Binocular Planets

Uranus is at magnitude +5.8 and starts the month just over 5.5° south-southwest of δ Psc. By mid-month it transits at 21:00UT. It moves just under a degree during the month.

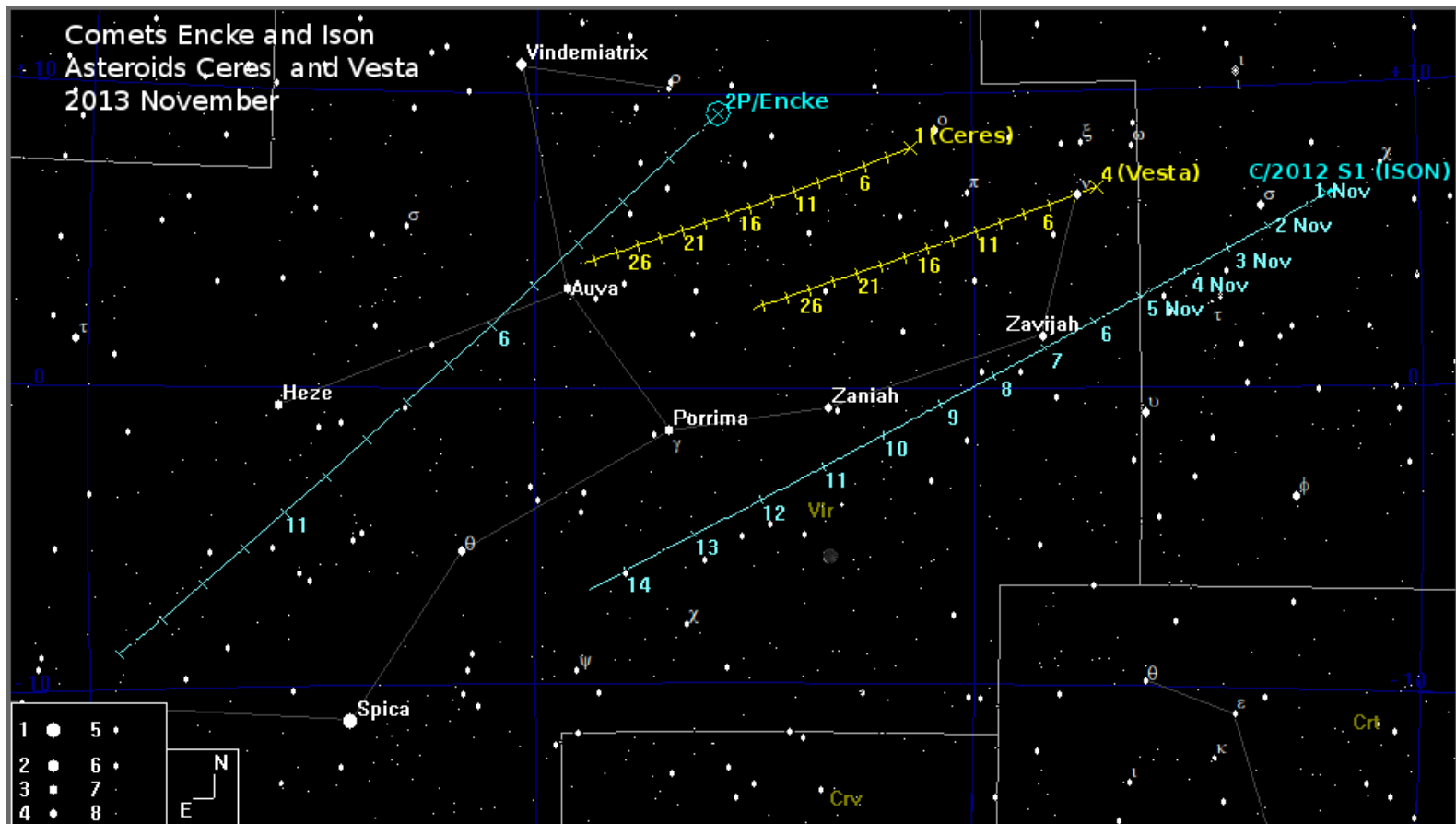


Neptune starts the month 2.5° west of σ Aqr, but is much fainter at magnitude +7.9. By mid-month, it sets before midnight, so observe it early in the evening



Minor Planets

The Virgo region is the area of choice this month. **Asteroids 1 (Ceres)** and **4 (Vesta)** are dawn objects, visible before 03:00 at magnitudes +8.8 and +8.1 respectively. They are in the same region of sky as comets **C/2012 S1 ISON** and **P/2 Encke**.

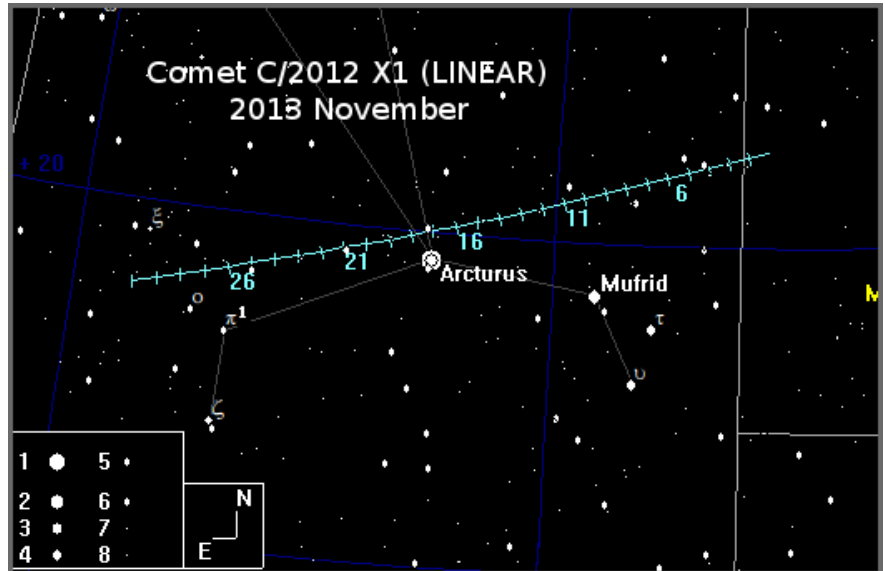


Comets

Comet C/2012 (ISON) is not brightening as much as expected, but should be visible in large binoculars all month, getting progressively easier as it brightens from approximately mag +9. Unless its rate of brightening increases, from mid-month it could become difficult as first Moonlight, then twilight, interfere as it dives towards its perihelion on the 28th. However, if it does brighten, it may become at least as bright as Jupiter.

Comet P/2 Encke is a reliable comet, with the shortest known orbital period (3.3 years). It starts the month slightly brighter than mag +8 and could brighten by up to a magnitude by month end. However, it too will likely become a victim of Moonlight and twilight from mid-month.

As astronomers, we frequently bemoan the fickle nature of these objects, but it does not always work to our detriment. On October 20, **Comet 2012 X1 (LINEAR)** underwent an unexpected outburst and a consequent 5 magnitude brightening and is now a difficult binocular object at mag +8. Although it is theoretically visible in the evening, it will be easier as it rises in the pre-dawn sky.



Asteroid Occultation (stars <mag 9.0)

There are two potential asteroid occultations of interest to binocular users in Britain this month:

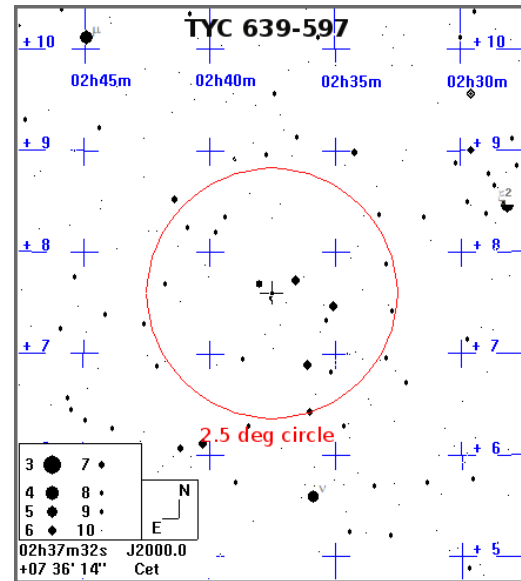
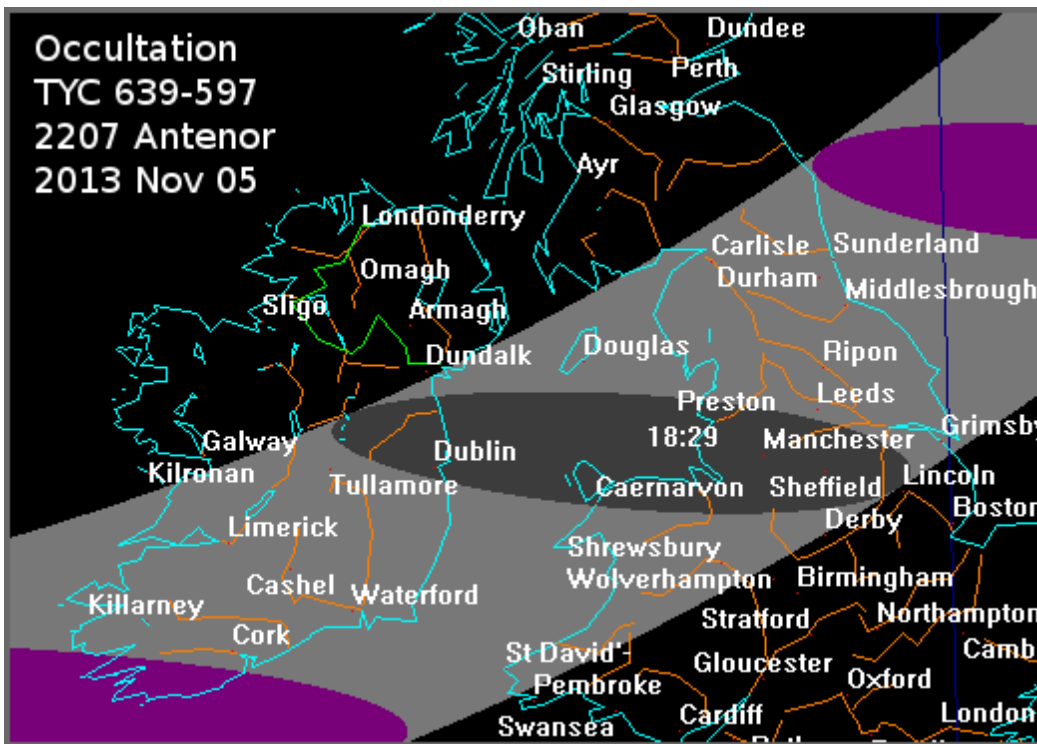
On the evening of the 5th, Asteroid 2207 (Antenor) occults the mag 9.0 TYC 639-597 across a large swathe of the Midlands and northern England, extending into Eire. Bonfires and fireworks will be confounding factors!

On the morning of the 21st, the mag +4.3 κ Aur will be occulted by Asteroid 14988 (Tryggvason) along a track that is predicted to extend from Great Yarmouth to Tiree. The confounding factor here will be the proximity of a waning gibbous Moon in Gemini.

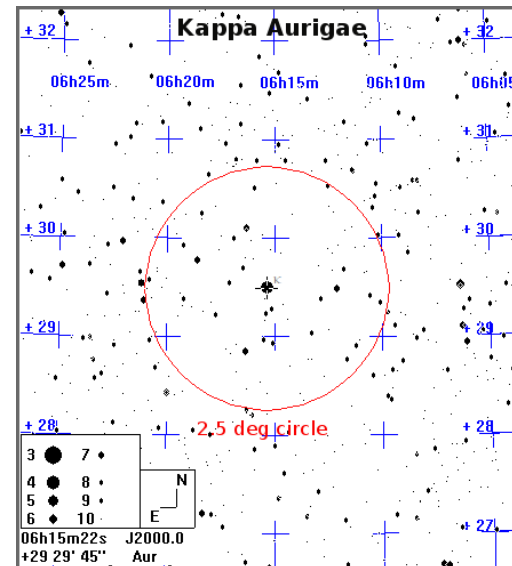
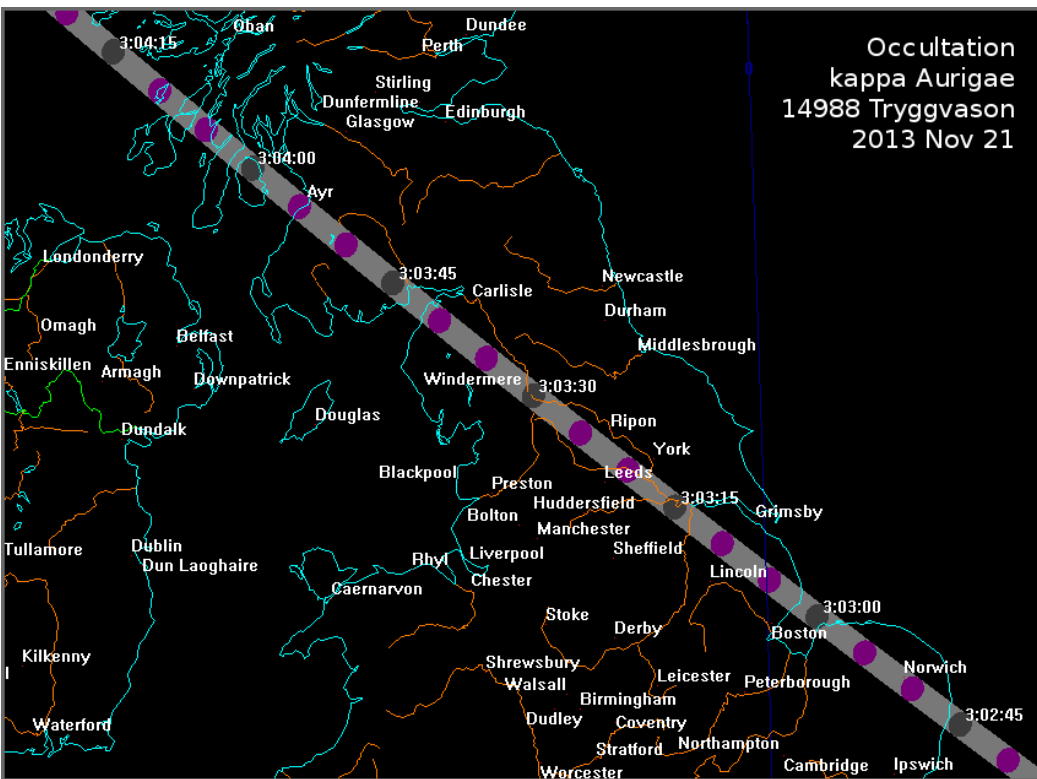
(Charts and maps on next page)

Asteroid Occultation Tracks and Finder Charts

Occultation
TYC 639-597
2207 Antenor
2013 Nov 05



Occultation
kappa Aurigae
14988 Tryggvason
2013 Nov 21



Lunar Occultations

There are several occultations of stars brighter than mag +8.5 visible from the UK this month. Times and Position Angles are for my location (approx: 50.9N, 1.8W) and will vary by up to several minutes for other UK locations. The types are **(D)**isappearance, **(R)**eappearance and **(G)**raze; they are all dark-limb events unless there is a **(B)**. I have given the SAO numbers of stars on the assumption that most readers will find this more useful than ZC (Zodiac Catalogue) numbers.

| Lunar Occultations, November 2013, 50.9°N, 1.8°W | | | | | | |
|--|----------|-------|--------|-----|------|--------|
| Date | Time | Const | SAO | Mag | Type | PA (°) |
| Nov 02 | 06:01:41 | Vir | 157923 | 1.0 | R | 232 |
| Nov 07 | 17:57:41 | Sgr | 161862 | 8.3 | D | 7 |
| Nov 10 | 19:12:24 | Cap | 145635 | 7.0 | D | 72 |
| Nov 10 | 19:13:47 | Cap | 145637 | 5.1 | D | 83 |
| Nov 14 | 21:10:51 | Psc | 109738 | 7.8 | D | 36 |
| Nov 14 | 22:26:44 | Psc | 109763 | 8.1 | D | 141 |
| Nov 15 | 01:18:23 | Psc | 109816 | 8.3 | D | 59 |
| Nov 15 | 02:11:31 | Psc | 109826 | 8.1 | D | 41 |
| Nov 16 | 18:23:03 | Ari | 93144 | 5.5 | D | 46 |
| Nov 19 | 05:03:06 | Tau | 94164 | 5.1 | R | 273 |
| Nov 19 | 22:12:20 | Tau | 94634 | 7.5 | R | 311 |
| Nov 20 | 00:31:31 | Tau | 94687 | 8.5 | R | 313 |
| Nov 20 | 00:59:43 | Tau | 94694 | 7.8 | R | 255 |
| Nov 20 | 04:18:38 | Tau | 94784 | 8.1 | R | 199 |
| Nov 20 | 04:44:55 | Tau | 94787 | 7.3 | R | 290 |
| Nov 20 | 04:59:26 | Tau | 94793 | 6.7 | R | 291 |
| Nov 20 | 05:49:16 | Tau | 94814 | 7.7 | R | 268 |
| Nov 20 | 06:15:37 | Tau | 94830 | 6.7 | R | 243 |
| Nov 21 | 00:59:56 | Gem | 95703 | 7.5 | R | 258 |
| Nov 21 | 01:09:46 | Gem | 95715 | 7.7 | R | 322 |
| Nov 21 | 04:19:55 | Gem | 95808 | 8.5 | R | 288 |
| Nov 21 | 05:56:14 | Gem | 95866 | 8.1 | R | 290 |
| Nov 21 | 21:37:42 | Gem | 96611 | 6.5 | R | 297 |
| Nov 21 | 22:53:41 | Gem | 96667 | 8.1 | R | 212 |
| Nov 21 | 23:25:06 | Gem | 96681 | 8.3 | R | 240 |
| Nov 22 | 00:20:57 | Gem | 96746 | 3.6 | D(B) | 149 |
| Nov 22 | 01:10:54 | Gem | 96746 | 3.6 | R | 227 |
| Nov 22 | 01:40:02 | Gem | 96753 | 8.4 | R | 248 |
| Nov 22 | 03:46:22 | Gem | 96825 | 8.1 | R | 335 |
| Nov 22 | 04:43:47 | Gem | 96848 | 7.1 | R | 349 |
| Nov 23 | 00:43:58 | Cnc | 97555 | 8.4 | R | 219 |
| Nov 23 | 02:14:52 | Cnc | 97580 | 7.8 | R | 279 |
| Nov 23 | 05:20:04 | Cnc | 97647 | 6.5 | R | 276 |
| Nov 23 | 05:47:53 | Cnc | 97656 | 8.5 | R | 273 |
| Nov 23 | 23:30:25 | Cnc | 98178 | 7.8 | R | 345 |
| Nov 24 | 01:59:44 | Cnc | 98235 | 5.4 | R | 342 |
| Nov 24 | 03:51:37 | Cnc | 98261 | 8.4 | R | 243 |
| Nov 25 | 00:43:04 | Leo | 117836 | 7.2 | R | 315 |
| Nov 25 | 02:59:06 | Leo | 117874 | 8.0 | R | 309 |
| Nov 27 | 04:05:10 | Leo | 118786 | 7.9 | R | 330 |
| Nov 27 | 05:33:51 | Leo | 138159 | 8.4 | R | 343 |
| Nov 29 | 05:23:07 | Vir | 139094 | 7.3 | R | 279 |

Meteor Showers

The Moon will severely interfere with the only major shower this month, the Leonids, which are active for the last three weeks of the month and peak on the 17th with a ZHR of 20.

The Moon

| | |
|--------|---------------|
| Nov 03 | New Moon |
| Nov 10 | First Quarter |
| Nov 17 | Full Moon |
| Nov 25 | Last Quarter |

Wishing you Clear Dark Skies,

Steve Tonkin for The Binocular Sky



Acknowledgments:

Charts and occultation tracks prepared with Guide v9.0 from <http://projectpluto.com>

Lunar occultation data produced with David Herald's [Occult v4.1.0](#)

Variable star data from David Levy's [Observing Variable Stars](#)

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