



The Binocular Sky

No. 96
November 2019

Newsletter

Introduction



Welcome to November's **Binocular Sky** Newsletter. As most of you know, my intention here is to highlight some of the best astronomical targets for binoculars (and small telescopes!) for the coming month. Although it is primarily intended for observers in the UK, nearly all the objects can be seen from anywhere north of latitude 30°N and many of them in the southern hemisphere temperate zone.

Now that we have reverted to "proper" time (GMT/UTC), the sky is fully dark by early evening so that a significant amount of observing is a realistic option for those who need to work the next day. The darker skies mean that some otherwise tricky deep sky objects are more easily visible.

The highlight of the month for observers in the English Midlands and South Wales is a grazing lunar occultation off a bright star.

The ice-giants, Uranus and Neptune, are only 3 hours apart in the sky, so can be observed during the same session if you time it well. Uranus is now relatively easy, but Neptune remains difficult and is only available in the evening ([page 6](#)).

As well as the ice giants, Vesta is near opposition and is thus an easy object ([page 7](#)).

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The Deep Sky

(Hyperlinks will take you to finder charts and more information about the object.)

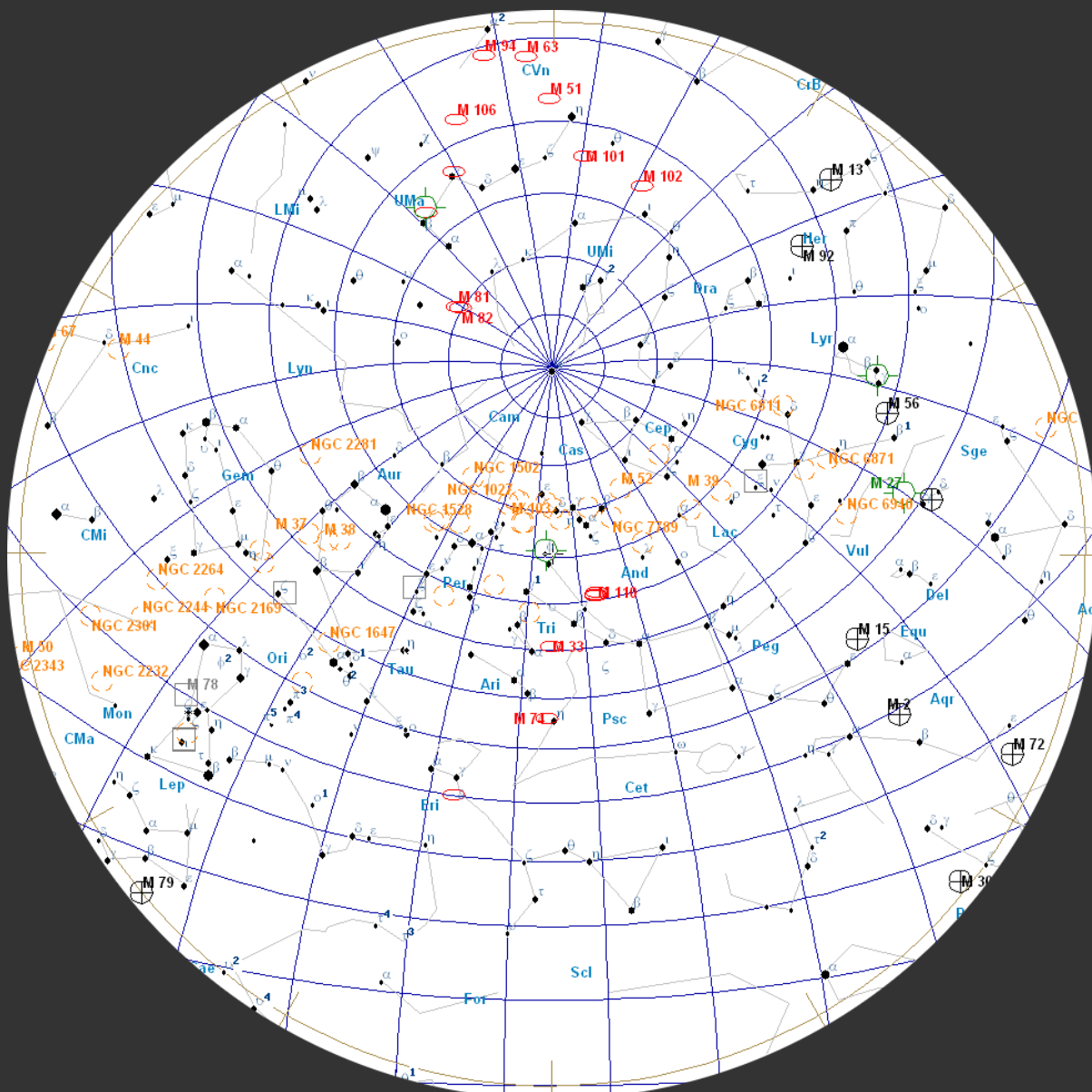
As the sky darkens at twilight, the Milky Way, always a pleasure to scan with binoculars of any size, arches overhead. In the north are [NGC 457](#) (the Owl Cluster) and [NGC 663](#) in Cassiopeia and the [Perseus Double Cluster](#), from which you can easily find [Stock 2](#) (the Muscleman Cluster). [Kemble's Cascade](#) and its "splash pool", [NGC 1502](#) are also conveniently placed. To the East of them lie [M34](#) in Perseus and the often-overlooked [NGC 752](#) in Andromeda. More open Clusters are visible in the southern sky in the region of Ophiuchus. These include [Melotte 186](#), [NGC 6633](#) and [M11](#), The Wild Duck Cluster, all of which are easily visible in 50mm binoculars. Rising in the north-east are the [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](#) make a welcome return to 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

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 technology consisted of rocks, sticks and bones.

51°N
November 01, 23:00 UT November 15, 22:00 UT November 31, 21:00
UT
(chart is “clicky”)



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 Triangulum Galaxy), 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, but you will need a good southern horizon for this.

Although the two Hercules globulars, M92 and the very impressive, and very easy to find, M13 are still observable, 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; as with NGC 253, a good southern horizon is essential.

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.

The easiest planetary nebula, M27 (the Dumbbell Nebula – also known as the Apple Core and the Diabolo) – is visible in the evening skies in even 30mm binoculars. The Helix Nebula, NGC 7293 is now about as well-placed as it gets for observation from Britain before midnight; you'll need a decent southern horizon.

Planetary Nebulae are short-lived (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 appearance of giant ghostly planets.

For interactive maps of Deep Sky Objects visible from 51°N, you can visit: http://binocularsky.com/map_select.php

November Deep Sky Objects by Right Ascension

Object	Con	Type	Mag	RA (hhmmss)	Dec (ddmmss)
M31 (the Great Andromeda Galaxy)	And	gal	4.3	004244	411608
NGC 253	Scl	gal	8.0	004733	-251717
NGC 288	Scl	gc	8.1	005246	-263512
NGC 457 (the ET Cluster, the Owl Cluster)	Cas	oc	6.4	011932	581727
M33 (NGC 598, the Pinwheel Galaxy)	Tri	gal	6.2	013351	303929
NGC 663	Cas	oc	7.1	014601	611406
NGC 752	And	oc	5.7	015742	374700
NGC 884 and NGC 869 (the Perseus Double Cluster)	Per	oc	5.3	022107	570802
Melotte 25 (the Hyades)	Tau	oc	0.5	042650	154841
NGC 1647	Tau	oc	6.4	044555	190542
M38 (NGC 1912)	Aur	oc	6.4	052842	355117
M36 (NGC 1960)	Aur	oc	6.0	053617	340826
M37 (NGC 2099)	Aur	oc	5.6	055218	323310
M35 (NGC 2168)	Gem	oc	5.1	060900	242100
M81 (NGC 3031)	UMa	gal	7.8	095533	690401
M82 (NGC 3034)	UMa	gal	9.2	095554	694059
M51 (NGC 5194, the Whirlpool Galaxy)	CVn	gal	8.9	132952	471144
M101 (NGC 5457)	UMa	gal	7.7	140312	542057
M13 (NGC 6205, the Great Hercules Globular Cluster)	Her	gc	5.8	164141	362738
M92 (NGC 6341)	Her	gc	6.4	171707	430812
M11 (NGC 6705, Wild Duck Cluster)	Sct	oc	5.8	185106	-061600
M27 (NGC 6853, the Dumbbell Nebula, the Apple Core, the Diabolo)	Vul	pn	7.6	195936	224318
M15 (NGC 7078)	Peg	gc	6.2	212958	121003
M2 (NGC 7089)	Aqr	gc	6.5	213327	-004922
NGC 7293 (the Helix Nebula)	Aqr	pn	6.5	222938	-205013

Variable Stars

Mira-type stars near predicted maximum (mag < +7.5)		
Star	Mag Range	Period (days)
o Cet	2.0-10.1	332

Selection of binocular variables (mag < +7.5)

Star	Mag Range	Period	Type
XY Lyr	5.8-6.4	Irreg	Irregular
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
TW Peg	7.0-9.2	ca. 90d	Semi-regular
U Cep	6.8-9.2	2.5d (increasing)	Eclipsing binary
SS Cep	6.7-7.8	ca. 190d	Semi-regular
RZ Cas	6.2-7.7	1.195d	Eclipsing binary
R Sct	4.5-9.0	146d	RV Tau

Double Stars

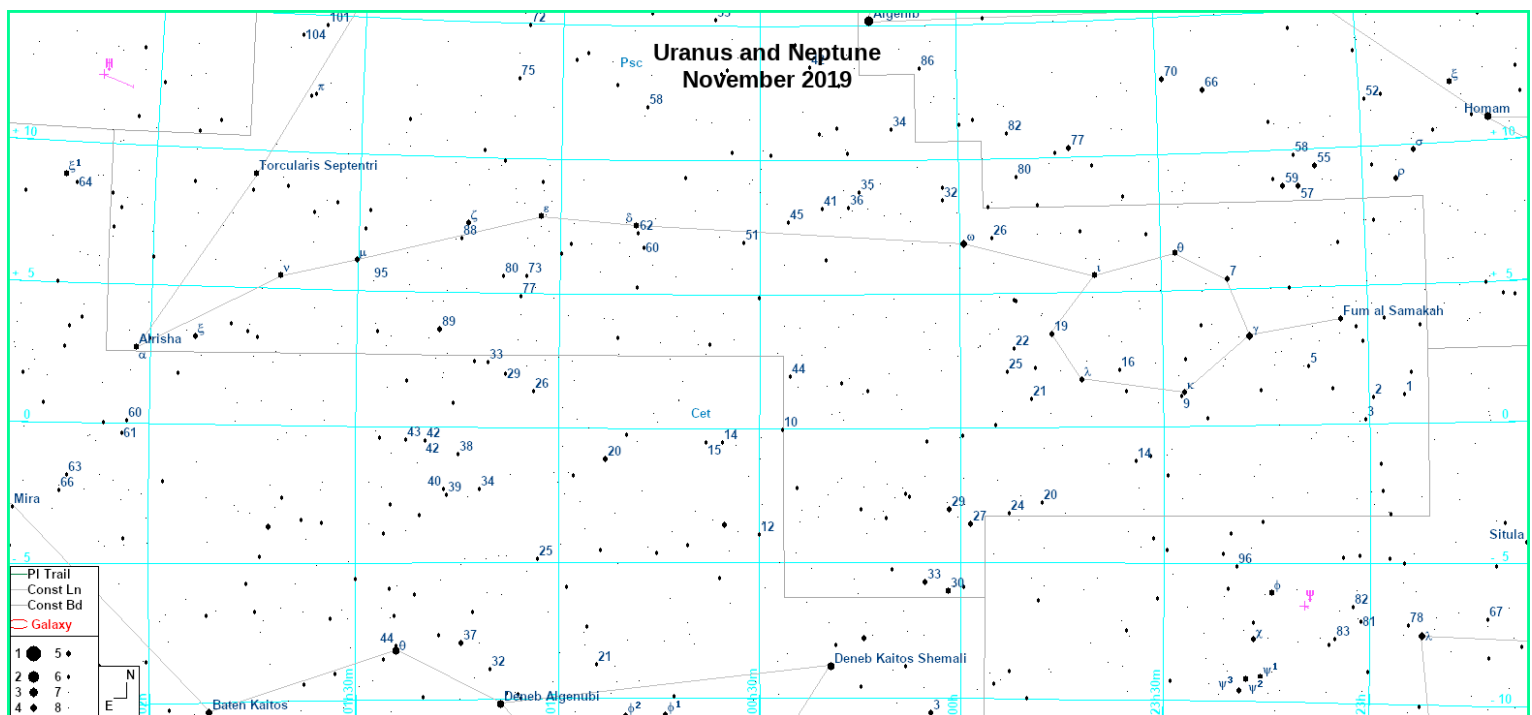
Binocular Double Stars for November

Star	Magnitudes	Spectral Types	Separation (arcsec)
ζ Lyr	4.3, 5.6	A3, A3	44
β Lyr	3.6, 6.7	B8, B3	46
οΣ525 Lyr	6.0, 7.6	G0, A0	45
d Cep	4.1, 6.1	F5, A0	41
γ Her	3.7, 9.4	F0, K	43
Σ2277 Her	6,2, 8.9	A0, K	27
8 Lac	5.7, 6.3	B3, B5	22
56 And	5.7, 5.9	K0, K2	128
ΣI 1 And	7.1, 7.3	G5, G5	47
ψ-1 Psc	5.3, 5.8	A2, A0	30
14 Ari	5.0, 7.9	F0, F2	106
62 Eri	5.4, 8.9	B9, B8	67
τ Tau	4.3, 7.0	B5, A0	63
ν Gem	4.1, 8.0	B5, A0	113
ζ Gem	4.0, 7.6	G0, G	101
π-1 Umi	6.6, 7.2	G5, G5	31

The Solar System

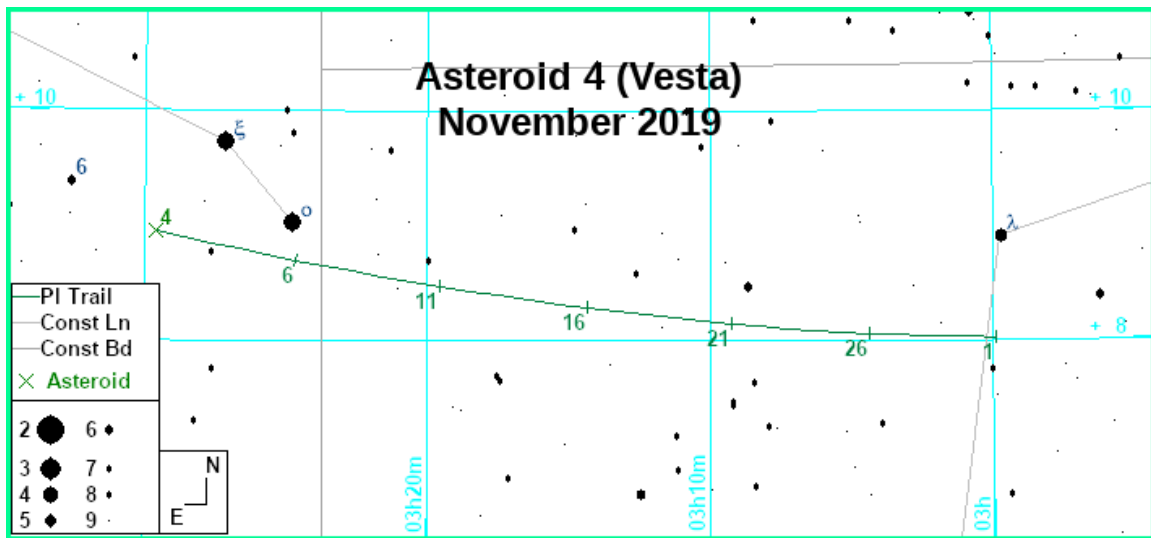
(Clicking on the charts in this section will take you to higher resolution ones)

The ice giants, **Uranus** and **Neptune**, rise in the evening but, if you want to nab both in the same session, look a couple of hours either side of midnight UT. At the beginning of the month, Neptune (mag + 7.8) transits more than an three hours before midnight, and Uranus (mag +5.7) three hours later. By the end of the month, they transit two hours earlier, so Neptune will become more difficult.



Both are moving retrograde. Neptune is the easier to find: at the beginning of the month it is slightly more than a degree from ϕ Aqr in the direction of λ Aqr. Uranus starts the month 3.5° from ξ -1 Cet in the direction of β Ari.

Further east in Taurus, **Asteroid 4 (Vesta)**, is easily visible to small binoculars. It starts the month at mag +6.6 and brightens lightly as it approaches opposition on the 12th, after which it fades to mag +6.8 by the end of the month. At the beginning of the month it is just south of ξ Tau and it finishes the month just south of λ Cet.

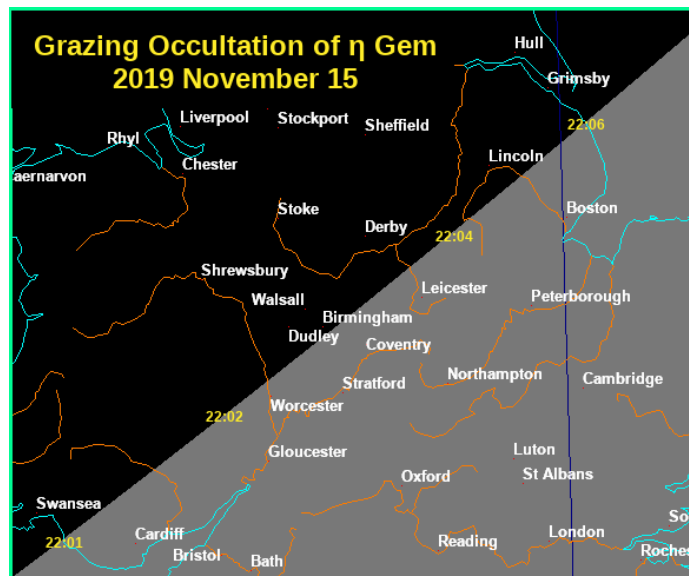


The Moon

November 04	First Quarter
November 12	Full Moon
November 19	Last Quarter
November 26	New Moon

Lunar Occultations

Data are for my location and may vary by several minutes for other UK locations. The phases are **(D)**isappearance, **(R)**eappearance and **(Gr)**aze; they are dark-limb events unless there is a **(B)**. The highlight of the month is the grazing occultation of η Gem on the evening of the 15th, visible from South Wales and the English Midlands (chart is "clicky").



Lunar Occultations, November 2019, 50.9°N, 1.8°W						
Date	Time	Phase	Star	Spectral Type	Magnitude	Cusp Angle
Nov 01	17:30:05	D	24 Sgr	K3	5.5	56S
Nov 11	21:10:26	D	HIP 12599	K0	6.5	77S
Nov 11	21:46:49	D	HIP 12647	A2	6.3	75N
Nov 15	20:05:22	R	HIP 29196	K4	5.9	67N
Nov 15	21:51:33	D(B)	η Gem	M3	3.5	-5N
Nov 15	22:03:45	Gr	η Gem	M3	3.5	13N
Nov 15	22:10:60	R	η Gem	M3	3.5	32N
Nov 16	01:28:27	D(B)	μ Gem	M3	2.9	-88N
Nov 16	02:45:49	R	μ Gem	M3	2.9	74S
Nov 19	00:56:04	R	HIP 45510	A3	7	38N
Nov 19	05:35:57	R	HIP 46137	G0	7.3	85N

Asteroid Occultations

Nov 01 : Asteroid 12849 (1997 QD2) occults mag +7.5 HIP 25375 (Scotland, N. Ireland, Scandinavia). [Details here.](#)

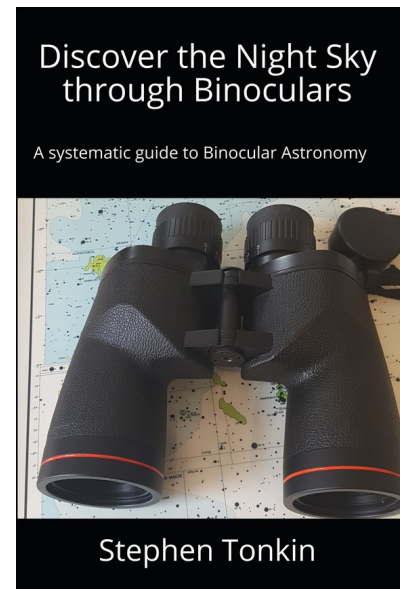
Public Outreach & Talks

This month I will be at the following public events; please do come and introduce yourself if you're at any of them.

- | | | |
|--------------------|---|---|
| 1 st : | Dorset Wildlife Trust, Kingcombe Centre | Autumn Nights Astronomy |
| 20 th : | Crewkerne and District AS | "Pseudoastronomy: Hollow Moon and Flat Earth" (Talk) |
| 29 th : | Rushmore Golf Club | Night Sky talk and Club Stargazing |

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- Purchase one of my books, **Binocular Astronomy** or **Discover the Night Sky through Binoculars**. Click on the cover image for more information.
- Make a purchase via the affiliate links in the [Binocular Sky shopfront](#)
- Make a small [PayPal](#) donation to newsletter@binocularsky.com



Wishing you Clear Dark Skies,

Steve Tonkin

for

[The Binocular Sky](#)

Acknowledgements:

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Variable star data based on *The International Variable Star Index*
Occultation data derived with Dave Herald's *Occult*

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