



# The Binocular Sky



July  
2016

# Newsletter

## Introduction

Welcome to the **Binocular Sky** Newsletter for July 2016.

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. Yet again it's a slightly shorter than usual owing to there being less to see in our short all-night twilight sky, although Uranus and Neptune do make a return.

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## The Deep Sky

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

Visible low in the North are [NGC 457 \(The Owl Cluster\)](#), [NGC 633](#) in Cassiopeia and the [Perseus Double Cluster](#). The finest and best-placed open cluster available this month is [Melotte 111](#), the cluster that gives Coma its name. More open clusters are becoming visible in the south-eastern sky as Ophiuchus rises. These include [Melotte186](#), [NGC 6633](#) and [IC4665](#), all of which are easily visible in 50mm binoculars.

*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.*

While you are in the region of Ophiuchus, see if you can find Barnard's Star. This has the largest known proper motion of any star. Although it is visible in 50mm binoculars from a dark site, it is considerably easier in larger glasses and I recommend a minimum of 70mm.

In July, we are able to look out of the plane of the Galaxy during the evening. This makes more globular clusters and galaxies available for observation. Look out for the two galaxy trios in Leo (M95/96/105 and M65/66/NGC3628) which are now moving into the western sky, and Markarian's Chain in Coma Berenices, which is very well placed as we enter astronomical twilight. If you have a big binocular, also observe the edge-on NGC4565 (Berenice's Hair Clip), which is next to Melotte 111. Also very well placed this month are M81 (Bode's Nebula) and M82 (The Cigar Galaxy), both of which are easy in a 50mm binocular. These 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. If you have good skies, try M51 (The Whirlpool) and M101 which, although it is a large object, is very difficult owing to its low surface brightness.

The Canes Venatici globular cluster M3, is a good one to start with during a July evening's observing. Later in the evening, the two Hercules globulars, M92 and the very impressive, and very easy to find, M13 are at a better altitude for observation. Although M13 is clearly larger than M3, it is easier to resolve the outer stars of the latter one. Also visible this month is M5 in Serpens, which is one of the largest globular clusters known, being 165 light years in diameter. Its apparent size is nearly as large as a Full Moon.

*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.*

If you have binoculars of at least 100mm aperture, see if you can find and identify NGC 6572, a planetary nebula in Ophiuchus. Even in large glasses it looks stellar, but it has the distinction of being possibly the greenest object in the sky.

*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 disc-like appearance of giant planets.*

There are two other objects which, owing to their southerly declination, are best observed this month. They are the two bright emission nebulae, M20 (the Trifid) and the larger, brighter and easier M8 (the Lagoon). They are only about a degree and a half apart, so they will fit into the same field of view of even quite large binoculars.

For interactive maps of Deep Sky Objects visible from 51°N, please visit:

[http://binocularsky.com/map\\_select.php](http://binocularsky.com/map_select.php)

## Double Stars

<b>Binocular Double Stars for July</b>			
<b>Star</b>	<b>Magnitudes</b>	<b>Spectral Types</b>	<b>Separation (arcsec)</b>
67 Oph	4.0, 8.1	B5, A	54
ρ Oph	5.0, 7.3, 7.5	B5, A, B3	151, 157
53 Oph	5.7, 7.4	A2, F	41
δ Cep	4.1, 6.1	F5, A0	41
γ Her	3.7, 9.4	F0, K	43
δ Boo	3.5, 7.8	K0, G0	105
μ Boo	4.3, 7	F0, K0	109
ι Boo	4.0, 8.1	A5, A2	38
ν Boo	5.0, 5.0	K5, A2	628
DN & 65 UMa	6.7, 7.0,	A3, B9	63
π-1 UMi	6.6, 7.2	G5, G5	31

## Variable Stars

Mira-type stars near predicted maximum (mag < +7.5)		
Star	Mag Range	Period (days)
χ Cyg	5.2 – 13.4	408
R Ser	6.9 – 13.4	356

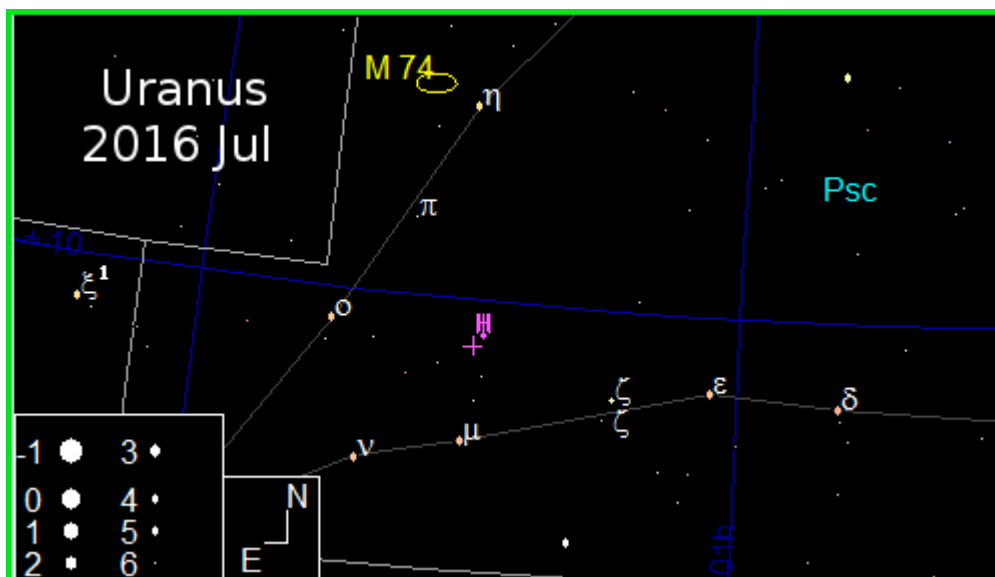
Selection of binocular variables (mag < +7.5)			
Star	Mag Range	Period	Type
U Cep	6.8-9.2	2.5d (increasing)	Eclipsing binary
V1010 Oph	6.1-7	0.66d	Eclipsing binary
RR Lyr	7.06-8.12	0.57d	RR Lyr
TX UMa	7.0-8.8	3.06d	Eclipsing binary
AF Cyg	6.4-8.4	92.5	Semi-regular
ZZ Boo	6.7-7.4	4.99d	Eclipsing binary
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
X Cyg	5.9-6.9	16.39d	Cepheid

## The Solar System

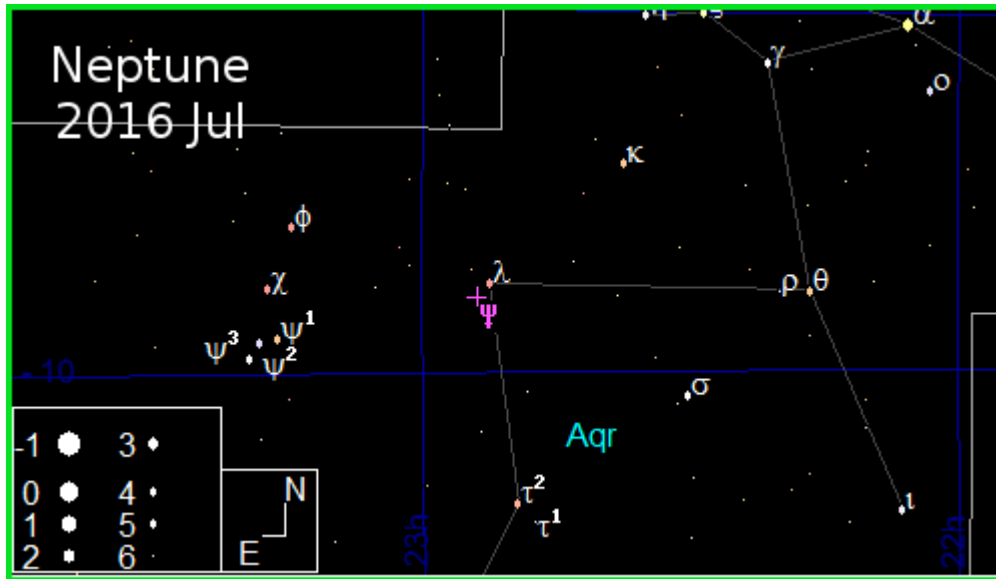
### Planets

The binocular planets, **Uranus** and **Neptune**, are difficult morning objects at the beginning of the month but, as the nights get longer and darker towards the end of the month, both are available in a fully dark sky.

**Uranus** is at mag. +5.8 on a direct line between ο and ε Psc



**Neptune** is at mag. +7.9 just south of  $\lambda$  Aqr.



### Comets

There are no comets suitable for binoculars and visible from the UK this month.

### Meteor Showers

There are no northern hemisphere meteor showers peaking this month.

### Asteroid Occultations

There are no asteroid occultations suitable for binoculars observable from our location this month.

## Lunar Occultations

Owing to the short evenings, there are very few occultations of stars brighter than mag +7.5 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 phases are **(D)**isappearance, **(R)**eappearance and **(Gr)**aze; they are all dark-limb events unless there is a **(B)**.

Lunar Occultations, July 2016, 50.9°N, 1.8°W							
Date	Time	Phase	Star	Spectrum	Magnitude	Cusp Angle	Position Angle
Jul 18	23:48:14	D	HIP 93537	K0	6.2	76S	114
Jul 29	02:19:47	R	48 Tau	F5	6.3	52N	295
Jul 31	02:47:01	R	HIP 29616	A6	5.9	52N	302

## The Moon

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

## Equipment Mini-Review

This is on-hold until I can get some quality time under a clear dark sky. If anyone knows any magic spells...

## Public Outreach & Talks

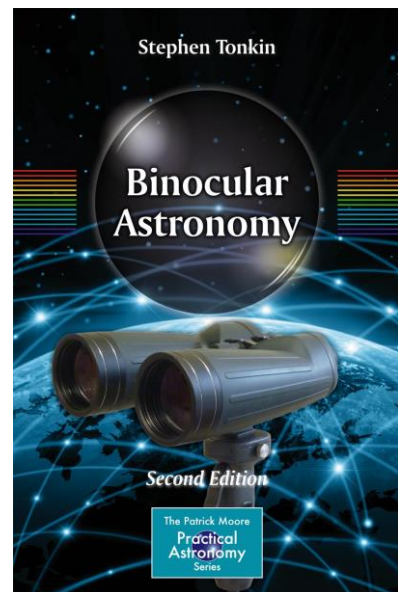
During July I will be at the following events, where I would be delighted to meet any readers of this newsletter who attend:

19th:      [Fordingbridge Astronomers](#)

**Exhibition and Equipment Clinic**  
(*Binocular Astronomy display*)

The **Binocular Sky Newsletter** will always be free to anyone who wants it, but if you would like to support it, there are a number of options:

- Purchase my book, [Binocular Astronomy](#):  
Click on the 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](mailto:newsletter@binocularsky.com)



Wishing you Clear Dark Skies,

**Steve Tonkin**

for

**[The Binocular Sky](#)**

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**Acknowledgments:**

The charts in this newsletter were prepared with Guide v9.0 from <http://projectpluto.com>

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

Lunar occultation data derived with Dave Herald's [Occult](#)

Asteroid occultation data derived from Hristo Pavlov's [OccultWatcher](#)

**Disclosure:** Links to *Amazon* or *The Binocular Shop* may be affiliate links

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