





# The Binocular Sky

August  
2014

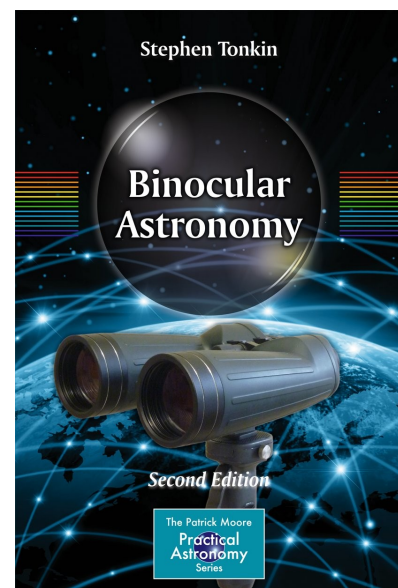
# Newsletter

## Introduction

Welcome to the *Binocular Sky* Newsletter of August 2014. 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 .

If you would like to support this Newsletter, the simplest way is to purchase my book, [Binocular Astronomy](#). Please click on the image for more information.



## 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](#). More open Clusters are visible in the southern sky in the region of Ophiuchus. These include [Melotte 186](#), [NGC 6633](#), [IC 4665](#) and [M11](#), [The Wild Duck Cluster](#), all of which are easily visible in 50mm binoculars. [M11](#), which is a cluster of over a thousand stars, benefits enormously from larger apertures and the higher magnification that permits more stars, including the "V"-shaped grouping that gives it its common name, to be revealed.

[IC 4665](#) benefits enormously from larger apertures and the higher magnification that permits more stars to be revealed. You should seek out a particularly attractive curved chain of bright white stars that forms part of the greeting "Hi!" written in the sky.

Even further to the south, culminating at around local midnight, is a group of open clusters in Serpens and Sagittarius that includes [M16 \(the Eagle Nebula\)](#), [M17 \(the Swan or Omega Nebula\)](#), [M23](#), [M24 \(the Sagittarius Star Cloud\)](#), and [M25](#).

Also worth enjoying in this region of sky is the denser part of the Milky Way that forms the *Scutum Star Cloud* as a backdrop to this cluster.

*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 this region of sky, see if you can find Barnard's Star in Ophiuchus. This has the largest known proper motion of any star. (**Proper motion** is motion with respect to the celestial sphere.) 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 August, 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. 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 Great Andromeda Galaxy, M31, is also rising into the sky to a reasonable altitude this month. It is large and bright enough to be able to withstand quite a lot of light pollution although, obviously, it benefits from a dark transparent sky.

The two Hercules globulars, M92 and the very impressive, and very easy to find, M13 are at a very good altitude for observation. Although M13 is clearly larger than M92, 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. At a reasonable altitude from the beginning of the month are the very bright M15, M2 (which looks almost stellar at 10x50) and NGC 6934. This last cluster is very easy to see and is excellent for demonstrating how globular clusters respond to transparency. In apertures of around 70mm and upwards, almost all of them look larger as the sky becomes more transparent. NGC 6934 displays to the greatest extent of any globular on which I have tested the phenomenon.

*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. At the other extreme, 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 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.

<b>Binocular Double Stars for August</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

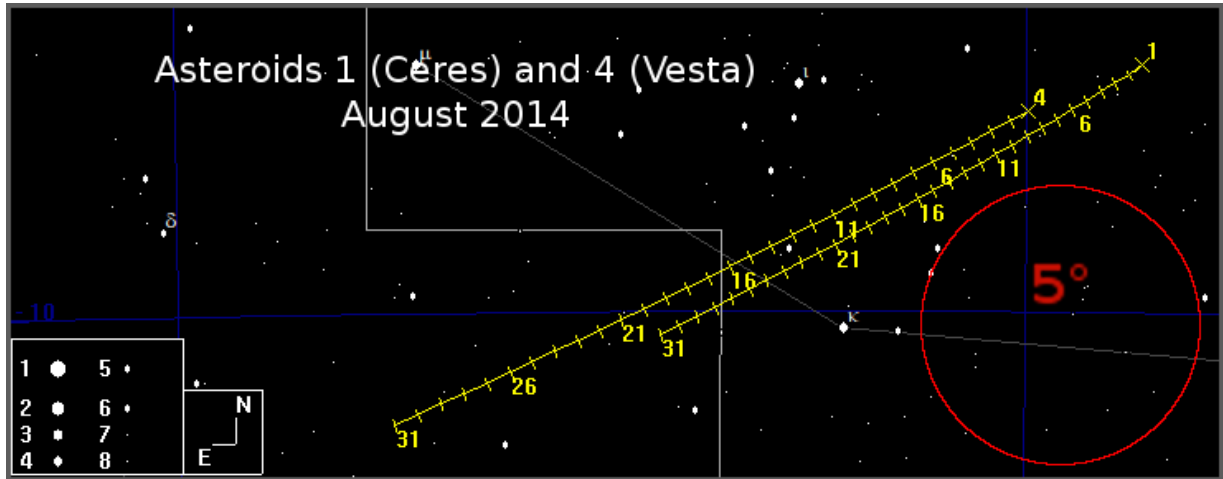
<b>Mira-type stars near predicted maximum (mag &lt; +7.5)</b>		
<b>Star</b>	<b>Mag Range</b>	<b>Period (days)</b>
X Cam	7.4-10.7	144
X Oph	6.8-8.8	329
R Ser	6.9-13.4	526
S CrB	7.3-12.9	360
V CrB	7.4-11.0	358

<b>Selection of Binocular Variables (mag &lt; +7.5)</b>			
<b>Star</b>	<b>Mag Range</b>	<b>Period</b>	<b>Type</b>
U Cep	6.8-9.2	2.5d (increasing)	Eclipsing binary
EK Cep	8.2-9.5	4.3d	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
ZZ Boo	6.7-7.4	4.99d	Eclipsing binary
R Sge	8.0-10.4	71d, 1112 d	RV Tau
U Sge	6.5-9.3	3.38d	Eclipsing binary
DY Vul	8.4-9.7	–	Irregular
U Vul	6.7-7.5	7.99d	Cepheid
X Cyg	5.9-6.9	16.39d	Cepheid
SU Cyg	6.4-7.2	3.84d	Cepheid
AF Cyg	6.4-8.4	92.5	Semi-regular

## **The Solar System**

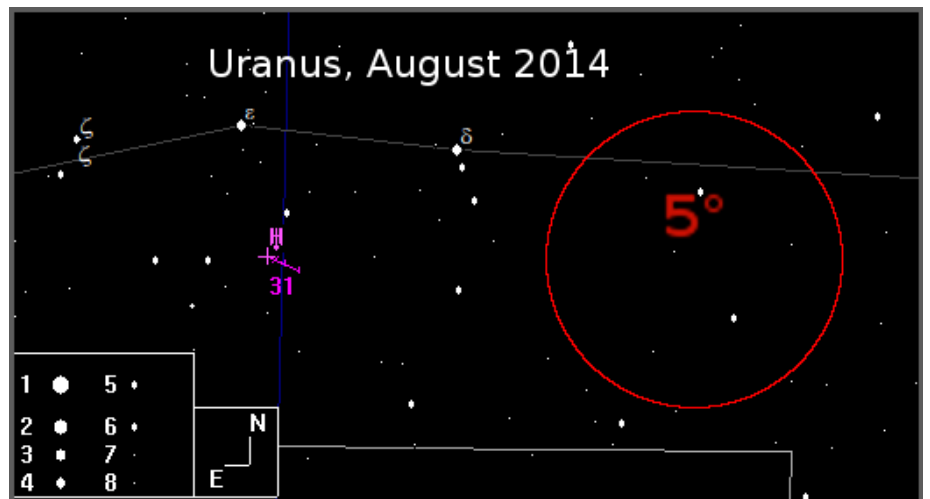
### **Minor Planets**

**Ceres** (mag +8.7) and **Vesta** (+7.4) are very close to each other, between  $\iota$  and  $\kappa$  Vir, during the first fortnight of the month, but are becoming lost in the evening twilight.

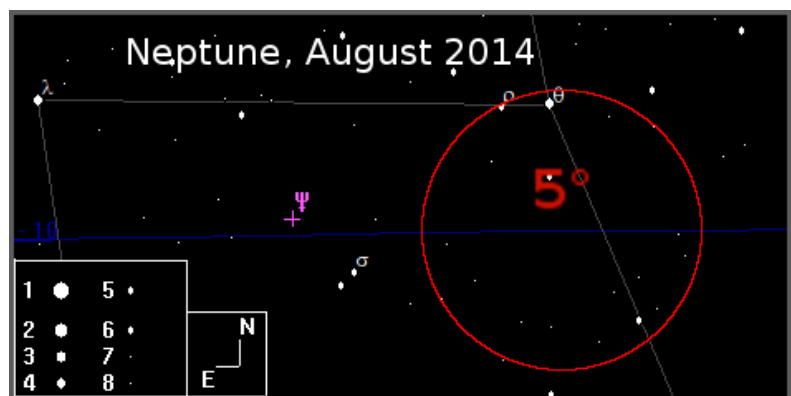


## Planets

The binocular planets, **Uranus** and **Neptune**, are becoming easier to observe. **Uranus** is still predominantly a morning object at magnitude +5.8 and just over  $2^\circ$  south of  $\epsilon$  *Psc*. It moves only about 35 arcminutes during the month.

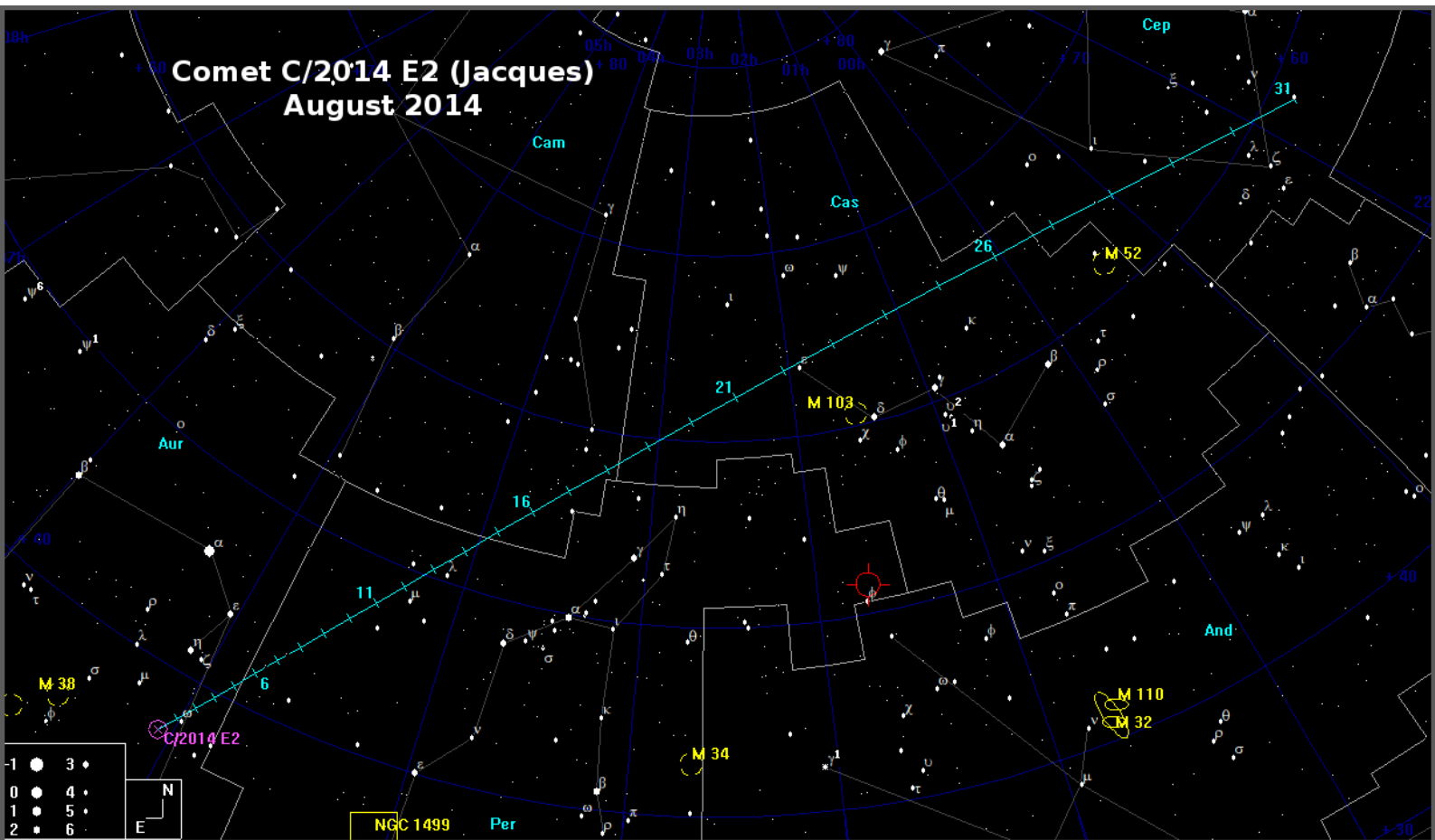


**Neptune** lies between  $\lambda$  and  $\sigma$  *Aqr*, but is much fainter than Uranus at magnitude +7.8. During the month, it moves about 45 arcminutes in the direction of  $\sigma$ . It is at opposition on the 29th, so may be observed all night.



## Comets

**2014 Aug 02 Comet C/2014 E2 (Jacques)**, moves from Auriga, through Perseus, Camelopardalis, Cassiopeia and into Cepheus during the month. It is reportedly at approximately magnitude +7 and is expected to fade by about a magnitude and a half by month end, so should remain a binocular object throughout the month, albeit increasingly difficult from the second week when the Moon also interferes.



## Meteor Showers

The **Perseid** meteors peak on the 12th, in bright Moonlight, so only the brighter ones will be visible. The meteors are grains of dust that were left in the wake of Comet Swift-Tuttle. As these particles enter the

atmosphere, they compress and heat the air in front of them. This heat causes the surface of the particle to ablate and ionise. Binoculars are useful for observing the persistence of these ionisation trains that form the streak in the sky which is what we observe as a "shooting star" but, again, only the brighter ones will be visible this month.

## Asteroid Occultations

There are no asteroid occultations of stars visible from the UK and suitable for binoculars this month.

## Lunar Occultations

There are several occultations of stars brighter than mag +7.5 visible from the UK this month, including the evening occultation of  $\rho$  Sgr on the 8th. 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 (**Gr**)raze; they are all dark-limb events unless there is a (**B**). The occultations near the Full Moon on the 10th will be very difficult.

<b>Lunar Occultations, Jul 2014, 50.9°N, 1.8°W</b>					
<b>Date</b>	<b>Time</b>	<b>Type</b>	<b>SAO</b>	<b>Mag</b>	<b>PA (°)</b>
Aug 05	21:37:56	D	159849	7.1	103
Aug 08	20:56:01	D	162512	3.9	63
Aug 09	21:59:07	D	163564	7.3	60
Aug 11	21:16:56	R	146062	5.9	267
Aug 12	01:15:46	R	146135	6.2	240
Aug 12	01:51:53	R	146142	6.9	227
Aug 13	01:16:28	R	146733	6.4	214
Aug 13	03:18:21	R	146756	6.4	299
Aug 13	03:59:00	R	146780	5.9	209
Aug 14	22:42:13	R	109753	6	268
Aug 20	03:11:40	R	94874	7.3	303



## The Moon

Aug 04 First Quarter

Aug 10 Full Moon

Aug 17 Last Quarter

Aug 25 New Moon

Wishing you Clear Dark Skies,

***Steve Tonkin for The Binocular Sky***



### **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*

Occultation data derived with Dave Herald's *Occult*

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