



The Binocular Sky

December
2018


Newsletter

Introduction

Welcome to the 7th anniversary edition of the **Binocular Sky** Newsletter. Back in 2011, this was an experiment to see if there was a readership large enough – maybe a couple of hundred – to warrant the effort. Seven years down the line, I think I can say that there is: this year we broke through the magic 1000 subscribers “barrier”, and at least the same number again download it from the website. More importantly, perhaps, is the number of “astro-buddies” I’ve made as a result of this, both “real life” and online. Yes, it’s been worth it!

If you’re new to the newsletter, my intention in this monthly publication is to highlight some of the binocular targets for the coming month. It is primarily written for binocular (and small telescope) observers in the UK, but should be quite useful for observers anywhere north of Latitude 30°N and not entirely useless even further south.

December nights are, of course, the longest we get in the northern hemisphere, so there is a lot of sky that is observable this month. The highlight has to be Comet 46P (Wirtanen), which is already nominally at naked-eye visibility (mag +5.5), but the moon and clouds have thus far thwarted my efforts at observation.

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

The Deep Sky

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

December marks the welcome return of the [Pleiades \(M45\)](#) and the [Great Orion Nebula \(M42\)](#) to early evening observation at a reasonable altitude. The [trio of open clusters in Auriga, M36, M37 and M38](#) and [M35](#) in Gemini are also worth observing. 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. Nearer the Pleiades is [NGC 1647](#), which is within the 'V' asterism of the [Hyades](#). It is a sparse cluster and, although it is visible in a 10x50 binocular, it really benefits from a little more aperture and magnification.

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.

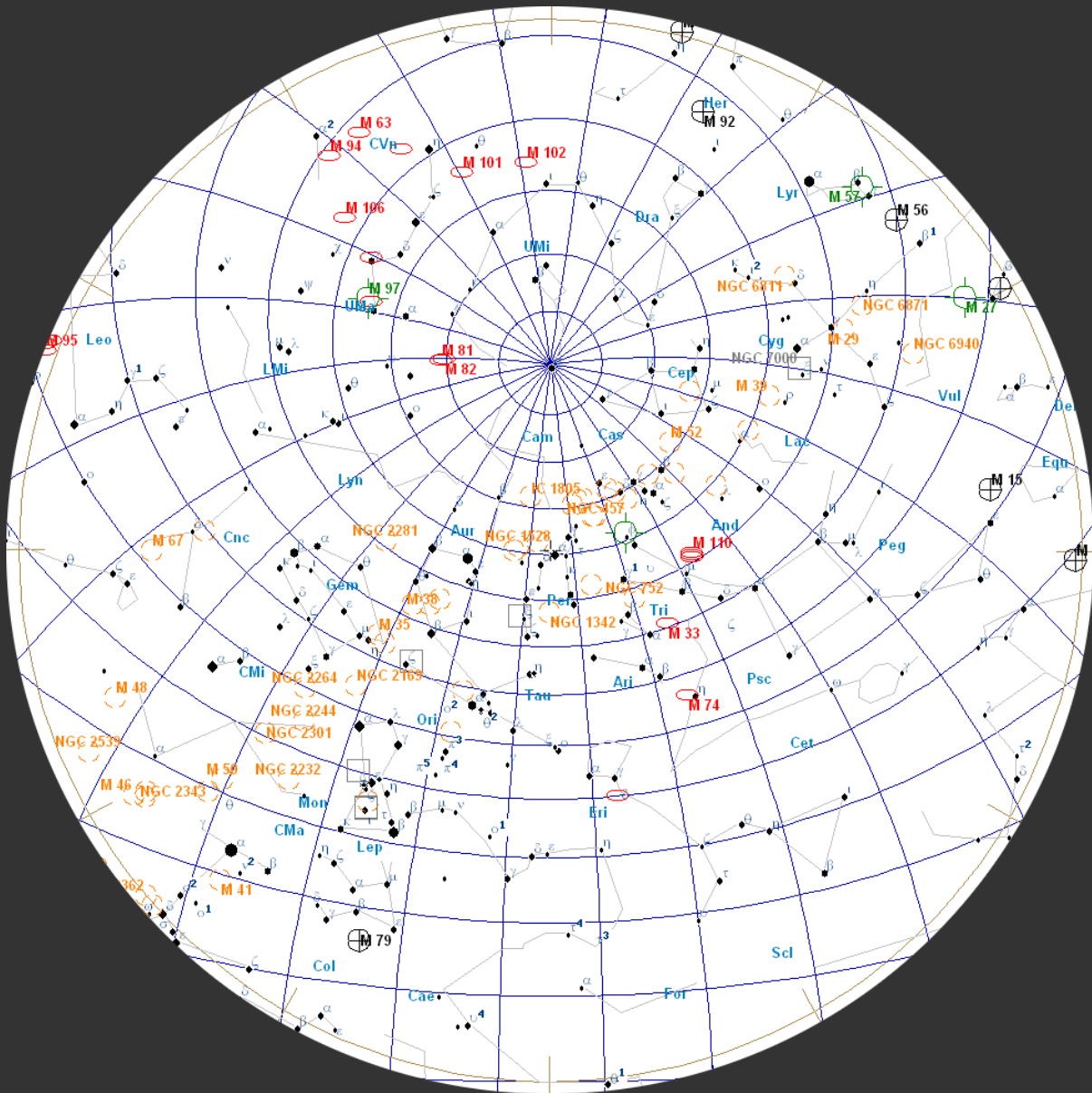
The open cluster [NGC 752](#) is very well placed this month; it is one of those objects that is often overlooked because of its proximity to a more famous object, in this case, the [Great Andromeda Galaxy](#) (see below). [NGC 752](#) is a very fine cluster, and easy in 50mm binoculars in which it begins to resolve. Nearby towards [Perseus](#) is another fine cluster, [M34](#).

In December, 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](#).

51°N

December 01, 23:00 UT December 15, 22:00 UT December 31, 21:00 UT

(chart is "clicky")



Two notable exceptions to the generalisation of galaxies being poorly placed on December 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 December evenings that the Sculptor Galaxy, NGC 253, becomes observable before midnight, but you will need a good southern horizon for this.

*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 globular clusters, M92 and the very impressive, and very easy to find, M13 are still observable in the early evening, but their altitude becomes less favourable as the month progresses. M15 and M2 are both much better placed for observation in December.

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.

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

December 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
M33 (NGC 598, the Pinwheel Galaxy)	Tri	gal	6.2	013351	303929
NGC 752	And	oc	5.7	015742	374700
M34 (NGC 1039)	Per	oc	5.2	024204	424542
M45 (the Pleiades)	Tau	oc	1.6	034729	240619
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
M42 (NGC 1976, The Great Orion Nebula)	Ori	en	4.0	053517	-052325
M36 (NGC 1960)	Aur	oc	6.0	053617	340826
M37 (NGC 2099)	Aur	oc	5.6	055218	323310
IC 2157	Gem		8.4	060449	240350
NGC 2158	Gem	oc	8.6	060726	240529
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
M13 (NGC 6205, the Great Hercules Globular Cluster)	Her	gc	5.8	164141	362738
M92 (NGC 6341)	Her	gc	6.4	171707	430812
M15 (NGC 7078)	Peg	gc	6.2	212958	121003
M2 (NGC 7089)	Aqr	gc	6.5	213327	-004922

Double Stars

Binocular Double Stars for December

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
β Cyg	3.1, 4.7	K0, B9	35
d Cep	4.1, 6.1	F5, A0	41
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

v 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

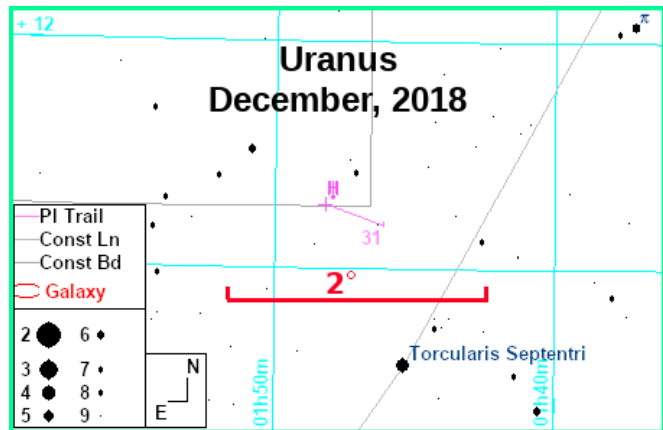
Variable Stars

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
V Aqr	7.6-9.4	ca. 244d	Semi-regular
SS Cep	6.7-7.8	ca. 190d	Semi-regular
RZ Cas	6.2-7.7	1.195d	Eclipsing binary

Mira-type stars near predicted maximum (mag < +7.5)		
Star	Mag Range	Period (days)
x Cyg	3.3-14.2	408
o Cet	2.5-10.1	332

The Solar System

Uranus is best observed in the evening, moving retrograde from Aries to Pisces, and shining at mag +5.7.

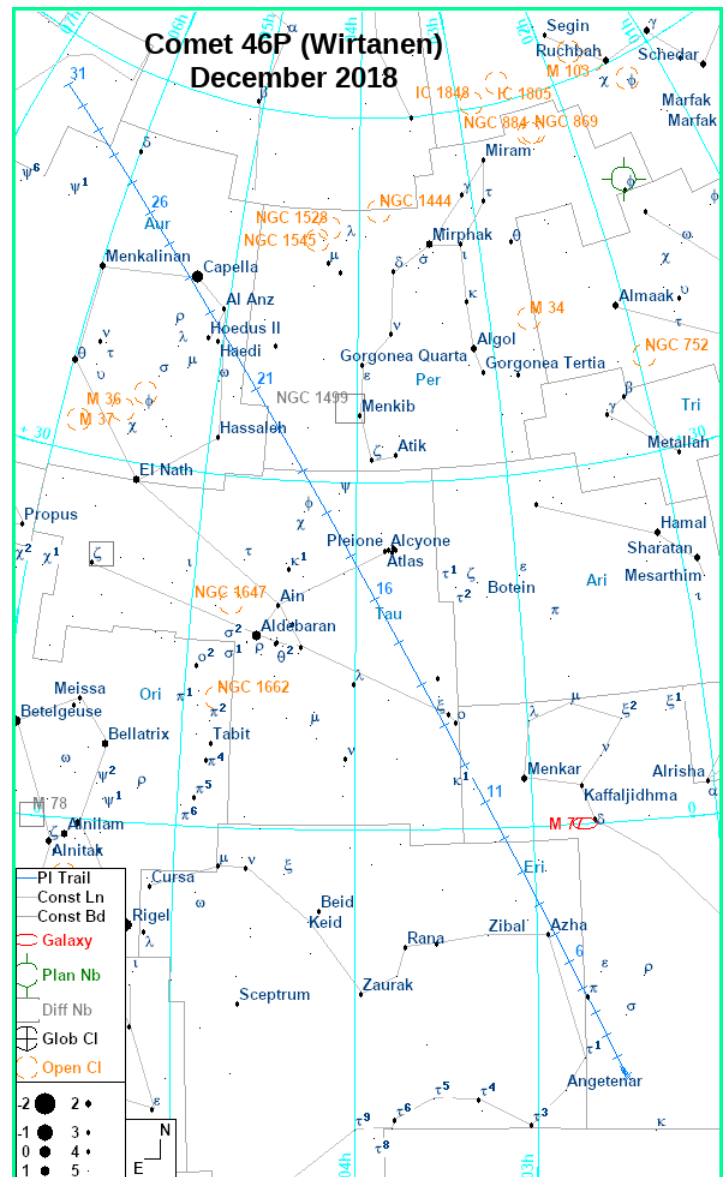


Comets

Comet 46P (Wirtanen) starts the month as a barely naked-eye object, and is predicted to brighten slightly as it gets higher in our skies. Some notable “passes”:

- 6th/7th: 36 arcmin W of Azha (η Eri)
- 13th: 48 arcmin E of σ and ξ Tau
- 16th: Between the Hyades and Pleiades
- 23rd: 26 arcmin SE of Capella (α Aur)

(The Solar System charts are “Clicky” for higher resolution chart)



Asteroid Occultations

There are no predicted asteroid occultations of stars mag +7.5 or brighter, observable from the UK, this month.

The Moon

December 07	New Moon
December 15	First Quarter
December 22	Full Moon
December 29	Last Quarter

Lunar Occultations

Data are for my location and may vary by several minutes for other UK locations. The types are (**D**)isappearance, (**R**)eappearance and (**Gr**)aze; they are all dark-limb events unless there is a (**B**). The Moon passes through the Hyades on the 21st/22nd, but manages to miss most of the brighter stars.

Lunar Occultations, Dec 2018, 50.9°N, 1.8°W							Position Angle
Date	Time	Phase	Star	Spectrum	Magnitude	Cusp Angle	
19 Dec	00:46:09	D	xi-2 Cet	B9	4.3	15S	142
19 Dec	18:18:42	D	HIP 14764	B8	6	69S	89
21 Dec	03:30:55	D	63 Tau	A1	5.6	33S	126
21 Dec	19:20:36	D	104 Tau	G4	4.9	25S	132
22 Dec	01:47:37	D	HIP 24906	A0	6.7	83S	72
25 Dec	02:25:32	R	HIP 41833	K0	6.5	43S	237
25 Dec	22:33:21	R	HIP 46232	G9	6.3	74S	270
28 Dec	02:52:07	R	HIP 56079	F5	6.7	12N	10
29 Dec	05:25:19	R	HIP 60667	A0	7.3	44N	339
30 Dec	03:51:15	R	SW Vir	M7	7.1	90S	293

Public Outreach & Talks

This month I will be at the following events; please do come and introduce yourself if you are there.

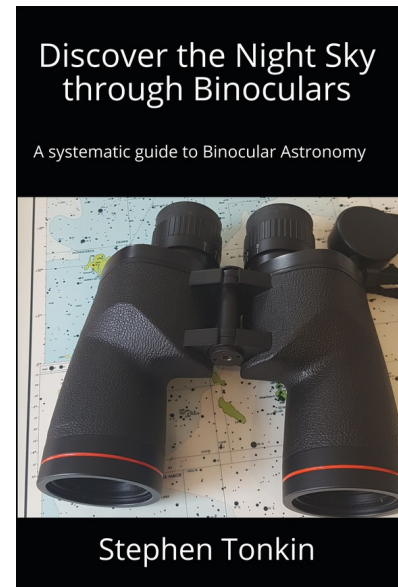
10th: [Cranbrook and District Science and Astronomy Society](#) **The Star of Bethlehem (talk)**

13th: [Fordingbridge Astronomers](#)

Geminid Meteor Watch (Public Stargazing)

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 one of my books, **Binocular Astronomy** or **Discover the Night Sky through Binoculars** (now in eBook format as well). 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



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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