

Constellation Guide

Orion (Ori)

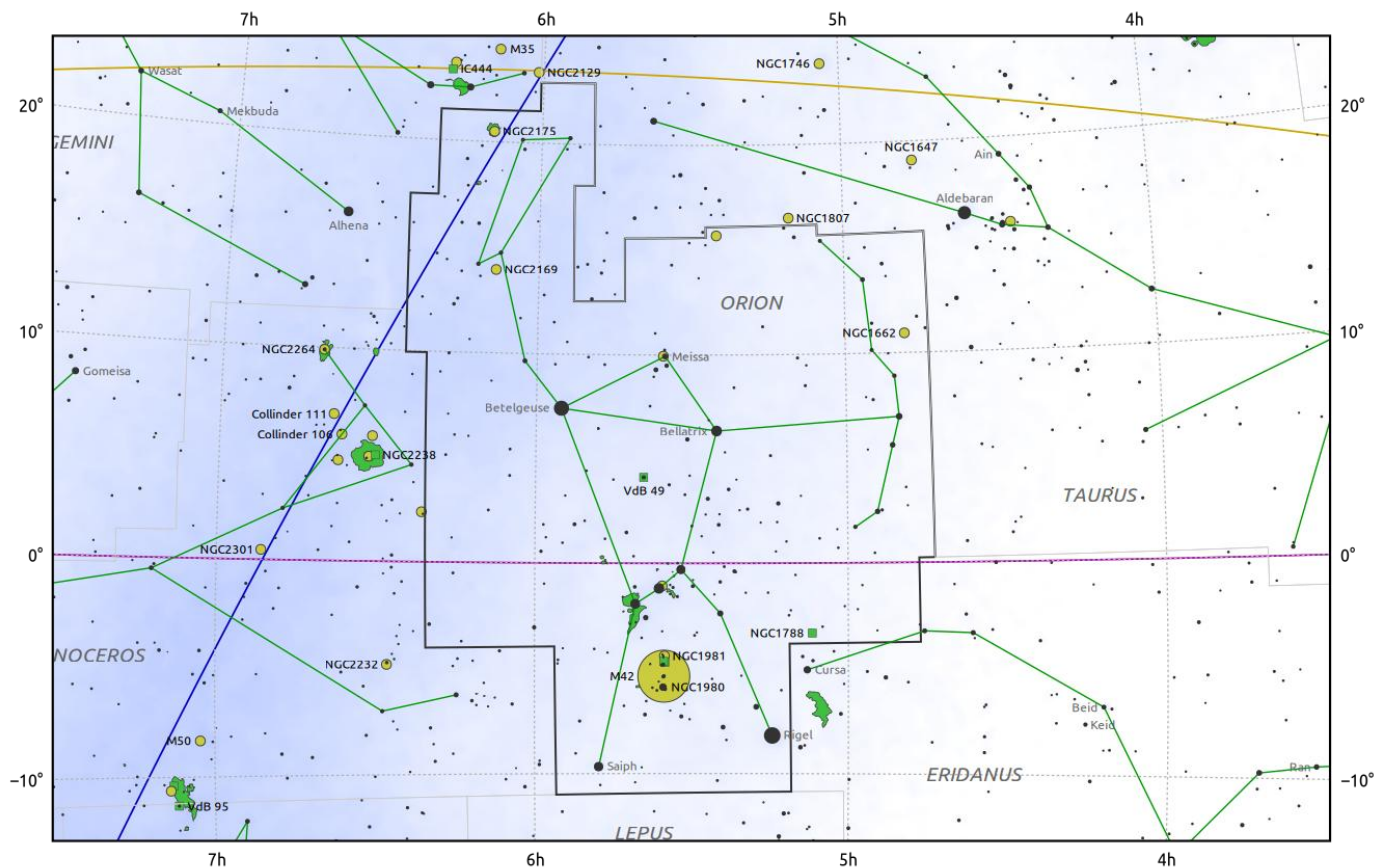
Evening Visibility: **November - January**

Online Information: [Orion](#)

More Online Information:

- Belt Region: [Eta Orionis](#), [Mintaka](#), Orion "S", Collinder 70, [Alnitak](#), [NGC-2024](#), [Sigma Orionis](#), Struve 761, [Barnard 33](#), [Messier 78](#)
- Sword Region: [Messier 42](#), [Trapezium](#), [Messier 43](#), [NGC-1980](#), [Hatysa](#), [Sh2-279](#)
- Head (Meissa) Region: [Sh2-264](#), [Collinder 69](#), [Meissa](#), 32 Orionis
- Remaining Objects: [Rigel](#), [Betelgeuse](#), [NGC-1788](#), [NGC-2169](#), [NGC-2174](#), [W Orionis](#)

[In-The-Sky.org](#) Constellation Map



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Magnitude scale: -6.0 • -5.0 • -4.0 • -3.0 • -2.0 • -1.0 • 0.0

— The Equator — Ecliptic Plane — Galactic Plane

● Galaxy ■ Bright nebula ● Open cluster ● Globular cluster ◆ Planetary nebula

Constellation Guide

Orion is one of the easiest to recognize constellations in the sky and contains 10% of the 70 brightest stars in the night sky. Many of these stars originated around the Orion Nebula region. Orion is one of the most ancient constellations and lies on the celestial equator and is prominent in the sky from November to February. Orion is the home of Messier 42 (The Orion Nebula), one of the brightest nebulae visible in the northern hemisphere. Orion is also home to so many different targets we have grouped as follows:

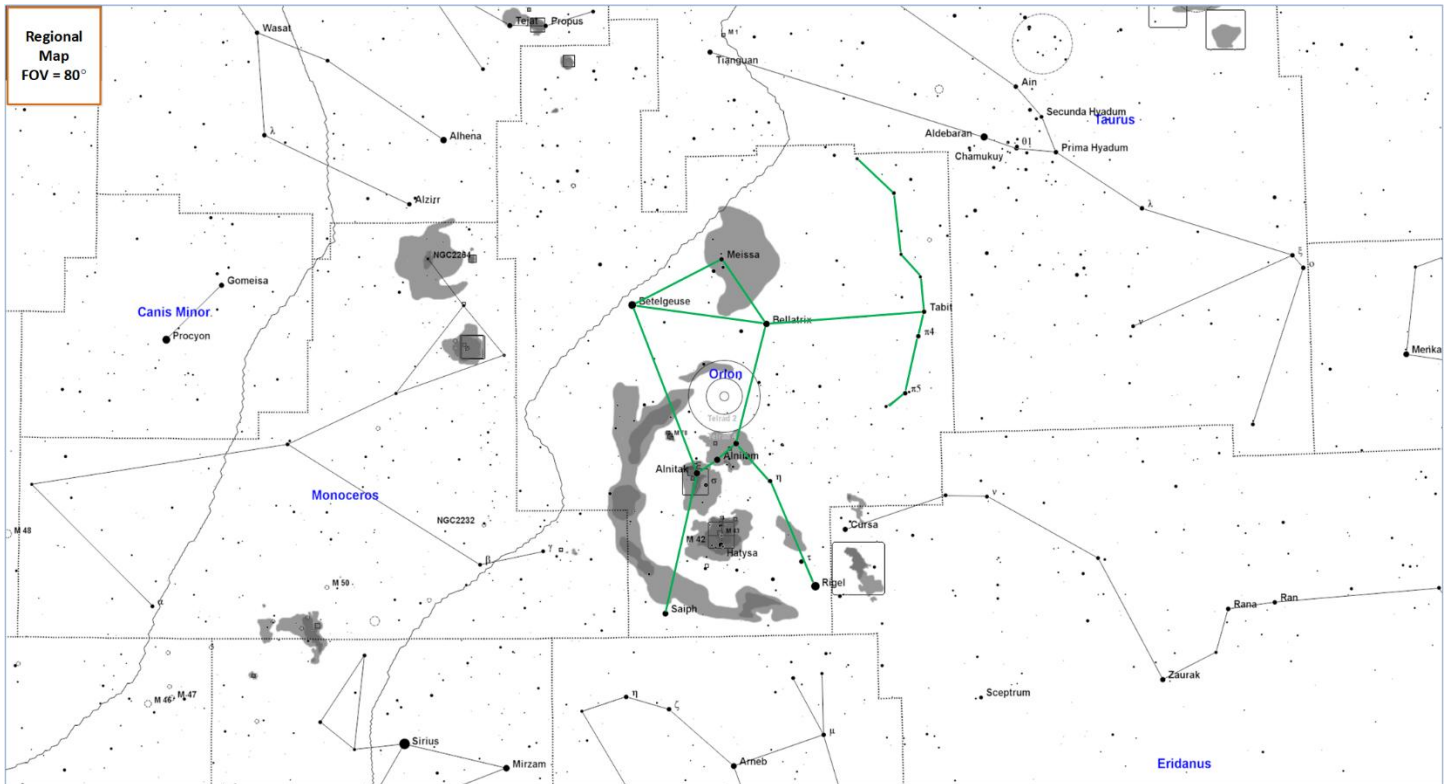
- [Belt Region](#): 10 objects
- [Sword Region](#): 6 objects
- [Head \(Meissa\) Region](#): 4 objects
- [Remaining Objects](#): 6 objects

Constellation Highlights

- [Belt Region](#)
 - Orion “S” – Asterism of letter “S” for binoculars
 - Sigma Orionis – Quadruple star system
 - Struve 761 – Sextuple star system
- [Sword Region](#)
 - Messier 42 – The great Orion Nebula
 - Trapezium – Open cluster located in the core of the Orion Nebula (M-42).
 - Hatysa – Tripple star system located in the heart of the open cluster NGC-1980.
- [Head \(Meissa\) Region](#)
 - Meissa – A Sextuple star system located in the core of the open cluster Collinder 69 and the very dim nebula Sh2-264.
- [Remaining Objects](#)
 - Rigel – Easily located double star system with a dim companion.
 - NGC-2169 – The “37” open cluster really does appear to have the number”37” written in the stars.

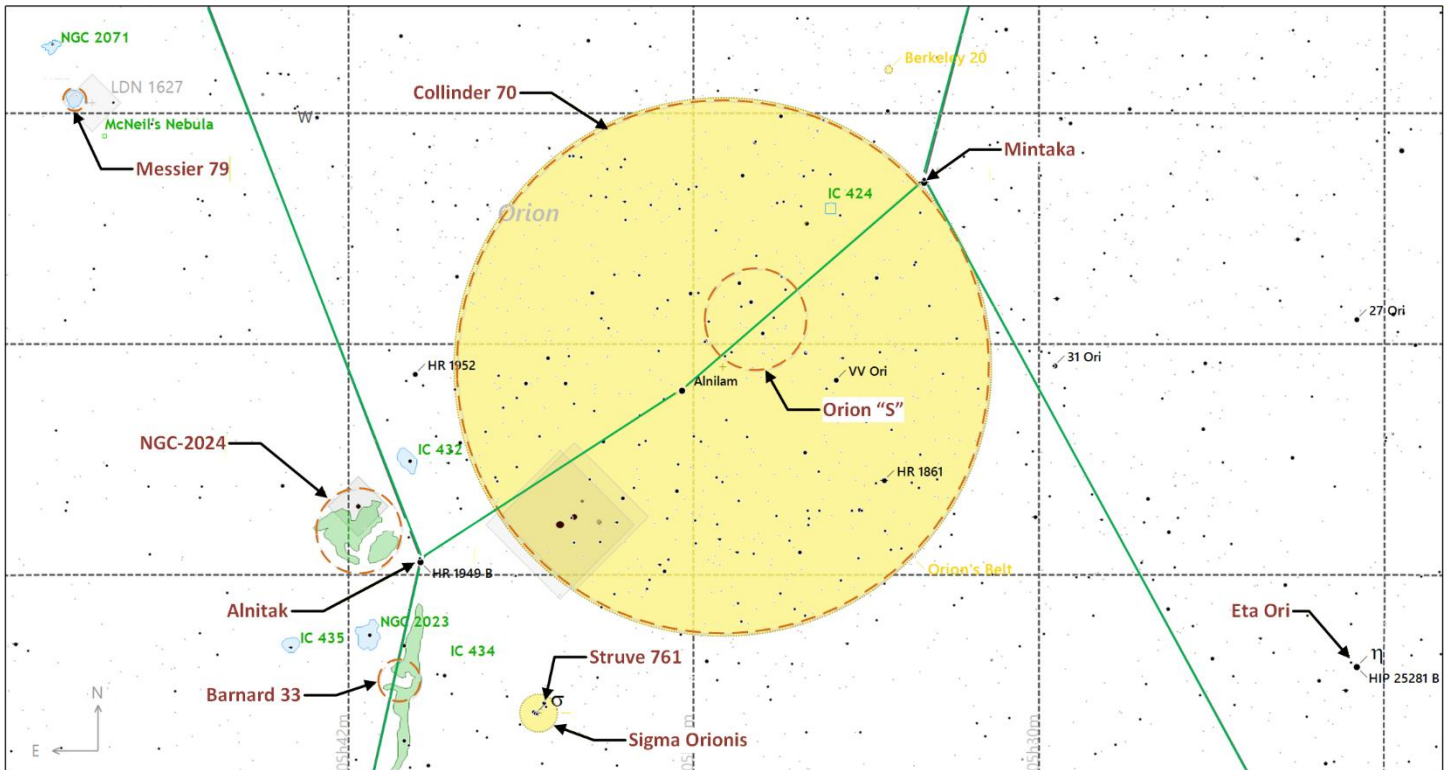
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Constellation Targets Map



Constellation Guide

Orion Belt Region



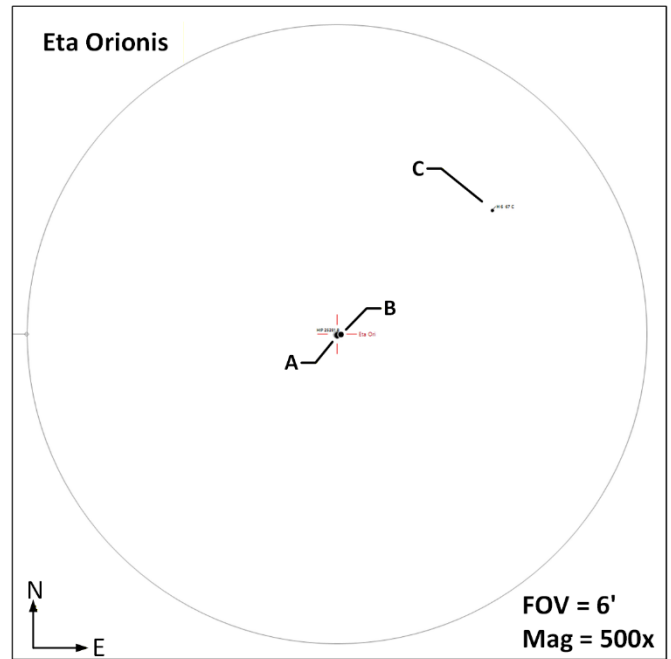
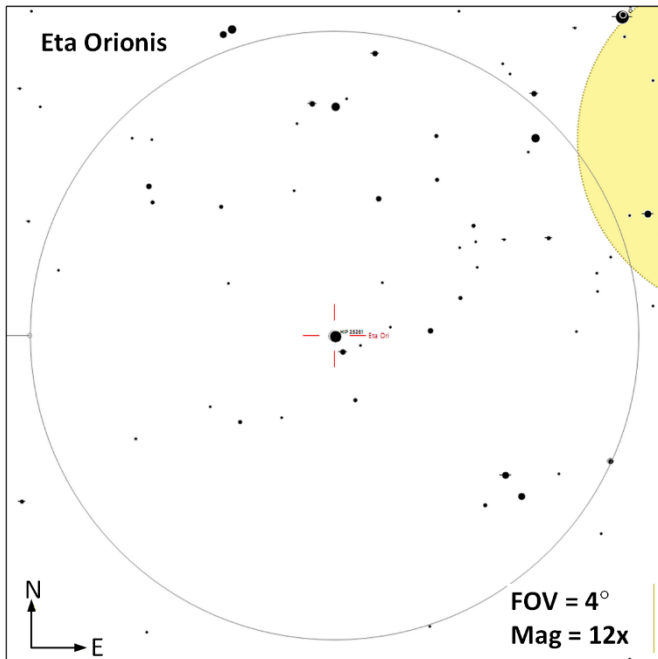
Region Objects Summary

Object (Type)	Ref	Aliases	Stats
Eta Orionis (MS-3)	1 , 2	SAO-132071, HIP 25281, 28 Ori, HR 1788, HD 35411, ADS 4002, Algjebbah, η Ori	M=3.6, 4.9, 11.0 Sep AB=1.8", AC=114" PA AB=77° AC=51°
Mintaka (MS-3)	1 , 2	SAO-1322220, HIP 25930, 34 Ori, HR 1852, HD 36486, ADS 4134, delta Ori, δ Ori	M= 2.4, 3.8, 14.2, 6.8 Sep AaAb=0.3" AB=33" AC=52" PA AaAb=128° AB=229° AC=0°
Orion S (AS)		RA-05h 34m DEC= -00d 46m	Size=2.0° Ref Star = HD 36954 "S" shaped asterism between Epsilon and Delta Orionis
CR 70 (OC)		Collinder 70, Lund186, OCL503, Orion's Belt	M=0.60 Size=140' SB=20.0
Alnitak (MS-3)	1 , 2	SAO-132444, HIP 26727, 50 Ori, HR 1949, HD 37743, STF 774, ADS 4263, Zeta Orionis, ζ Ori	M=1.9, 3.7, 9.6 Sep AB=2.5" AC=58" BC=60" PA AB=167°, AC=10°, BC=8°
NGC 2024 (EN)	1	Flame Nebula, Christmas Tree Nebula, Tank Track Nebula, SH 2-277	M=10 Size=30' x 30' SB=26.0 OIII filter
Sigma Ori (MS-4, OC)	1 , 2	SAO-132406, HIP 26549, 48 Ori, HR 1931, HD 37468, ADS 4241, σ Ori	M=4.1, 5.3, 8.8, 6.6, 6.3 Sep AB/C=11.4", AB/D=13.5", AB/E=42" PA AB/C=239°, AB/D=84°, AB/E=62°

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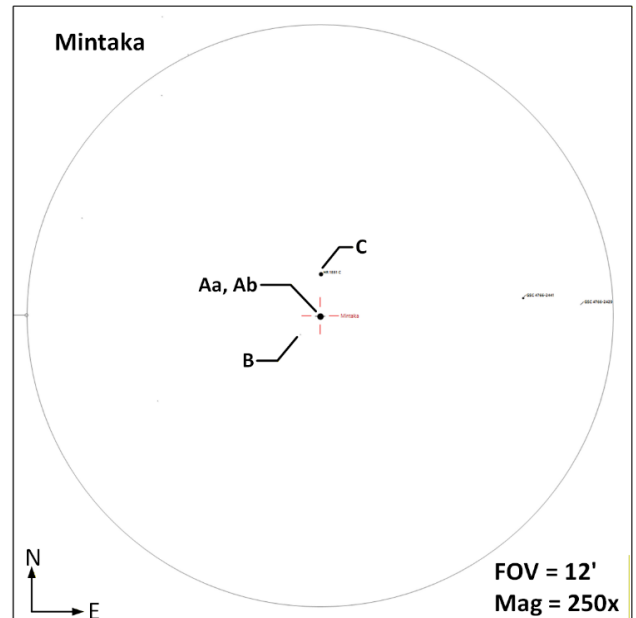
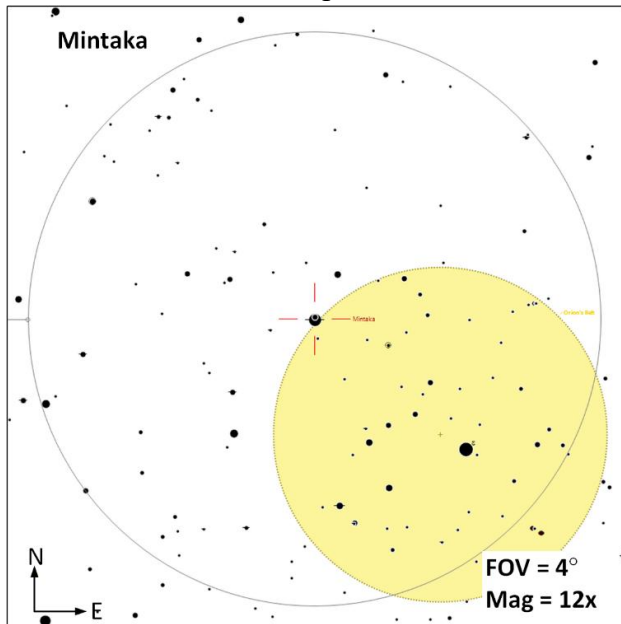
Object (Type)	Ref	Aliases	Stats
Struve 761 (MS-6)	<u>1</u>	SAO-132401, HD 294271, STF 761, ADS 4240	M=7.9, 8.4, 8.6, 11.8, 12.8, 13.0 Sep AB=68", AC=72" AD=33", AE=10.6", AF=18.8", BC=8.7" PA AB=202°, AC=209°, AD=308°, AE=267°, AF=269°, BC=268°
Barnard 33 (DN)	<u>1</u>	Horsehead Nebula, LDN 1630, IC 434, B33	Size = 6' x 4'
Messier 78 (RN)	<u>1</u>	NGC 2068, Ced 55u, DG 80, Casper the Friendly Ghost Nebula	M=8.3 Size=8' x 6' SB=21.1

Eta Orionis (MS-3 | M=3.6, 4.9, 11.0 | Sep AB=1.8", AC=114" | PA AB=77°, AC=51°) – This star system lies just west of Orion’s Belt and consists of three components. The “A” component is a spectroscopic triple star. This system is part of the OB1 association, a group of massive stars that includes most of the stars in the Orion constellation.

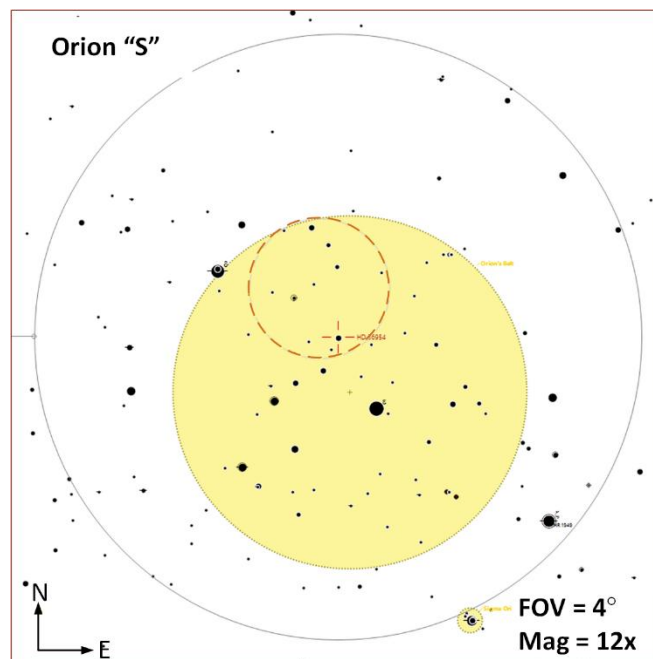


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Mintaka (MS-3 | M=2.4, 3.8, 14.2, 6.8 | Sep AaAb=0.3", AB=33", AC=52" | PA AaAb=128°, AB=229°, AC=0°) – A quintuple star system located 1,200 ly from earth. The two closest stars (Aa & Ab) will be resolved only in larger telescopes, the remaining components “B” and “C” are not believed to be physically associated with the “A” component.

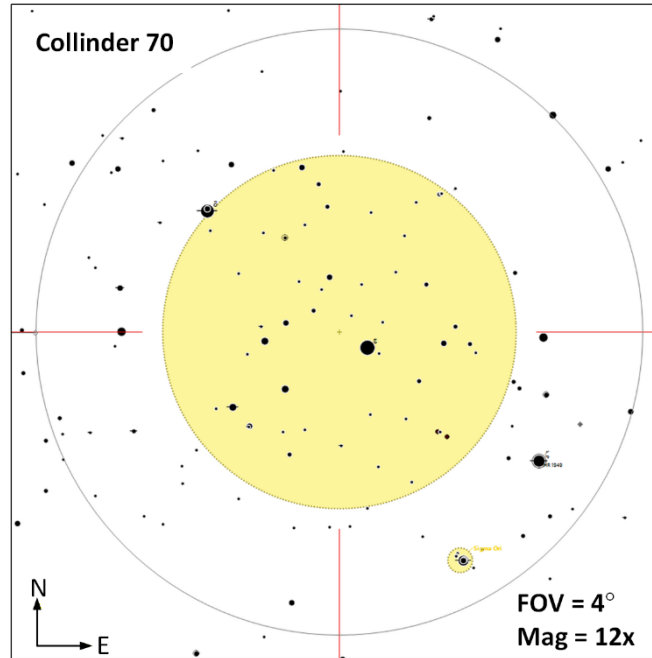


Orion S (AS | Size=2.0° | Ref Star=HD 36954) – “S” shaped formation of stars between Epsilon (Anilam) and Delta (Mintaka) Orions.

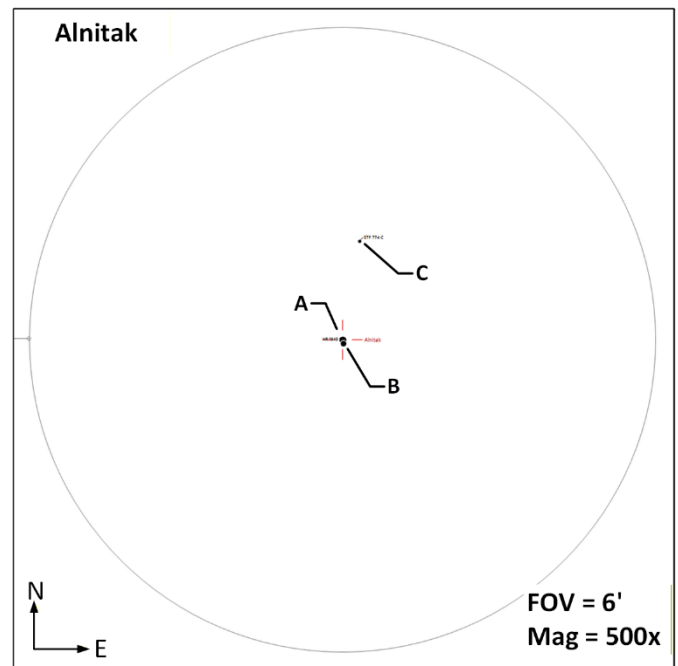
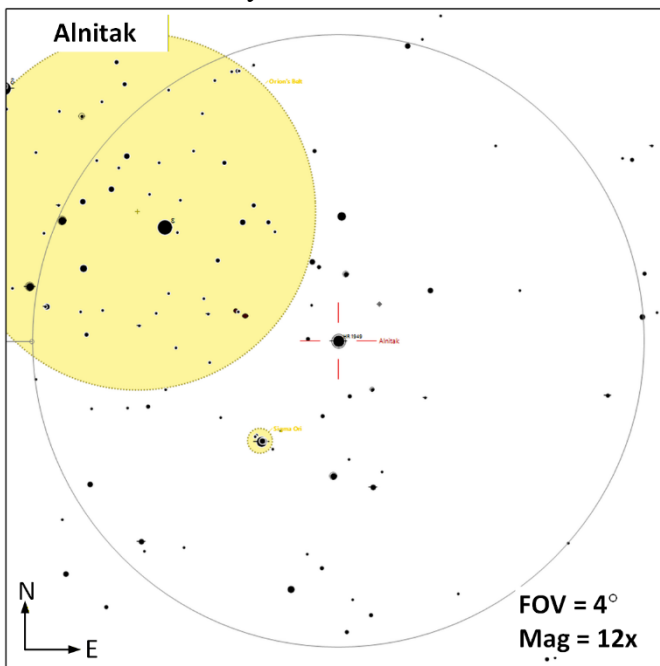


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Collinder 70 (OC | M=0.6 | Size=140' | SB=20.0 |) – An open cluster approximately 1,300ly from earth with a diameter of about 51 light years across. Epsilon Orionis (Alnilam) appears in the field of view of this cluster.

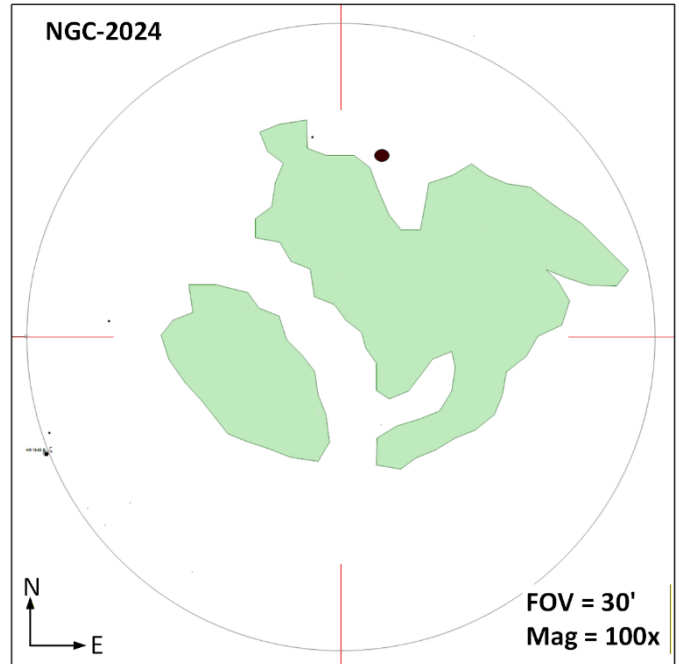
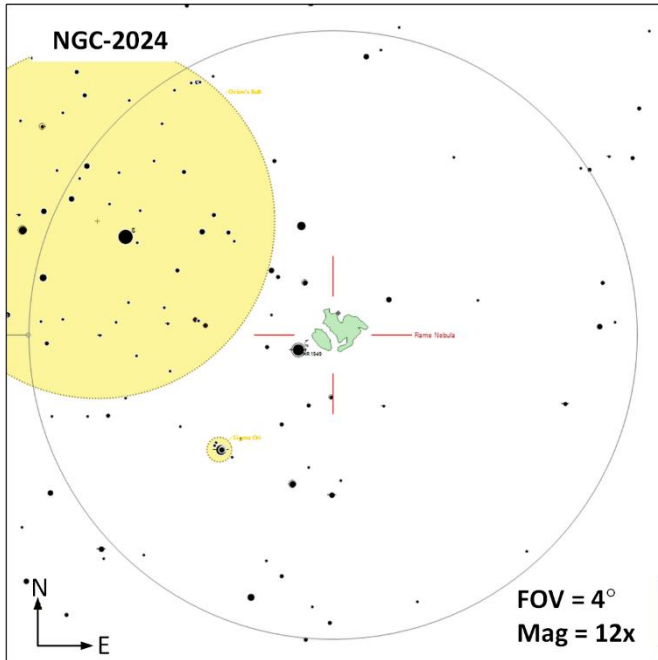


Alnitak (MS-3 | M=1.9, 3.7, 9.6 | Sep=AaAb=0.3", AB=33", AC=52", BC=60" | PA AC=10°, BC=8° |) – This triple star system (Zeta Orionis) is approximately 1,260 ly from earth and makes up one of the three belt stars of Orion. The Aa component is a blue supergiant about 33 times the mass of our sun. The B component has an orbit that takes about 1,500 years to complete. The C component has not been verified to be physically associated with this system.

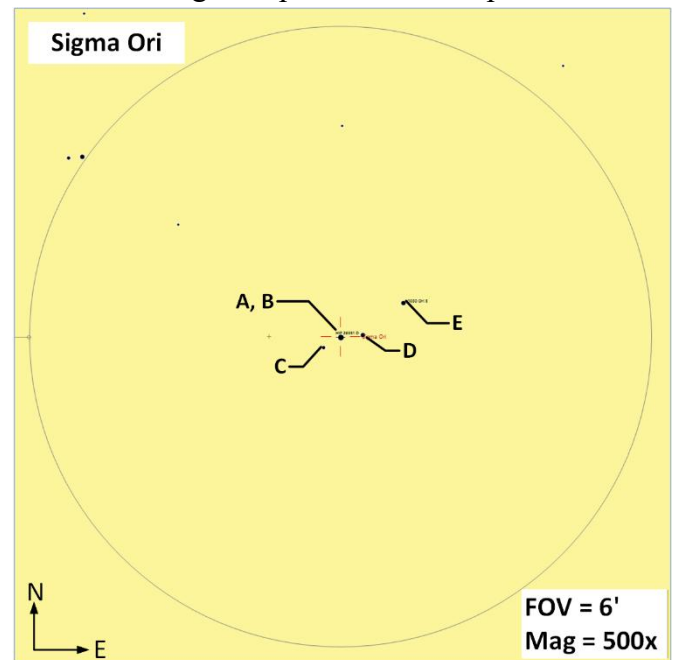
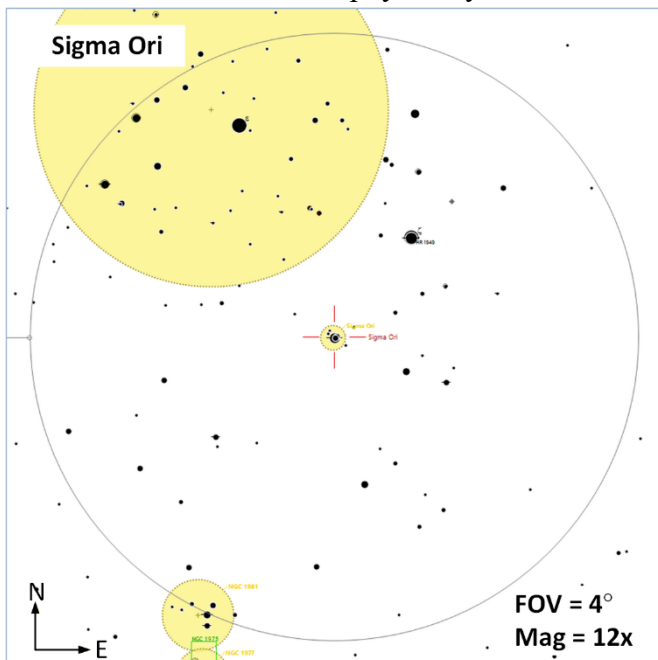


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NGC-2024 (EN | M=10.0 | Size=30' | SB=26.0) – The Flame Nebula is an emission nebula about 1,350 years from earth. An O III filter may help make this dim nebula more visible.

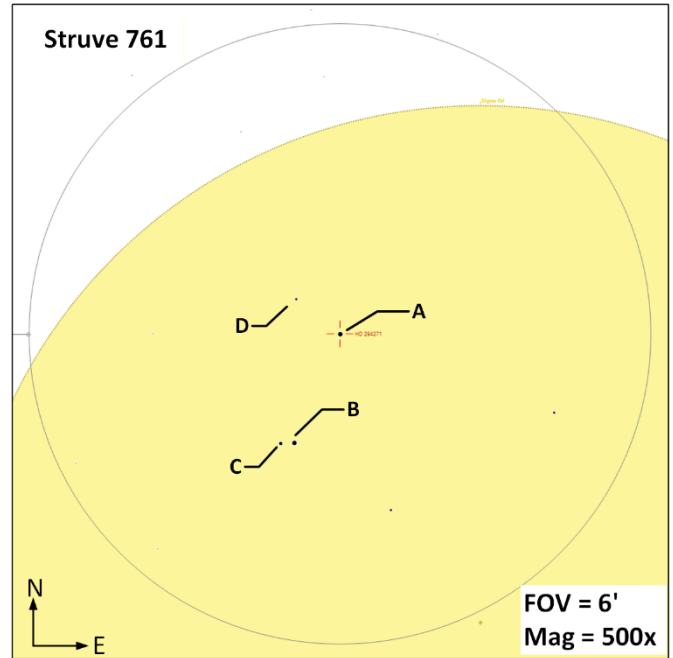
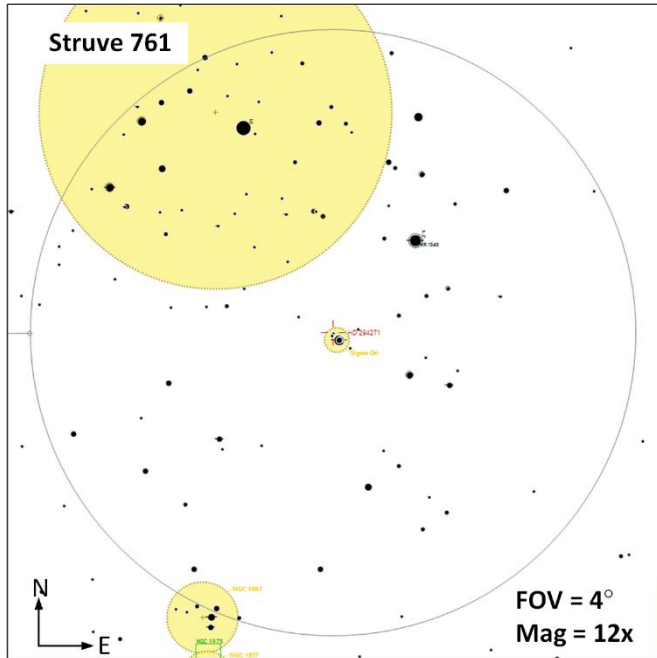


Sigma Orionis (MS-4 | M=4.1, 5.3, 8.8, 6.6, 6.3 | Sep AB/C=11.4" AB/D=13.5", AB/E=42" | PA AB/C=239°, AB/D=84°, AB/E=62°) – This is an exceptional multiple star system composed of four elements. Most of these stars do not seem to be physically associated with each other so might be part of a small open cluster.

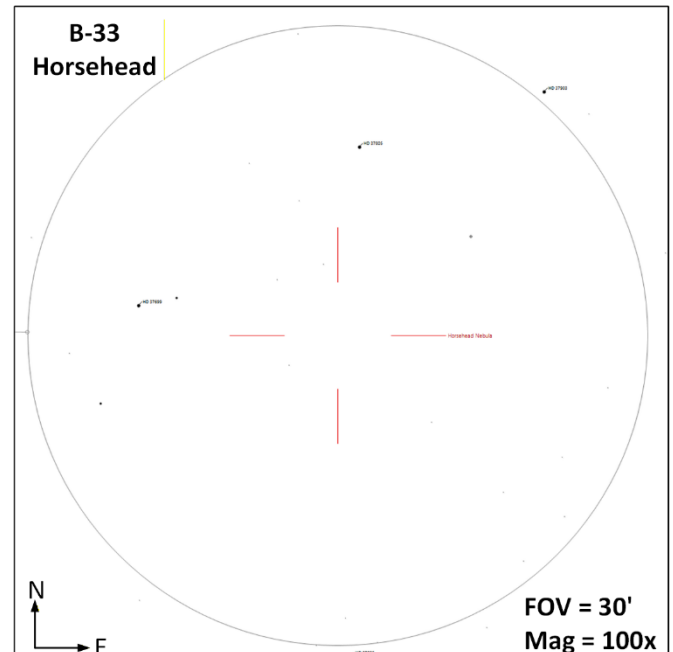
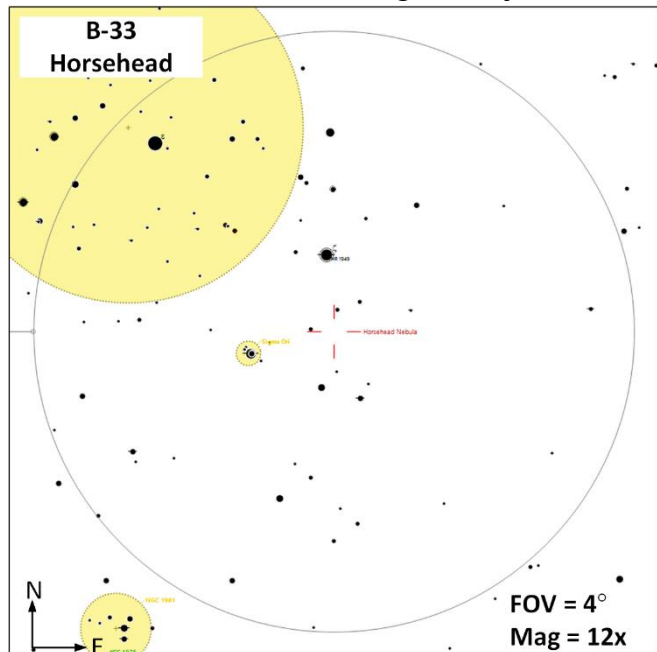


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Struve 761 (MS-6 | M=7.9, 8.4, 8.6, 11.8, 12.8, 13.0 | Sep AB=65", AC=72", AD=33", AE=10.6" AF=18.8", BC=8.7" | PA AB=202°, AC=209°, AD=308°, AE=267°, AF=269°, BC=268°) – Another well known multiple star system. Currently it is suspected these stars are not physically associated with each other.

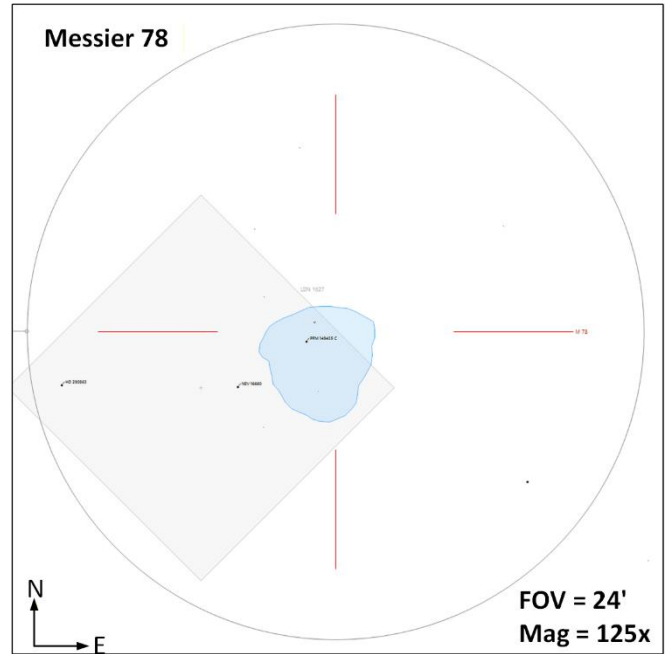
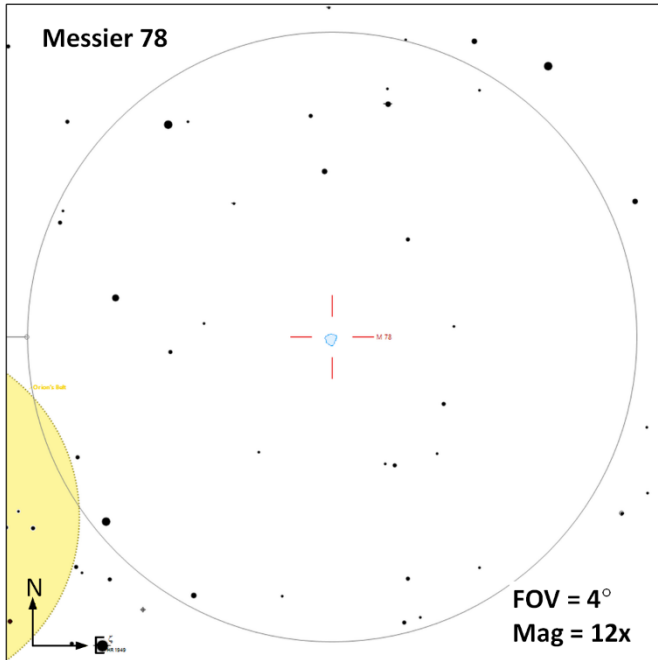


Barnard 33 (DN | Size=6' x 4') – The Horsehead Nebula is rather famous dark nebula with the shape of a horsehead. This target is very difficult to see in small and medium size telescopes and utilization of an O III filter is recommended for viewing this object.



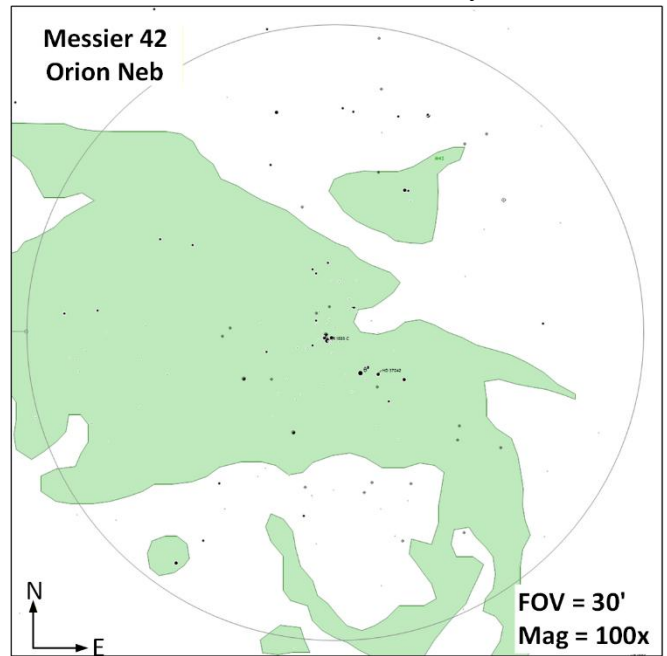
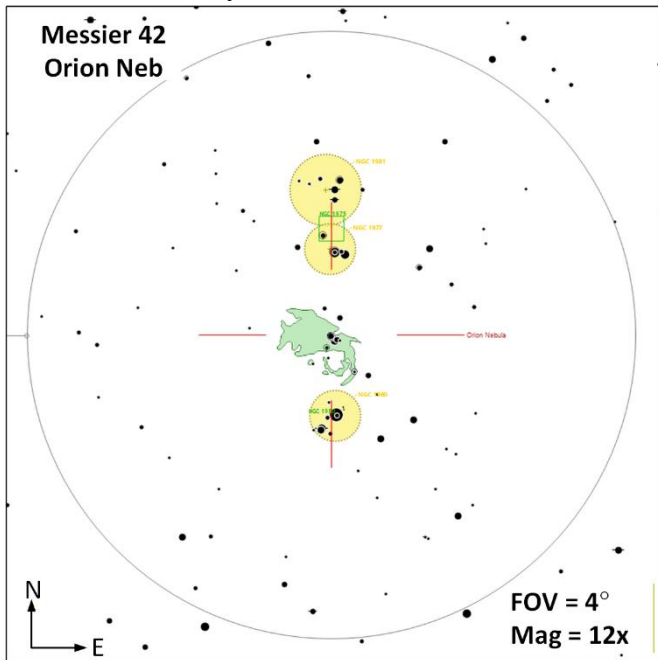
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Messier 78 (RN | M=8.3 | Size=8'x6' | SB=21.1 |) – A reflection nebula located about 1,600 ly from earth. This dim nebula may require 6" of aperture and dark skies to view.



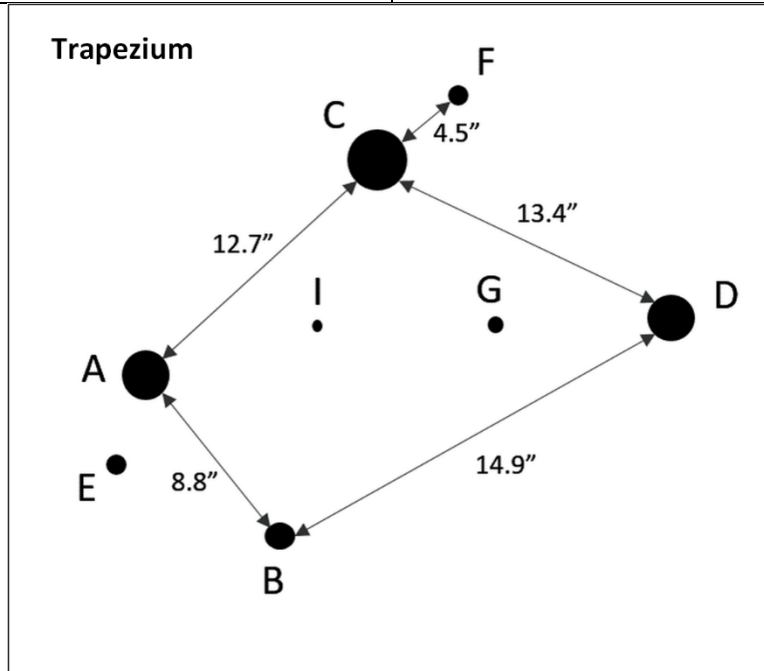
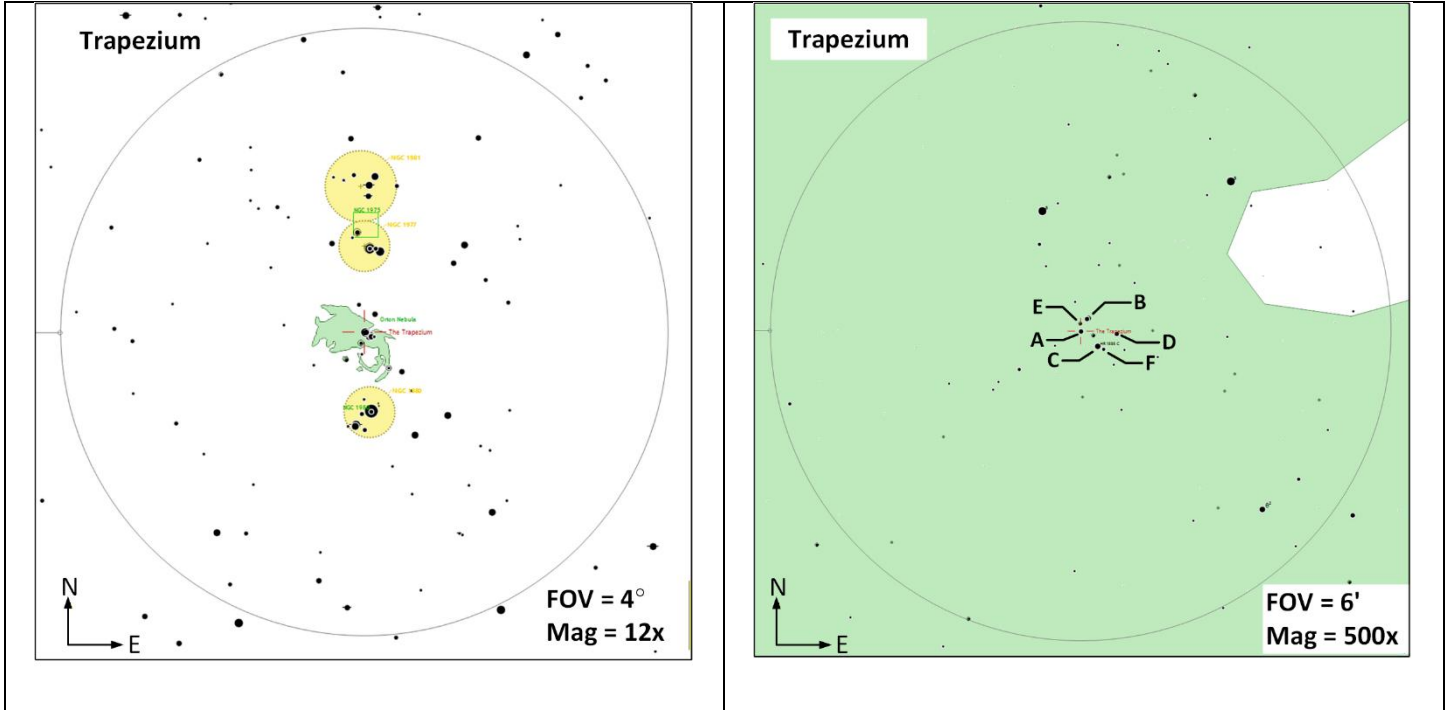
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Messier 42 (EN, OC | M=4.0 | Size=65'x60' | SB=21.6 |) – The Orion nebula is one of the best known objects in the Northern sky. It is a stellar nursery where stars are forming from a giant gas cloud. Both the gas cloud and some of the newly formed stars are visible even to the smallest of telescopes. The Orion nebula is estimated to be 25 ly across and have the mass of about 2,000 solar masses and is about 1,400ly from earth.



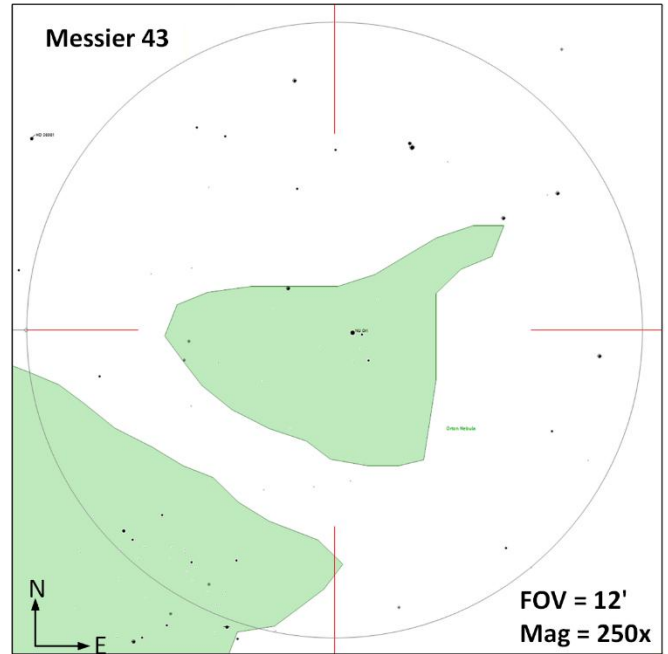
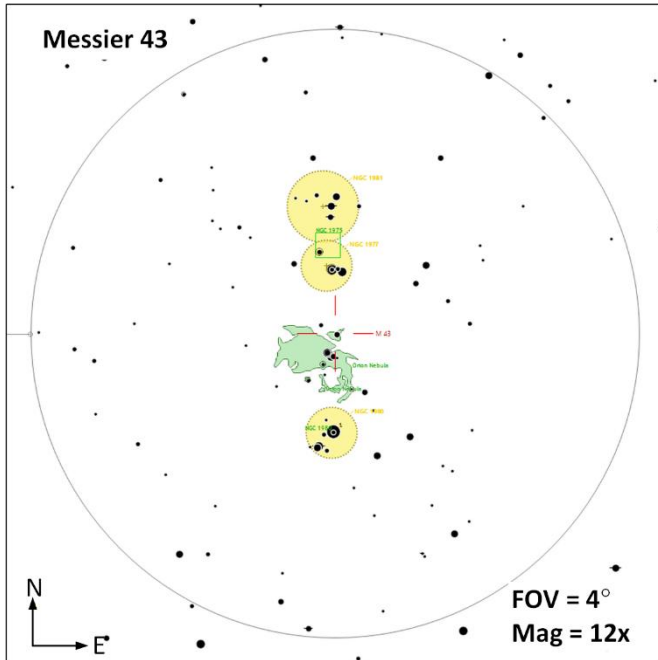
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Trapezium (MS, OC | M=6.6, 7.5, 5.1, 6.4, 11.1, 11.5, 11.6 | Sep=95" | PA=349° |) – Embedded int the heart of the Orion nebula, this small cluster of newly formed stars that mostly responsible for energizing the Orion Nebula. The Trapezium have often been used to check seeing conditions and telescope optics. The four brightest components (A-D) are usually easily identified while the E & F components test the seeing conditions and optics.

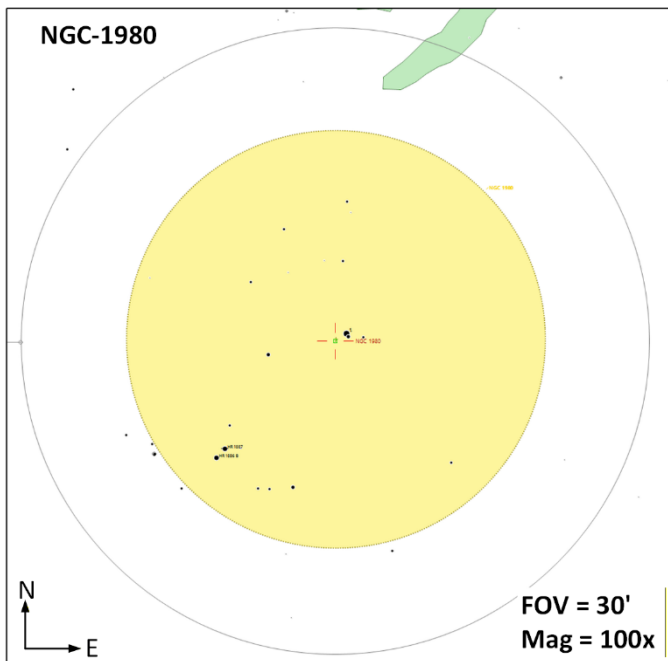
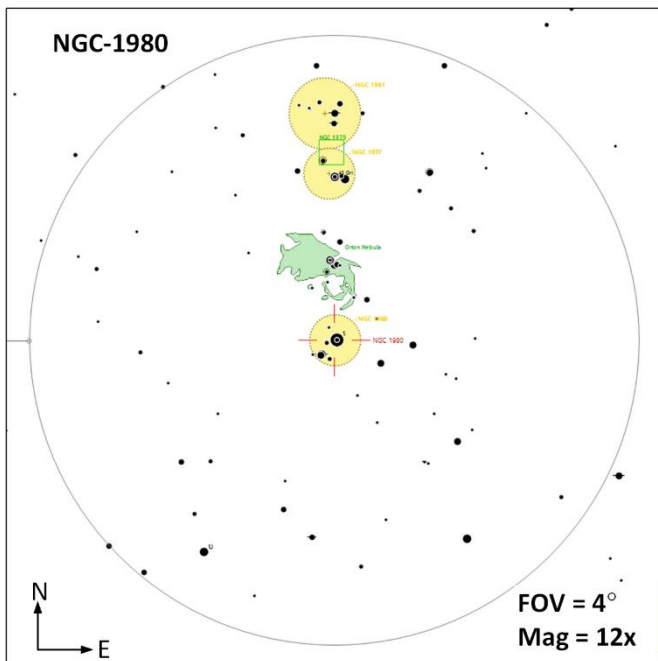


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Messier 43 (EN | M=9.0 | Size=20'x15' | SB=23.8 |) – De Mairan’s Nebula is part of the Orion Nebula and is delineated from the Orion Nebula by a dark lane and located 7' from the Trapezium.

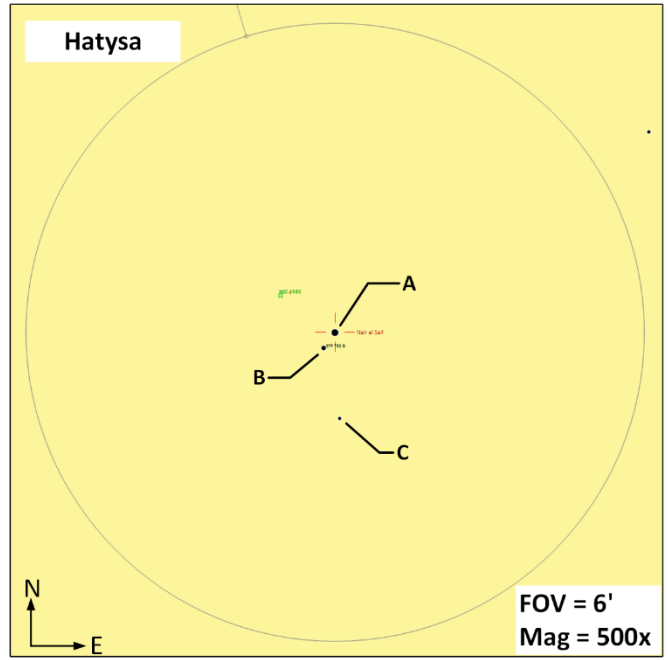
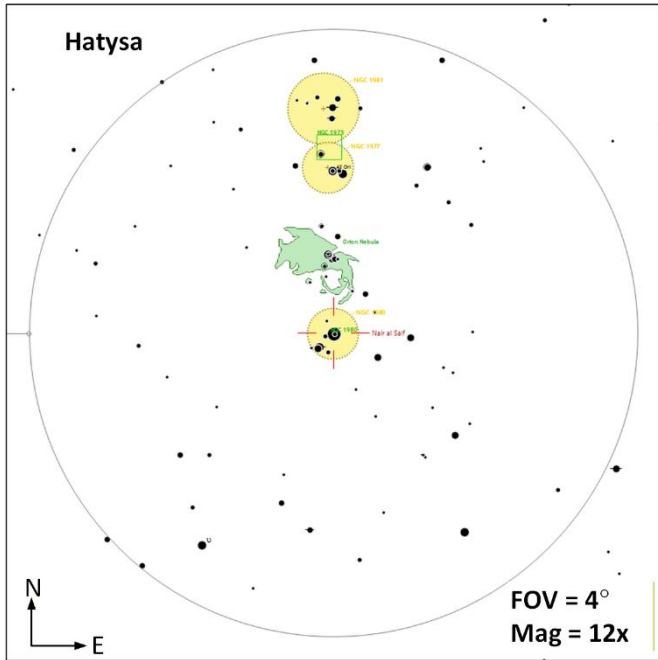


NGC-1980 (OC, EN | M=2.5 | Size=14' | SB=16.9 |) – Also known as “The Lost Jewel of Orion” this young open cluster and nebula is centered around the star Iota Orionis (Hatysa) at the southern edge of the Orion Nebula.

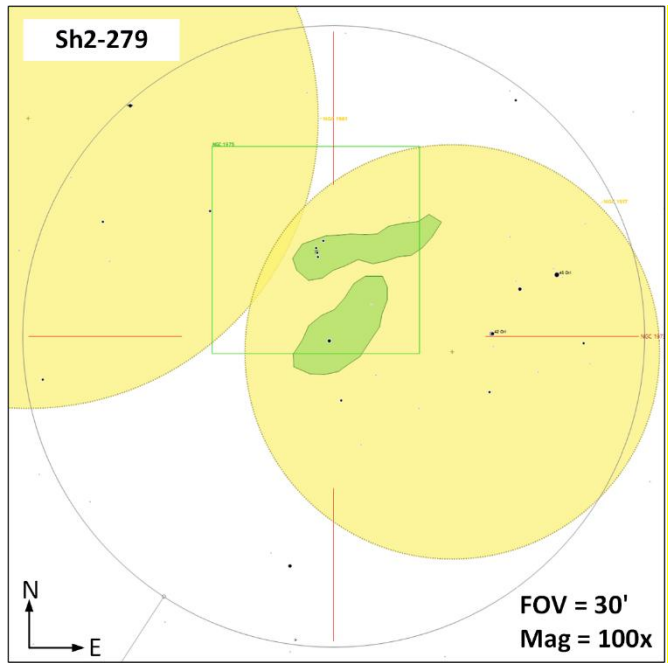
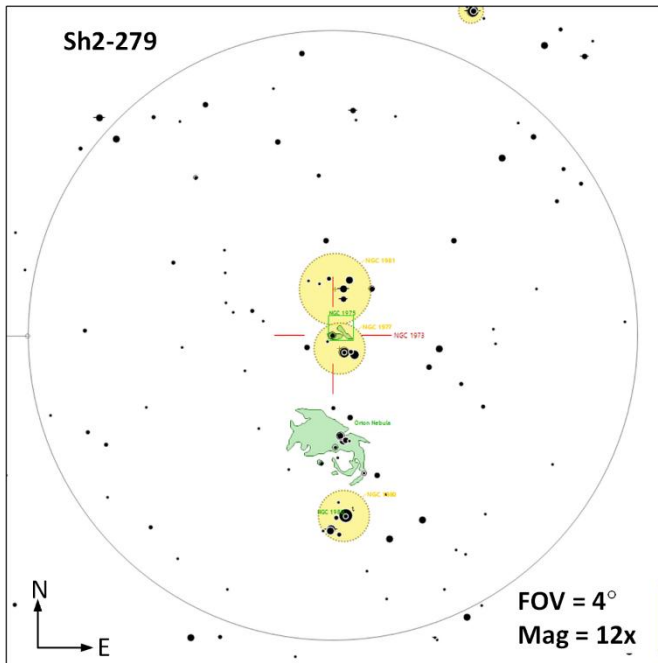


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Hatysa (MS-3 | M=2.8, 7.7, 9.8 | Sep AB=11.2", AC=49", BC=41" | PA AB=141°, AC=104°, BC=94° |) – A multiple star system in the center of the NGC-1980 open cluster. This system is 1,340ly from earth and has three visible components. It is suspected that these components are not physically associated with each other.

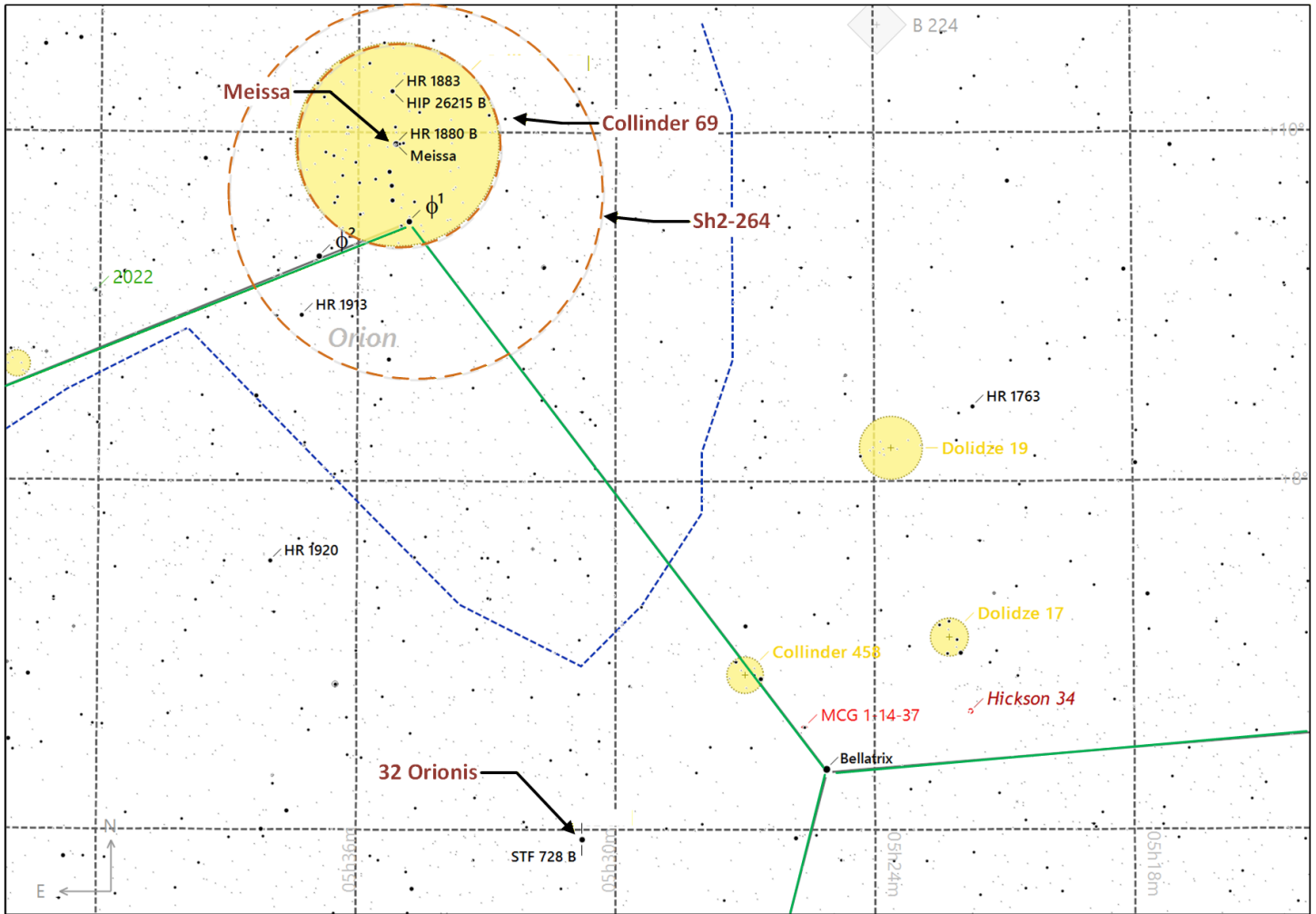


Sh2-279 (OC, EN | M=7.0 | Size=40'x25' | SB=23.1 |) – The Running Man Nebula is composed of three nebula (NGC-1973, NGC 1975, and NGC 1977) and the open cluster NGC-1981.



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Orion Head (Meissa) Region

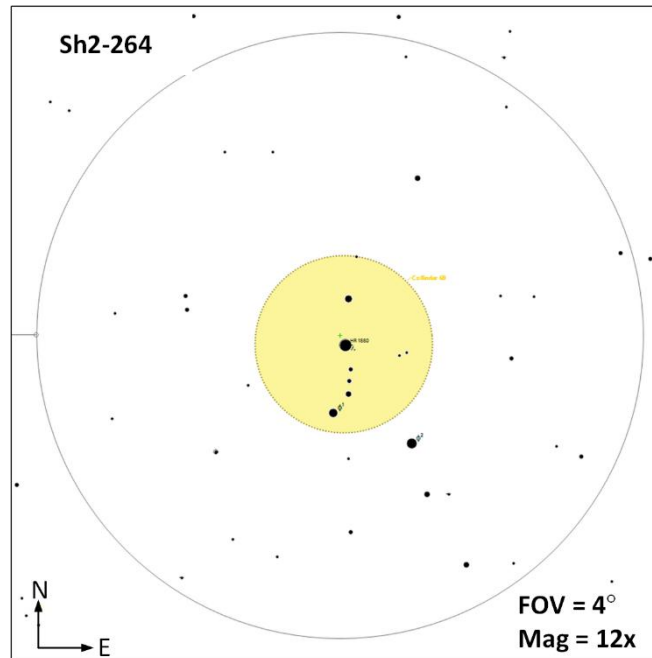


Objects Summary

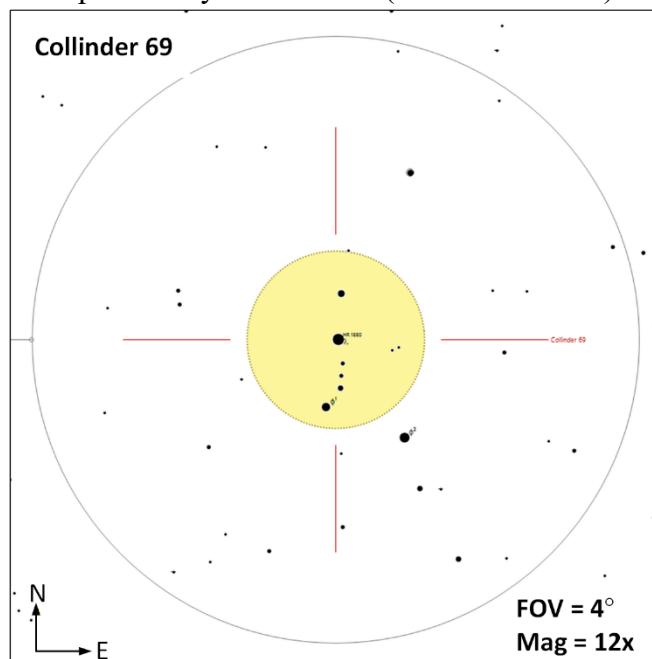
Object (Type)	Ref	Aliases	Stats
Head (Meissa) Region			
Sh2-264 (EN)	<u>1</u>	Anglefish Nebula, Lambda Orionis Ring	Size=4.5° Use H-beta filter to view
CR 69 (OC, EN)	<u>1</u>	Lambda Orionis Cluster, Collinder 69, Lund185, OCL479	M=2.8 Size=70' SB= 20.7
Meissa (MS-6)	<u>1</u> , <u>2</u>	SAO-112921, HIP 26207, 39 Ori, HR 1880, HD 36862, STF 738, ADS 4179, Lambda Orionis, λ Ori, Heka, Hatya	M=3.5, 5.4, 10.7, 9.6, 9.2, 12.9 Sep AB=4.1" AC=29", AD=78", AE=151", AF=62", BC=32" PA AB=43°, AC=185°, AD=272°, AE=279°, AF=325°, BC=189°
32 Ori (DS)	<u>1</u>	SAO-112849, HIP 25813, HR 1839, HD 36267, STF 728, ADS 4115	M=4.4, 5.7 Sep=1.3" PA=44°

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Sh2-264 (EN | Size= 4.0° |) – The Lambda Orionis Ring is a [molecular cloud](#) surrounding Meissa (Lambda Orionis) This is a very faint nebula that will require a large telescope for possible identification.

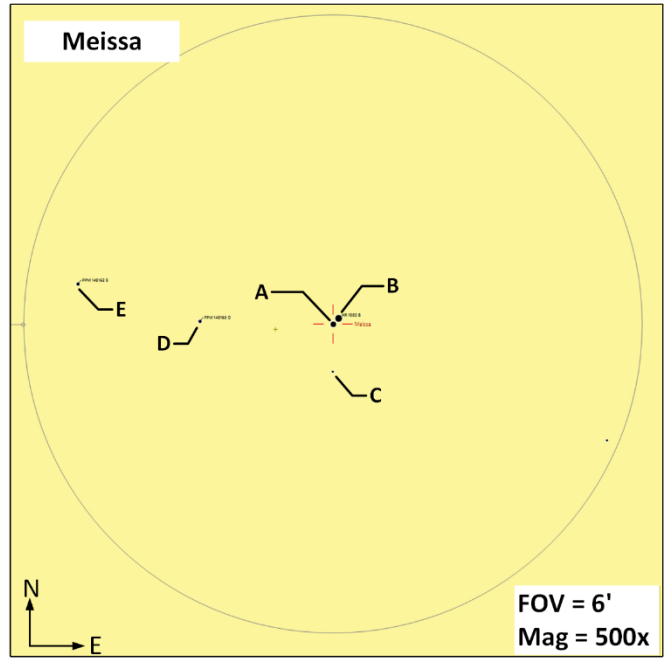
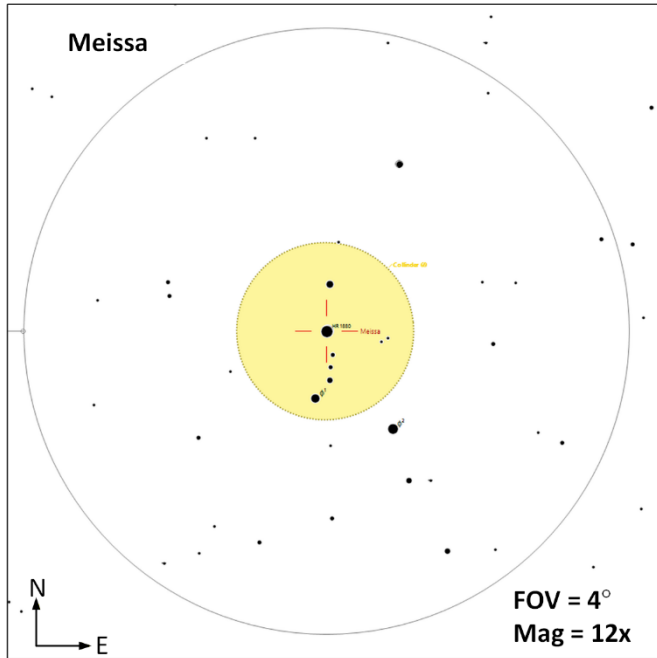


Collinder 69 (OC, EN | M=2.8 | Size=70' | SB=20.7 |) – Embedded in the Lambda Orionis Ring is the open cluster CR 69. CR 69 is approximately 27 light years across and is estimated to be 1,300 ly from earth. At the core of this open cluster is the sextuplet star system Meissa (Lambda Orionis).

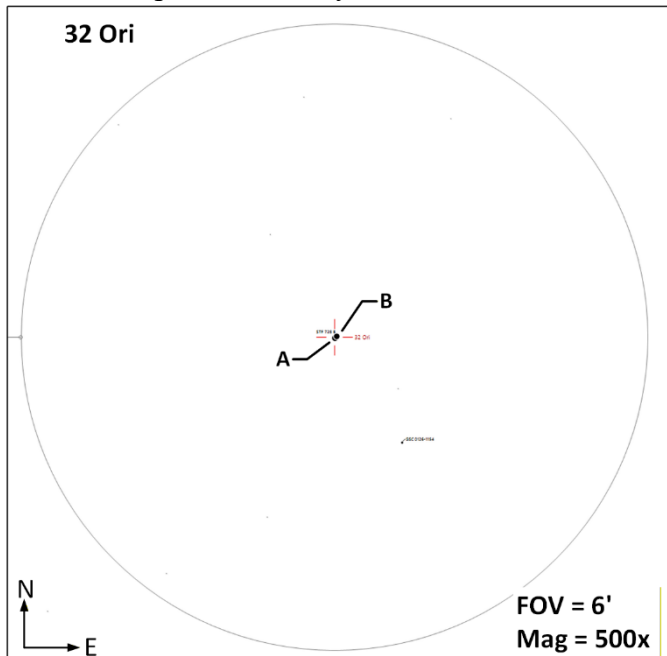
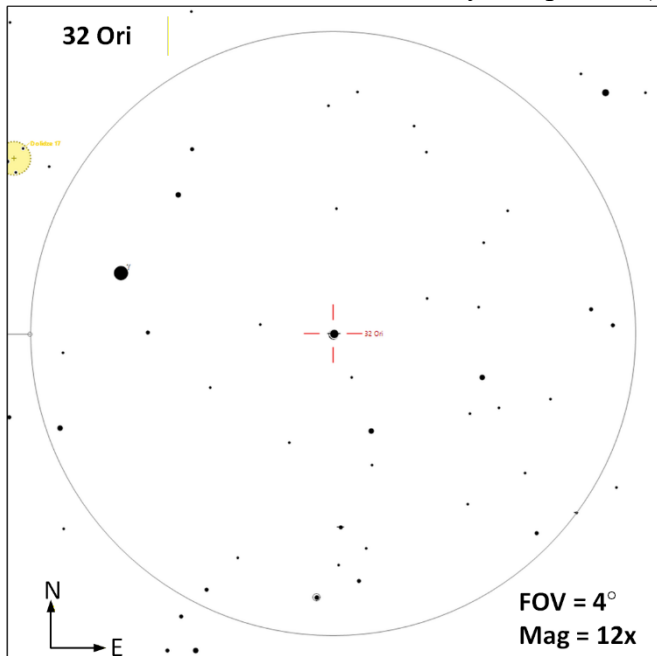


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Meissa (MS-6 | $M=3.5, 5.4, 10.7, 9.6, 9.2, 12.9$ | $\text{Sep AB}=4.1''$, $\text{AC}=29''$, $\text{AD}=78''$, $\text{AE}=151''$, $\text{AF}=62''$ $\text{BC}=32''$ | $\text{PA AB}=43^\circ$, $\text{AC}=185^\circ$, $\text{AD}=272^\circ$, $\text{AE}=279^\circ$, $\text{AF}=325^\circ$, $\text{BC}=189^\circ$) – This star system represents the Head of Orion. Meissa is 1,100 ly from earth and has 6 components that can be viewed in most telescopes. Five of the components are known to be physically associated with each other. An amazing system!

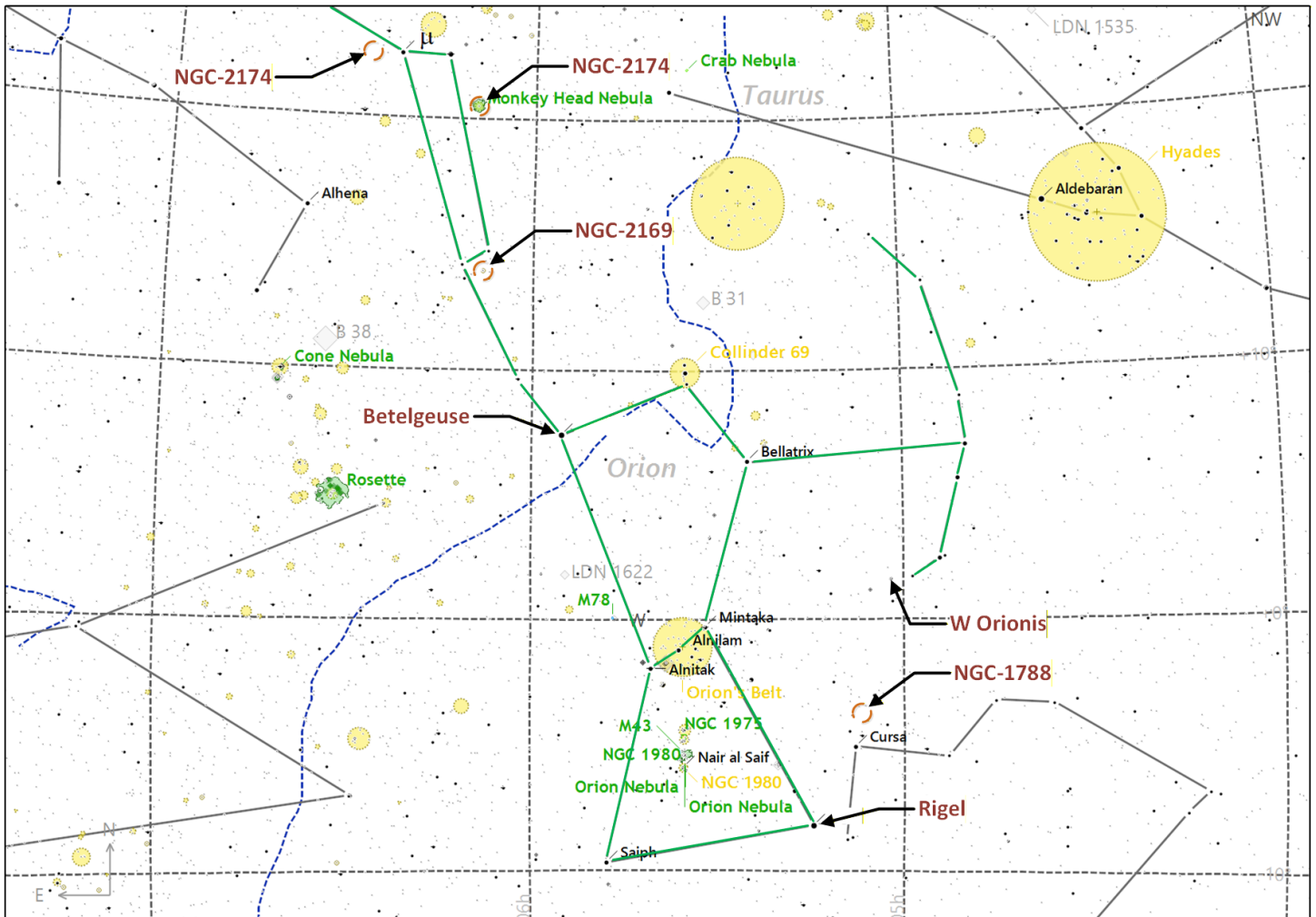


32 Orionis (DS | $M=4.4, 5.7$ | $\text{Sep}=1.3''$ | $\text{PA}=44^\circ$) – Located just to the left of the right arm star of Orion (Bellatrix), you can locate this double star system. The primary component (A) is a blue giant that has 3 times the diameter of our sun. The secondary component (B) has an orbital period of 614 years.



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Orion Remaining Constellation Region

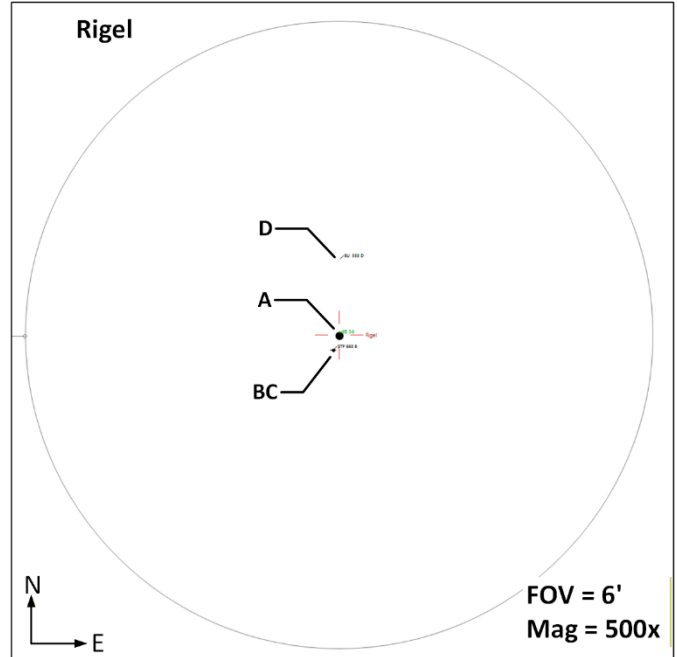
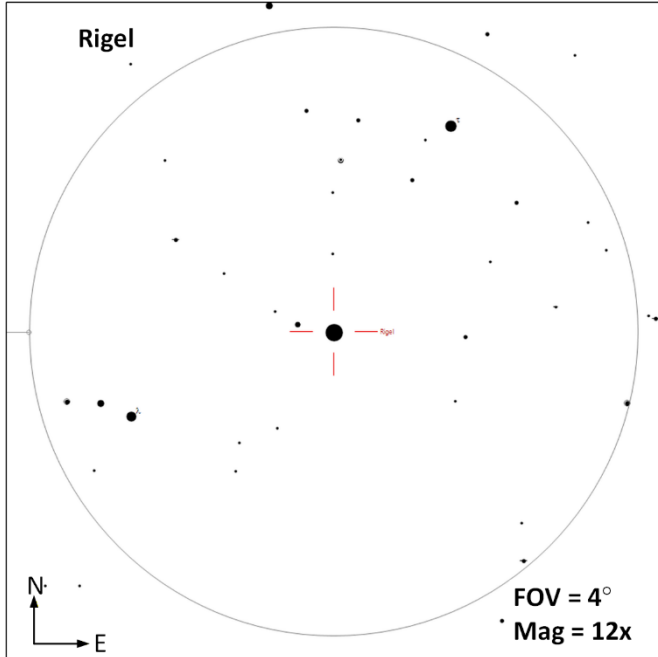


Objects Summary

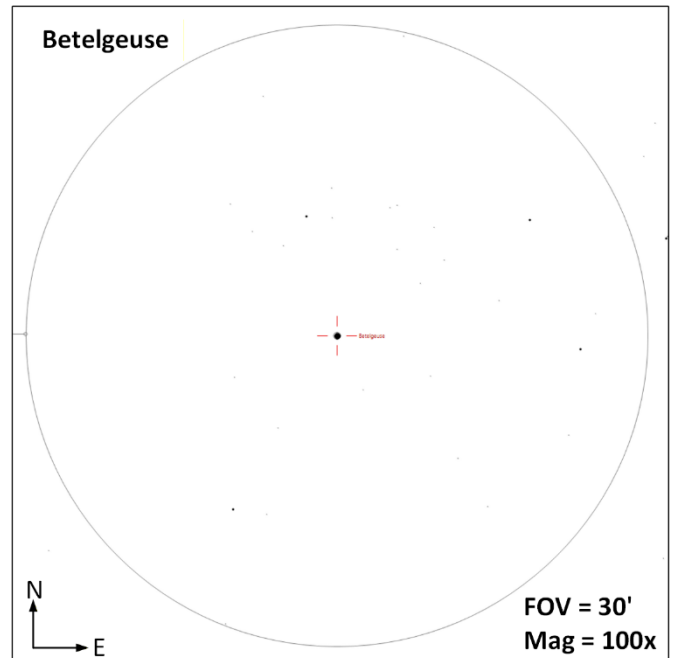
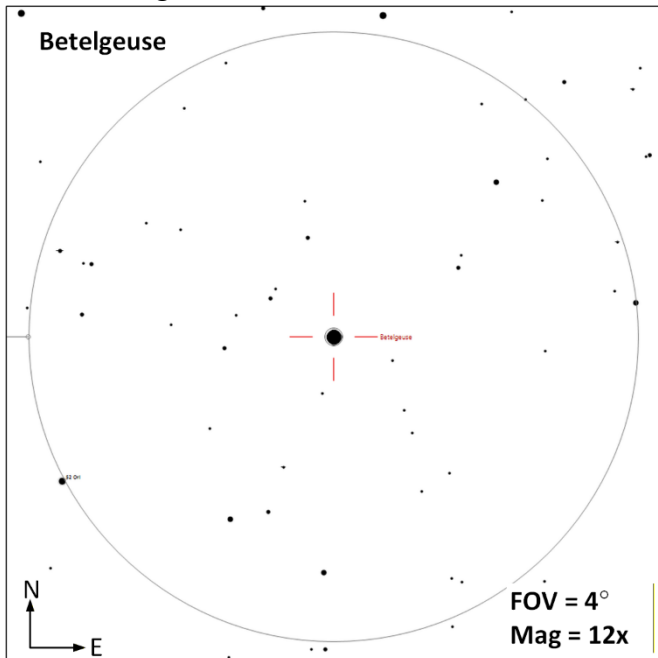
Object (Type)	Ref	Aliases	Stats
Rigel (DS)	1 , 2	SAO-131907, HIP 24436, 19 Ori, HR 1713, HD 34085, STF 558, ADS 3823, Beta Orionis, β Ori	M=0.30, 6.8 Sep=9.4" PA=204° Optical double
Betelgeuse (CS)	1	SAO-11372, HIP 27989, HR 2061, HD 39801, Alpha Ori, 58 Ori, ADS 4506, α Ori	Mag Range = 0.4 to 1.3 Period = 5.7 yrs
NGC-1788 (RN)	1	LBN 916, Cosmic Bat	M=9.0 Size= 8' SB=22.1 Comet Shape
NGC-2169 (AS, OC)	1	"37" Cluster, "LE" Cluster, CR 38, CR 83	M=5.9 Size=7' SB=18.8
NGC-2174, 75 (OC, EN)	1 , 2	Monkey Head Nebula, Sh 2-252. Cr 84, OCL 476	M=6.8 Size=40' SB=23.4
W Ori (CS)	1	SAO-112406, HIP 23680, HR 1648	Mag Range = 4.4 to 6.9 Period=7 months

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Rigel (DS | $M=0.3, 6.8$ | $\text{Sep}=9.4''$ | $\text{PA}=204^\circ$) – This is a blue supergiant 18-24 times as massive as our sun and over 100,000 times as luminous. It is expected to have 3 companion stars, however only one is visible in ground based telescopes. Although there are technically four components in this system, only two (A, AB) will likely be visible in telescopes due to the fact that the D component is Mag 15.4 and the BC components are so close to each other ($0.1''$).

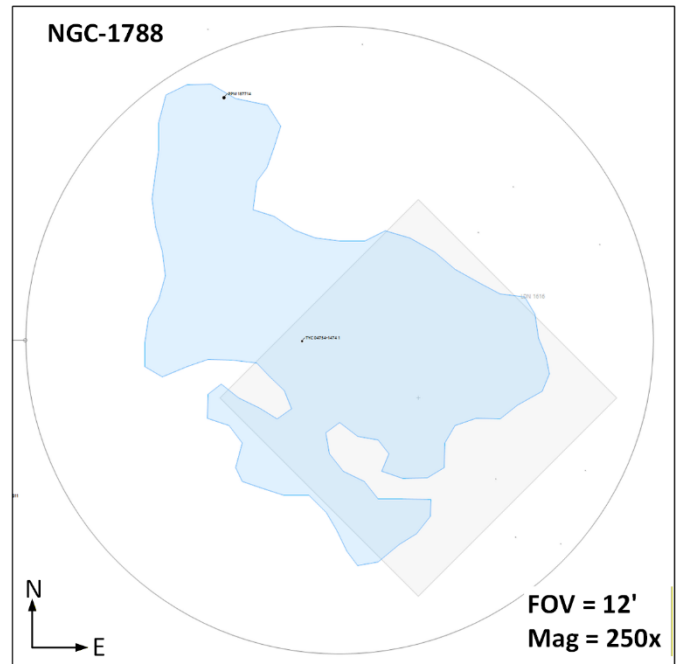
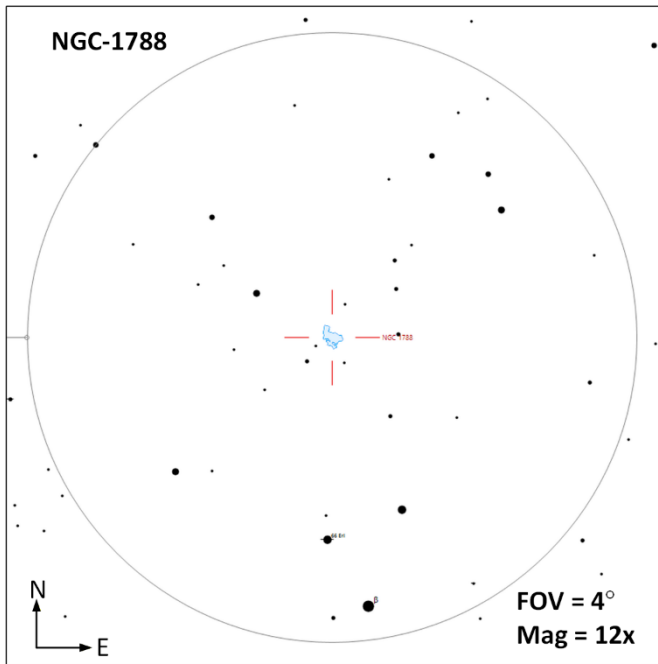


Betelgeuse (CS | Mag Range = 0.4 to 1.3 | Period = 5.7yrs) – A red supergiant located 500 ly from Earth, it is the second brightest star in the Orion constellation and has a radius of about 700 times that of our sun.

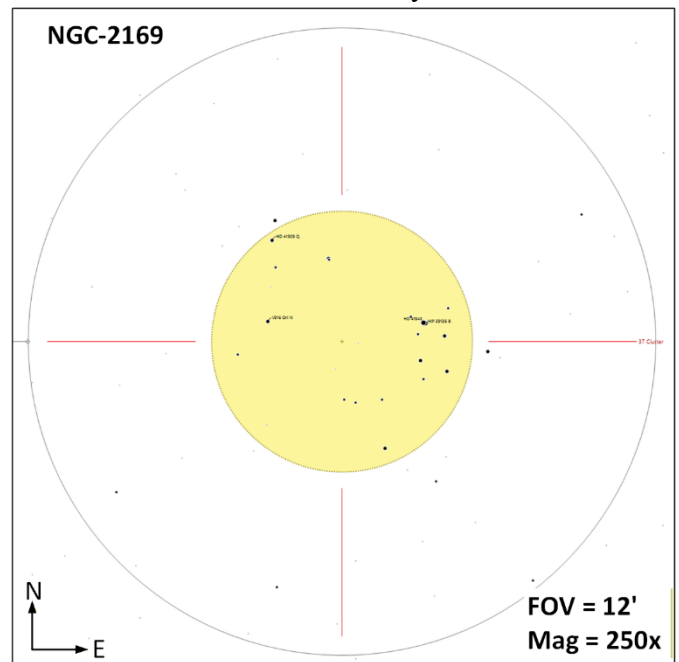
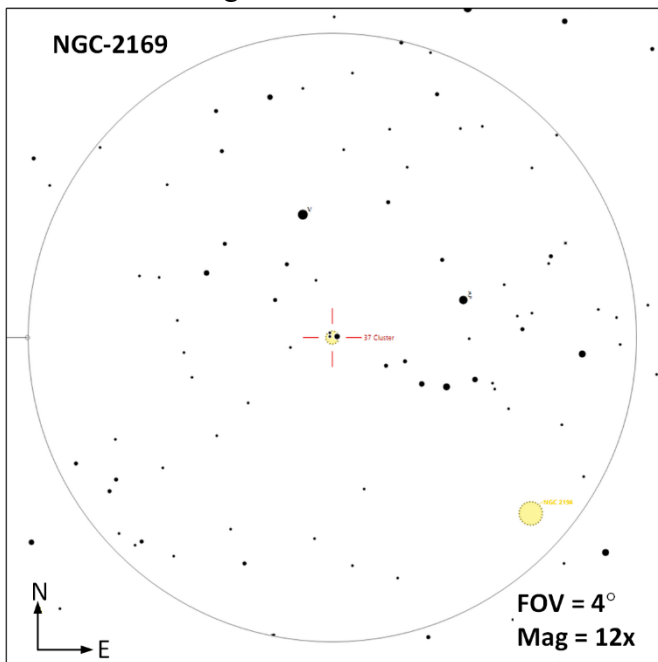


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NGC-1788 (RN | M=9.0 | Size=8' | SB=22.1 |) – A dim [reflection nebula](#) located 1,300 ly from Earth and may require a larger telescope to identify.

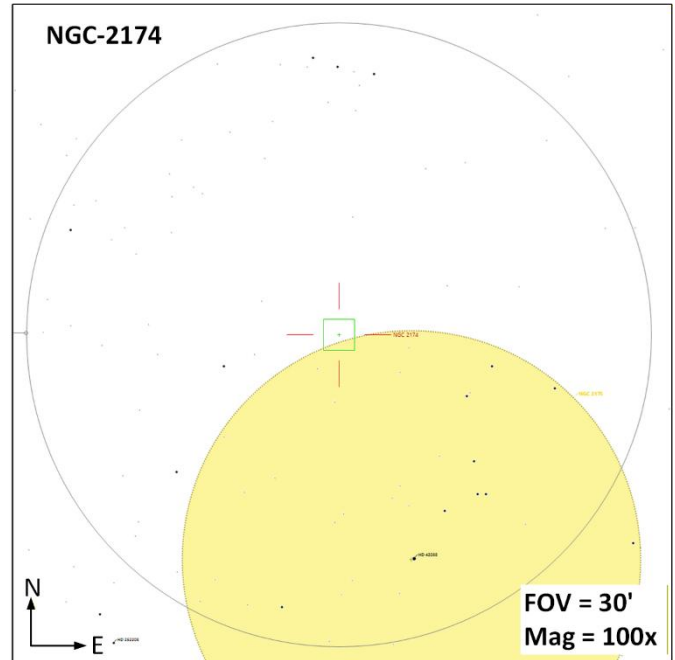
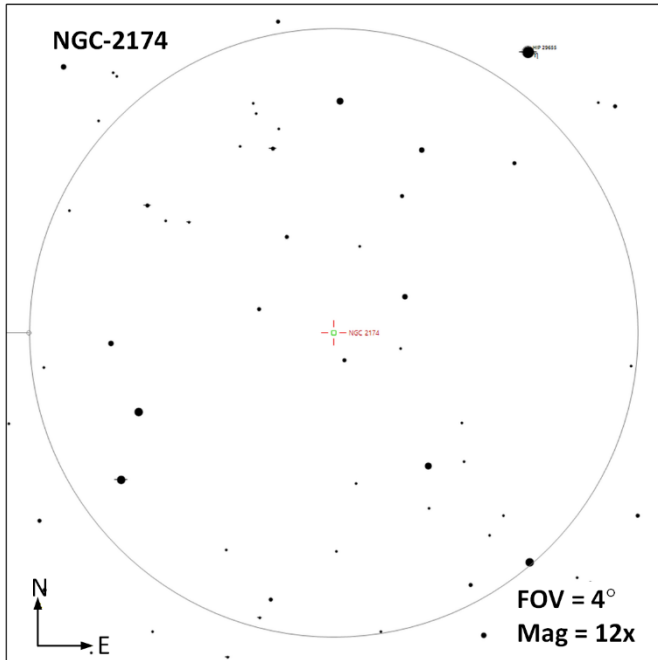


NGC-2169 (AS, OC | M=5.9 | Size=7' | SB=18.8 |) – Known as the “37” open cluster the unique arrangement of stars is something to behold. This cluster contains about 30 stars and is located 3,400 ly from Earth.

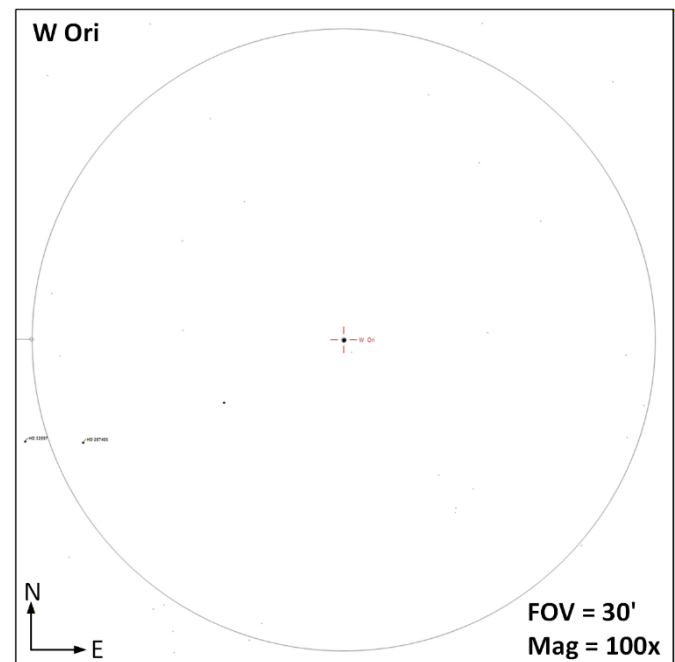
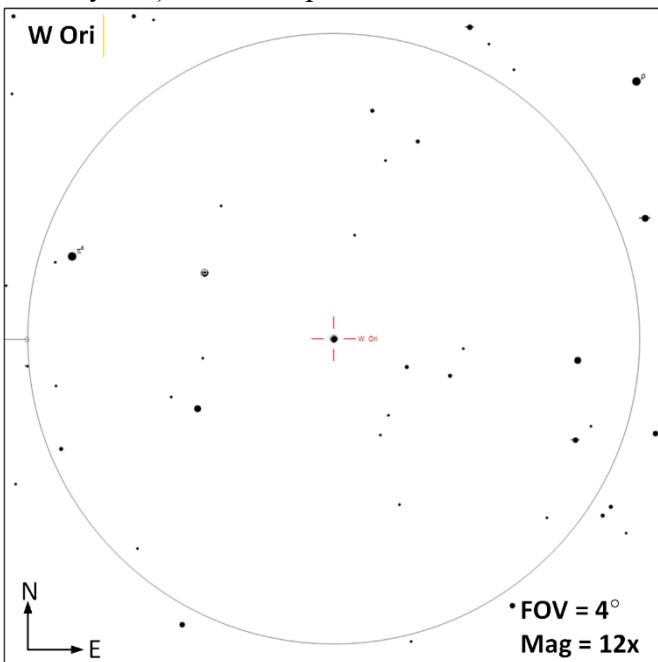


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NGC-2174 (OC, EN | M=6.8 | Size=40' | SB=23.4) – The Monkey Head Nebula is a dim nebula that contains an open star cluster. The nebula is 1,370 ly from earth and is 16 ly in diameter.



W Orionis (CS | Mag Range = 4.4 to 6.9 | Period = 7 months) – A carbon star 1,300 ly from earth the primary variability of magnitude is from 4.4 to 6.9 over a 212 day cycle. A long secondary period of 2,450 days(close to seven years) is also suspected for this star.



Constellation Guide

References, Resources and Tools used to create this document

The resources listed below were utilized to generate this document.

References

- Books
 - [Objects in the Heavens](#): Peter Birren
 - [Touring the Universe through Binoculars](#): Philip Harrington
 - [The Deep Sky](#): Philip Harrington
 - [Double and Multiple Stars and How to Observe Them](#): James Mullaney
 - [Sky Spot](#) Books
 - Bright Telescopic Objects: Brent Watson
 - Select Double Stars: Brent Watson
 - Overlooked Objects: Bret Watson
- Asterisms
 - Astronomical League: [Asterisms observing program](#) List
 - Asterisms: Demeiza Ramakers
 - [Pattern Asterisms](#): John Chiravalle
 - Milwaukee Astronomical Society: [Binocular Asterisms](#)
 - Deep-Sky.co.uk: [Observing Asterisms](#) (David Ratlege)
 -
- [Saguaro Astronomy Club](#)
 - Asterisms List
 - [110 Best of the NGC](#)
 - Red Stars List
- Online
 - [Wikipedia](#)
 - The Garden Astronomer: [Double, Multiple, and Special Star Observations List](#)
 - Sky & Telescope: [Colored Double Stars, Real and Imagined](#)
 - [In-The-Sky.org](#)
 - [Constellation-guide.com](#)

Applications

- [SkyTools](#) 4.1 Visual Professional
- [AstroPlanner](#) Version 2.4
- [Cartes du Ciel](#) Version 4.3
- [Sky Safari](#) Pro 7
- Microsoft Office Home and business 2021 - Word
- Microsoft Visio Professional 2021
- [IrfanView](#) Version 4.72