

Constellation Guide

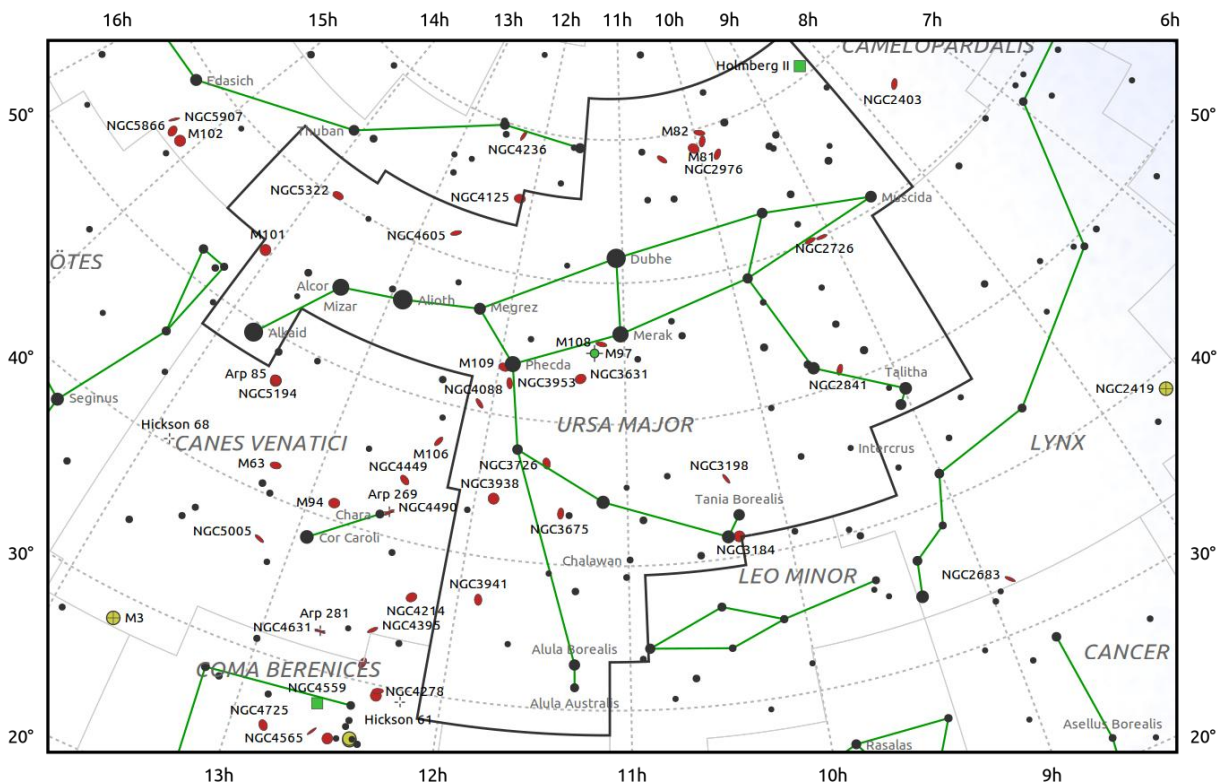
Ursa Major (UMa)

Evening Visibility: **February - April**

Online Information: [Ursa Major](#)

More Online Information: [Mizar](#), [NGC-5308](#), Gas Pump Handle, STF-1831, [M-101](#), [NGC-5485](#), [NGC5486](#), NGC-5484, Eiffel Tower, [NGC-4605](#), [M-40](#), [NGC-3972](#), [NGC-3977](#), [NGC-3982](#), [M-109](#), [NGC-4026](#), [NGC-4088](#), [NGC-4157](#), [NGC-3877](#), [65 UMa](#), [NGC-3941](#), [Alula Australis](#), [NGC-3184](#), [NGC-3675](#), STF-1520, [M-108](#), [M-97](#), STAR 19, VY UMa, [M-82](#), [M-81](#), [NGC-3077](#), [23 UMa](#), [NGC-3079](#), [NGC-2841](#), STF-1321

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



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Magnitude scale: ● 5.0 ● 4.0 ● 3.0 ● 2.0 ● 1.0

— The Equator — Ecliptic Plane — Galactic Plane

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

Constellation Guide

Constellations Objects Summary

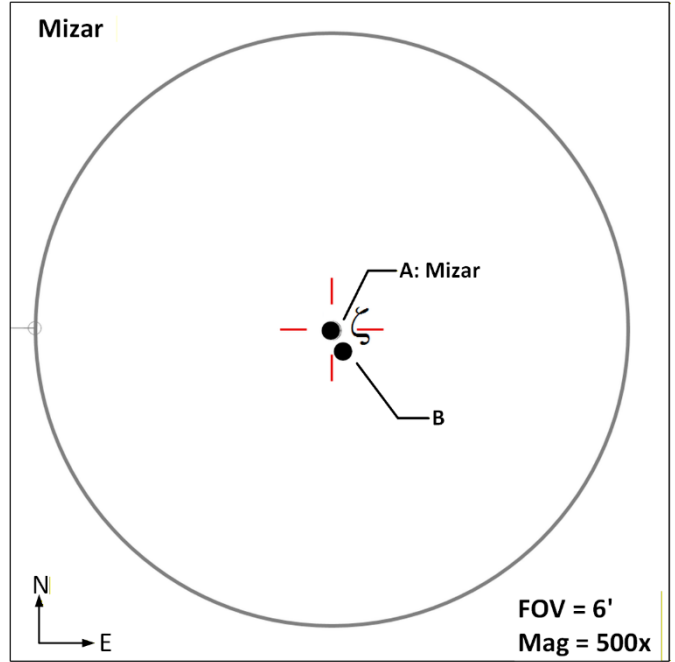
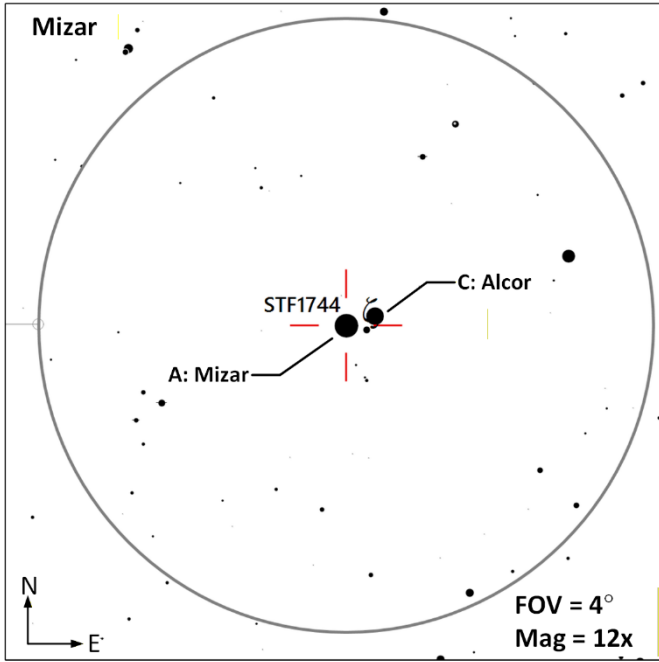
Object (Type)	Ref	Aliases	Stats
Mizar (MS-3)	1 , 2	SAO-028737, HIP 65378, 79 Uma, HR 5054, HD 116656, STF 1744, ADS 8891, Zeta Ursae Majoris, ζ CMa, Mizat, Mitsar	AB M=2.2, 3.9 Sep=14.4" PA=153° AC M=2.2, 4.0 Sep=715.5" PA=73°
NGC-5308 (G)	1	UGC 8722, PGC 48860, MCG 10-20-29, CGCG 295-12	M=12.5 Size=3.7' x 0.7' SB=22.2 MC=S0
Gas Pump Handler (AS)		ALAst47	Size=1 deg Stars=10 Ref Star: SAO-028832, HIP 66634, 82 UMa
Messier 101 (G)	1	Pinwheel Galaxy, NGC-5457, Arp 26, PGC 50063, VV 456, M-102	M=7.9 Size=29'x27' SB=23.8 MC=SABc
STF-1831 (MS-3)	1	SAO-029074, HIP 69711, HD 125229, ADS 9191	AB M=7.2, 9.6 Sep=5.7" PA=138° AC M=7.2, 6.7 Sep=112" PA=219°
NGC-5485 Group (NGC 5184, 5185, 5186)			
NGC-5485 (G)	1	UGC 9033, PGC 50369, MCG 9-23-37	M=11.4 Size=2.3' x 1.9' SB=21.6 MC=S0
NGC-5486 (G)	1	UGC 9036, PGC 50383, MCG 9-23-38	M=13.2 Size= 1.5' x 0.9' SB=22.2 MC=Sm
NGC-5484 (G)		PGC 50338, CGCG 272-29	M=14.7 Size=0.8' x 0.7' SB=22.7 MC=E2
Eiffel Tower (AS)		Ferrero 6	Size=28'x20' Stars= ?? Ref Star: SAO-028669, HIP 64309
NGC-4605 (G)	1	UGC 7831, PGC 42408, MCG 10-18-74, CGCG 293-31, IRAS 12378+6152, I-254	M=10.9 Size=6.0'x2.4' SB=22.4 MC=SBc
Messier 40 (DS)	1 , 2	SAO-028353, HD 238107, Winnecke 4, WNC 4	AB M=9.7, 10.2 Sep=53" PA=76°
NGC-3972 Group (NGC 3972, 3977, 3982)			
NGC 3972 (G)	1	UGC 5904, PGC 37466, MCG 9-20-32, CGCG 269-16	M=13.1 Size=3.7' x 1.0' SB=23.1 MC=SA(s)bc
NGC-3977 (G)	1	NGC-3980, UGC 6909, PGC 37497, MCG 9-20-34	M=13.4 Size=1.5' x 1.4' SB=22.8 MC=(R)SA(rs)ab
NGC-3982 (G)	1	UGC 6918, PGC 37520, MCG 9-20-36, CGCG 269-19	M=12.0 Size=1.7' x 1.5' SB=21.6 MC=SAB(r)b
Messier 109 (G)	1	Vacuum Cleaner Galaxy, NGC-3992, UGC 6937, PGC 37617, MCG 9-20-44	M=9.8 Size=7.6'x4.7' SB=23.3 MC=Sbc
NGC-4026 (G)	1	UGC 6985, PGC 37760, MCG 9-20-52, CGCG 269-29, I-223	M=10.7 Size=5.2'x1.3' SB=12.4 MC=S0
NGC-4088 (G)	1	UGC 7081, PGC 38302, MCG 9-20-89, CGCG 269-33, Arp 18, VV 357, I-206	M=11.2 Size=5.8'x2.2' SB=22.6 MC=SABc
NGC-4157 (G)	1	UGC 7183, PGC 38795, CGCG 269-38	M=11.3 Size=8.0' x 1.1' SB=22.3 MC=SAB(s)b
NGC-3877 (G)	1	UGC 6745, PGC 36699, MCG 8-22-2, CGCG 243-4, IRAS 11434+4746, I-201	M=12.1 Size=4.4'x0.8' SB=22.1 MC=Sc
65 UMa (MS-3)	1 , 2	SAO-043946, HIP 58117, V 399 UMa, HR 4561, HD 103498, BAG 46, ADS 8347, GC 16296	AB M=6.5, 9.0 Sep=0.3" PA=357° AB, C M=6.7, 8.3 Sep=3.8" PA=43° AB, D M=6.7, 7.0 Sep=63" PA=114° CD M=8.3, 7.0 Sep=62" PA=117°

Constellation Guide

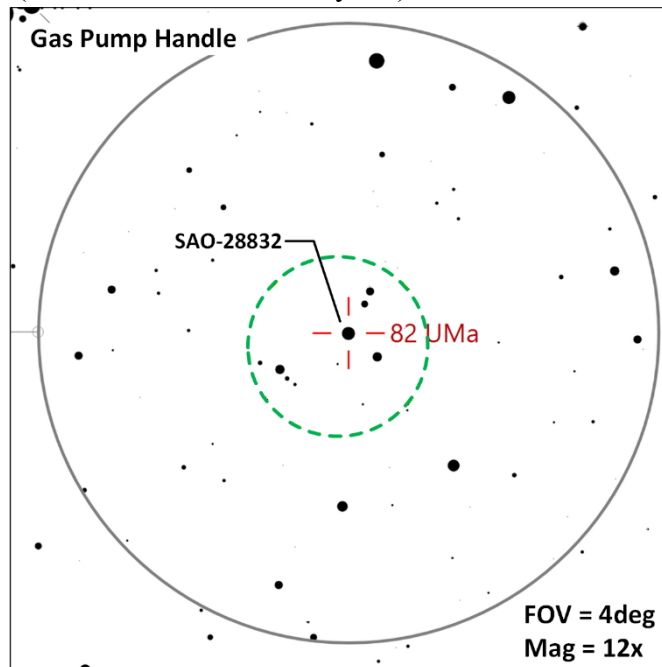
Object (Type)	Ref	Aliases	Stats
NGC-3941 (G)	1	UGC 6857, PGC 37235, MCG 6-26-51, CGCG 186-62, I-173	M=10.3 Size=3.5'x2.3' SB=21.2 MC=S0
Alula Australis (DS)	1 , 2	SAO-062484, HIP 55203, 53 UMa, HR 4375, HD 98230, STF 1523, ADS 8119, Xi ¹ UMa, ξ ¹ UMa	AB M=4.3, 4.8 Sep=2.6" PA=136°
NGC-3184 (G)	1	The Little Pinwheel Galaxy, UGC 5557, PGC 30087	M=10.4 Size=7.4'x6.9' SB=23.3 MC=SABc
NGC-3675 (G)	1	UGC 5439, PGC 35164, MCG 7-24-4, CGCG 214-5	M=10.0 Size=5.9'x3.1' SB=21.8 MC=Sb
STF-1520 (DS)	1	SAO-027970, HIP 55044, HR 4363, HD 97855, ADS 8108, GC 15484, Σ 1520	AB M=6.5, 7.8 Sep=12" PA=343°
Messier 108 (G)	1	Surfboard Galaxy, NGC-3556, UGC 6225, PGC 34030, MCG 9-18-98	M=10.0 Size=8.7'x2.2' SB=23.3 MC=Sc
Messier 97 (PN)	1	Owl Nebula, NGC-3587, ARO 25, VV 59	M=9.9 Size=3.4'x3.3' SB=21.2
STAR 19 (AS)		Broken Engagement Ring, The Crown	Size=20' Stars=10 Ref Star: SAO-027788, HIP 53036
VY UMa (CS)	1	SAO-015274, HIP 52577, HR 4195, HD 92839, VY Ursae Majoris	Mag Range: 5.9 to 7.0 Unknown Period
Messier 82 (G)	1	NGC-3034, Cigar Galaxy, Ursa Major A, UGC 5322, Cigar Galaxy, Ursa Major A, Arp 337	M=8.4 Size=11'x4' SB=21.1 MC= I0
Messier 81 (G)	1	NGC-3031, UGC 5318, Bode's Galaxy, PGC 28630	M=6.9 Size=27'x14' SB=22.0 MC= Sab
NGC-3077 (G)	1	UGC 5398, PGC 29146, The Garland	M=10.6 Size=5.4'x4.5' SB=22.7 MC=I0 pec
23 UMa (DS)	1 , 2	SAO-014908, HIP 46733, HR 3757, HD 81937, STF 1351, ADS 7402, h Ursae Majoris	AB M=3.7, 9.2 Sep=23" PA=267° AC M=3.7, 11.8 Sep=107" PA=232°
NGC-3079 (G)	1	UGC 5387, PGC 29050, CGCG 255-8	M=11.5 Size=7.9'x1.4' SB=22.7 MC=SBc
NGC-2841 (G)	1	Tiger's Eye Galaxy, UGC 4966, PGC 26412, MCG 9-16-5	M=10.1 Size=8.1'x3.5' SB=22.4 MC=SBb
STF-1321 (DS)	1	SAO-027178, HIP 45343, HD 79210, LHS 260, GJ 338, ADS 7251, GC 12752, Struve 1321, Σ 1321	AB 7.8, 7.9 Sep=17" PA=100° Period-2,000 y MC =M0V, K7V

Constellation Guide

Mizar (MS-3 | **AB** | M=2.2, 3.9 | Sep=14.4'' | PA=153° || **AC** | M=2.2, 4.0 | Sep=715.5'' | PA=73°) – Mizar (A component) and Alcor (C component) are a famous double star system. It is uncertain if these two stars are actually physically associated with each other. This is a much-celebrated binocular double and telescopes will reveal the B component associated with Mizar at a distance of 14''.

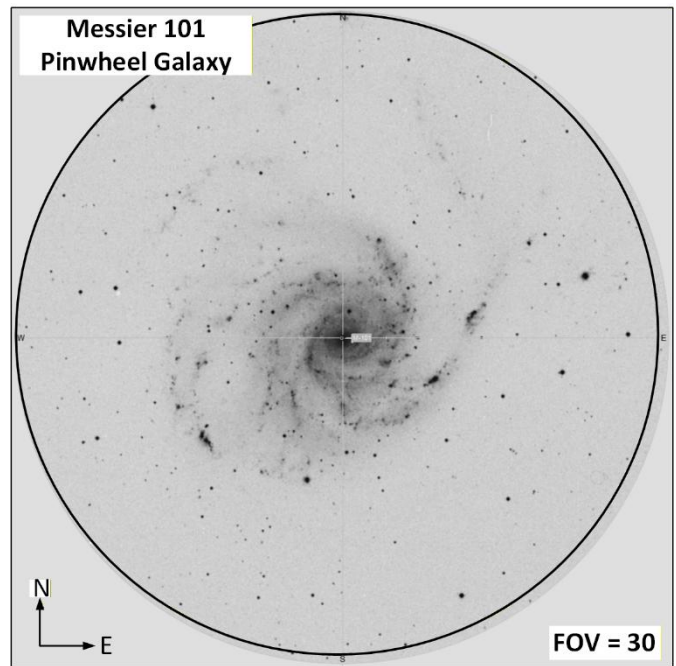
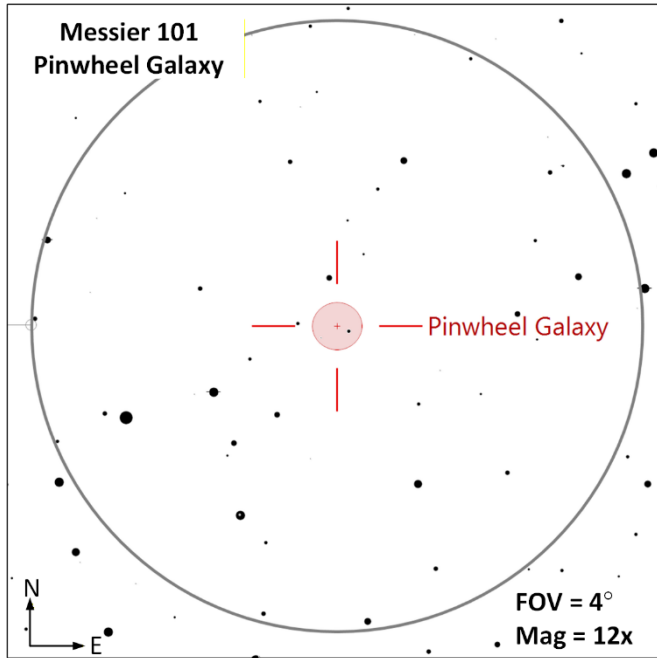


Gas Pump Handle (AS | Size=1 deg | Stars=10 || Ref Star: SAO-028832, HIP 66634, 82 UMa) – Reportedly this shape is easy to recognize (I don't see the handle myself).

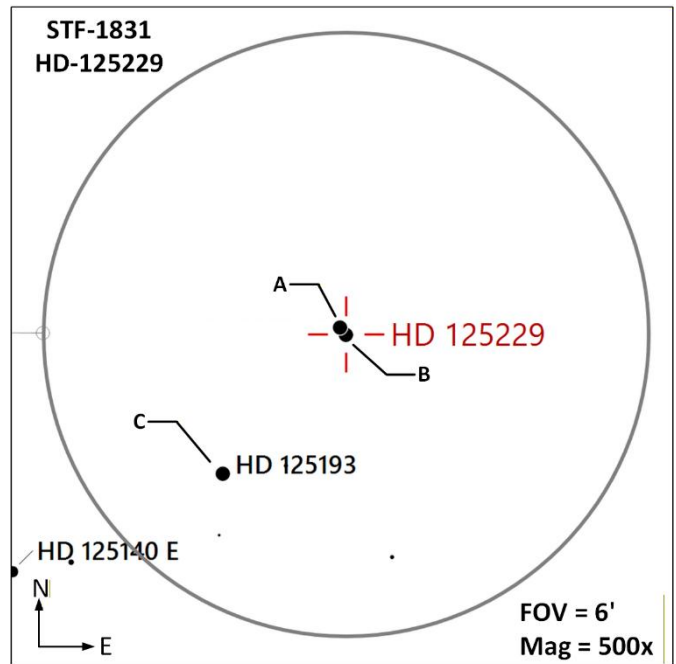
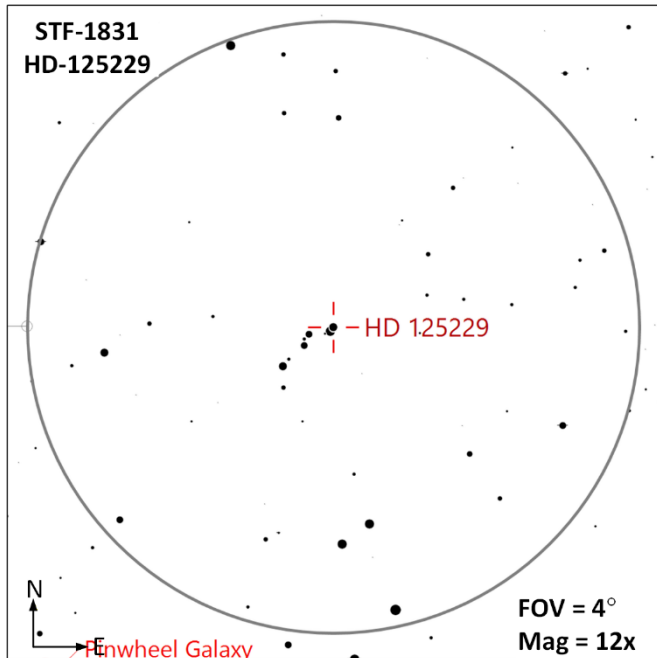


Constellation Guide

Messier 101 (G | M=7.9 | Size=29'x27' | SB=23.8 | MC=SABc) – The Pinwheel Galaxy (NGC-5457) is a face-on spiral galaxy located 21 million light-years from earth. Due to its larger angular diameter in the sky, M-101 has a low surface brightness, darker skies are required to view this object and smaller instruments probably see only the core of this galaxy. It is suspected that this is also known as M-102 (a duplicate entry).



STF-1831 (MS-3 | AB | M=7.2, 9.6 | Sep=5.7'' | PA=138° || AC | M=7.2, 6.7 | Sep=112'' | PA=219°) – This triple star system is located 509 ly from our solar system. The B component orbits at about a distance of 905 AU from the A component.



Constellation Guide

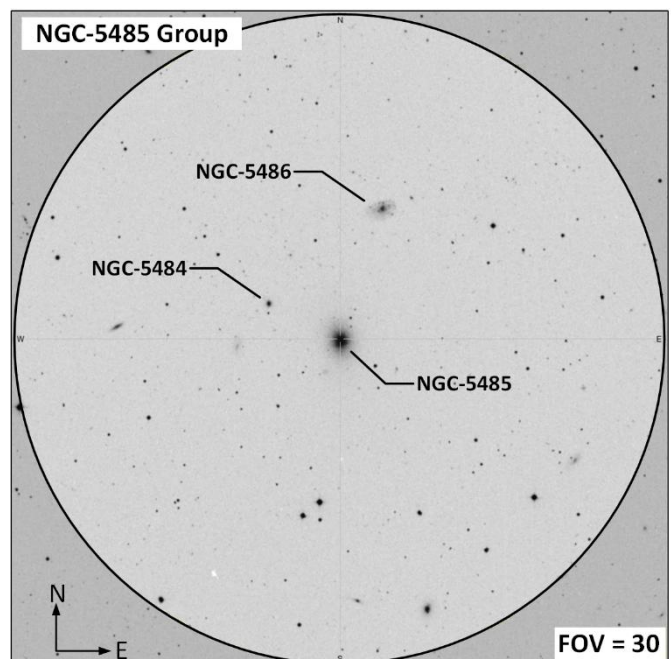
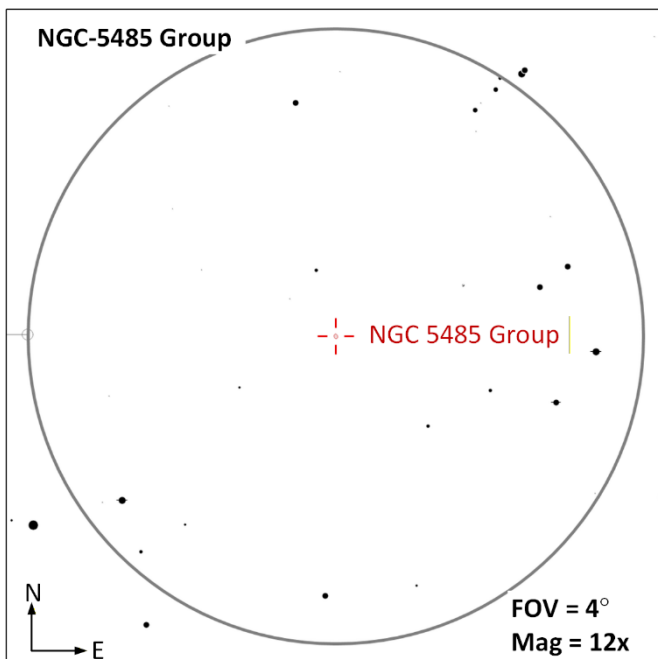
NGC-5485 Group of Galaxies

The NGC 5485 group of galaxies are identified in [Kemble's Fifty-To-The-Pole list](#), a list of 50 objects visible in the northern hemisphere these objects are located within 50° of the celestial north pole that should be visible with telescopes of 8" or more aperture. There doesn't exist much information on this particular set of galaxies, but one reference (Sky Safari Pro) indicated that NGC-5484 and NGC-5486 are companion galaxies to NGC-5485. This trio of galaxies can all be seen in a 30' field of view. Kemble describes this trio of galaxies as "An especially satisfying group of galaxies"

NGC 5485 (G | M=11.4 | Size=2.3' x 1.9' | SB=21.6 | MC=S0 |) – Estimated to be 90 million light years away. This galaxy has been classified as spiral and lenticular (characteristics of both spiral and elliptical galaxy) by different sources.

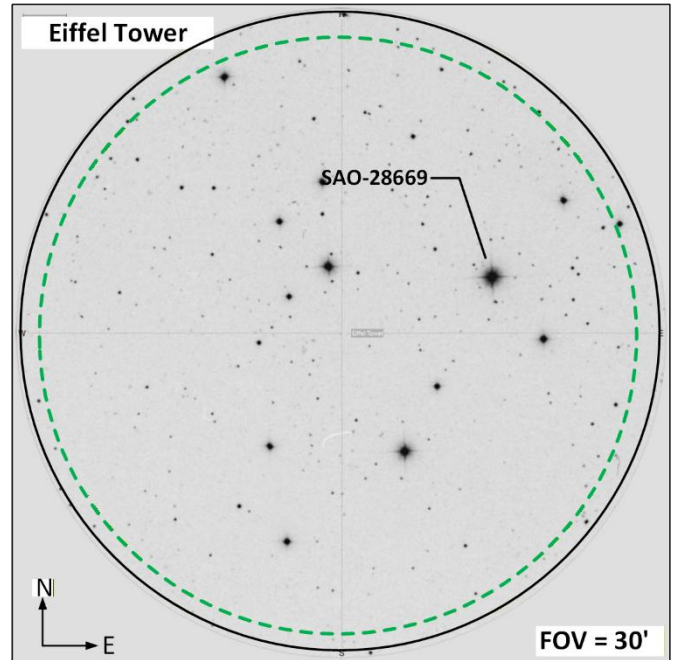
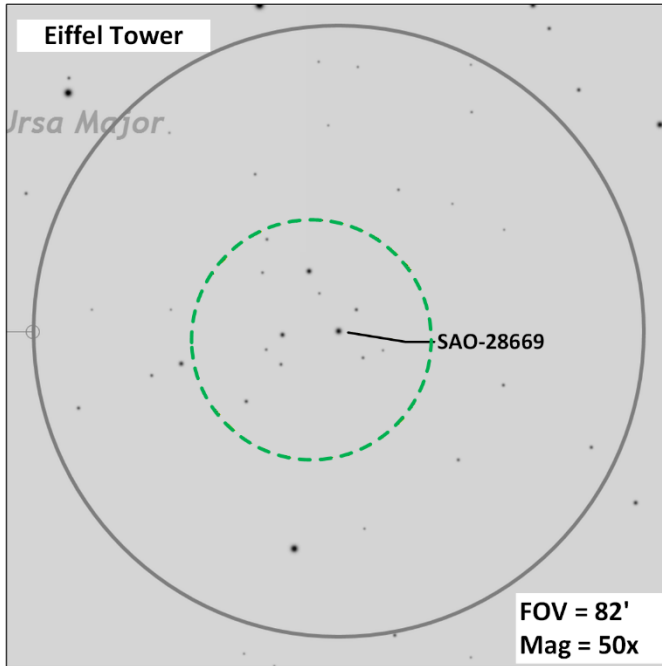
NGC 5486 (G | M=13.2 | Size= 1.5' x 0.9' | SB=22.2 | MC=Sm |) – Estimated to be 110 million light years away and is reported as "extremely faint" in Kemble's description.

NGC 5484 (G | M=14.7 | Size=0.8' x 0.7' | SB=22.7 | MC= E2 |) – Estimated to be 93 million light years away. This elliptical galaxy appears as the smallest of the trio of galaxies in this field of view and will likely appear as a fuzzy star.

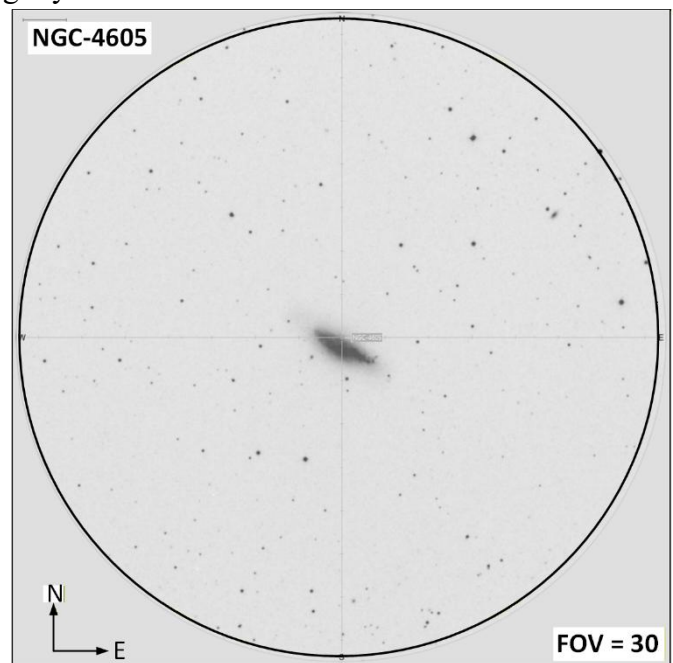
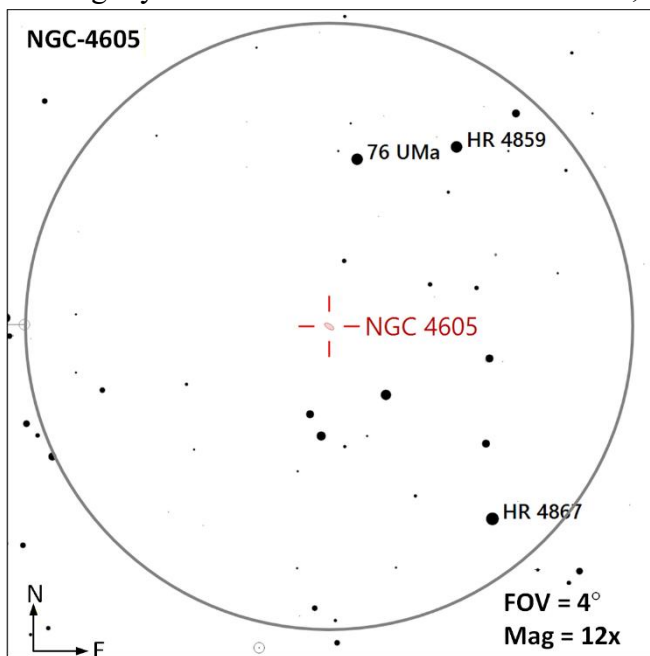


Constellation Guide

Eiffel Tower (AS | Size=28'x20' | Stars= ?? || Ref Star: SAO-028669, HIP 64309) – An active imagination may be required to identify the Eiffel Tower shape here since there are a lot of stars within and surrounding this object. Try to concentrate on the brightest stars to make out this shape.



NGC-4605 (G | M=10.9 | Size=6.0'x2.4' | SB=22.4 | MC=SbC) – A dwarf [barred spiral galaxy](#). Located 16 million light years from earth with a diameter of 27,540 light years.



Constellation Guide

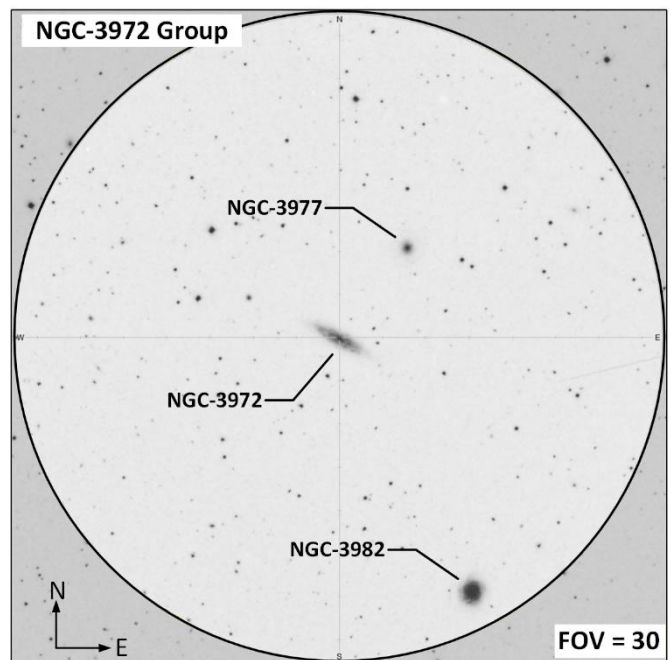
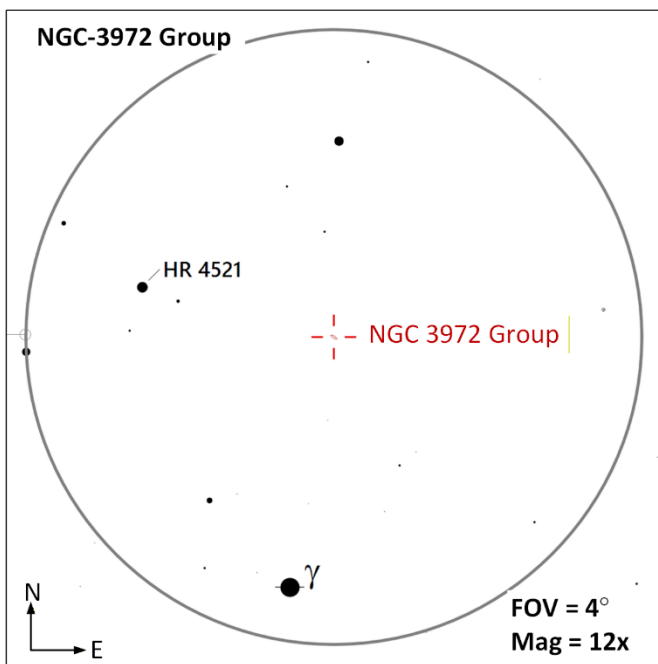
NGC-3972 Group of Galaxies

The NGC 3972 group of galaxies shown here appear within a 30' field of view. While NGC-3977 and NGC-3972 are associated with each other in the group listing of Holm 304, these galaxies are not physically associated with each other. However, both NGC-3972 and NGC-3982 are associated with the [M109 group](#) of galaxies (Also known as the NGC 3992 Group or Ursa Major Cloud), a group of about 50 galaxies located roughly 50 million light years away.

NGC 3972 (G | M=13.1 | Size=3.7' x 1.0' | SB=23.1 | MC=SA(s)bc |) – Estimated to be 66 million light years away and is associated with the [M109 group](#) of galaxies.

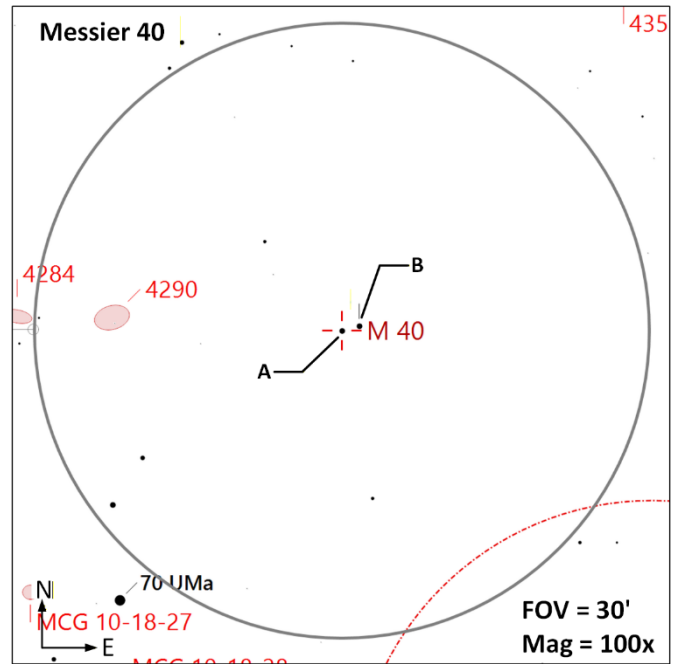
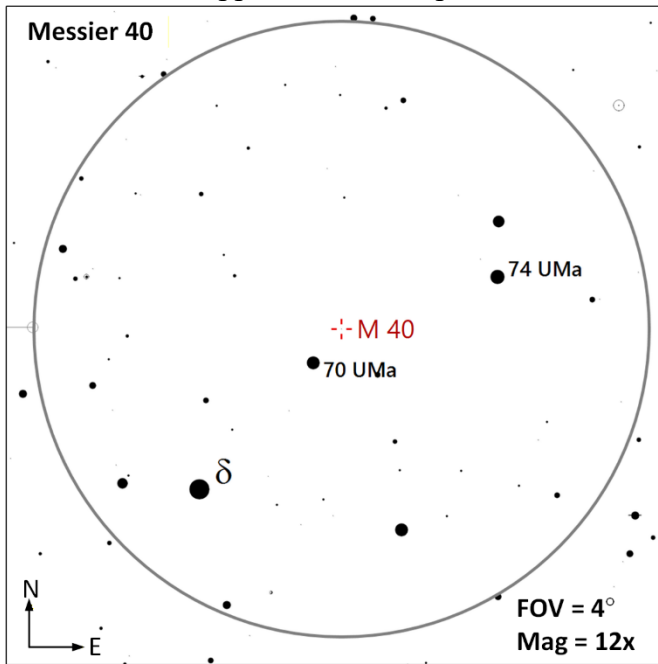
NGC 3977 (G | M=13.4 | Size=1.5' x 1.4' | SB=22.8 | MC=(R)SA(rs)ab |) – This galaxy is estimated to be 287 million light years away and is listed twice in the NGC catalog as NGC-3977 and NGC-3980. This galaxies is not physically associated with the other two galaxies in the field of view but just happens to be in the line of sight.

NGC 3982 (G | M=12.0 | Size=1.7' x 1.5' | SB=21.6 | MC=SAB(r)b |) – Estimated to be 72 million light years away and is about 1/3 the size of the Milky Way. This galaxy is associated with the [M109 group](#) of galaxies.

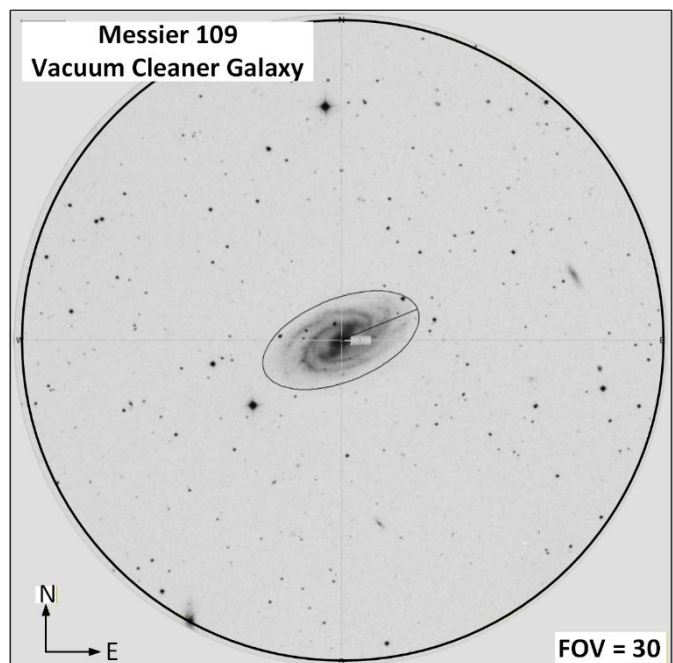
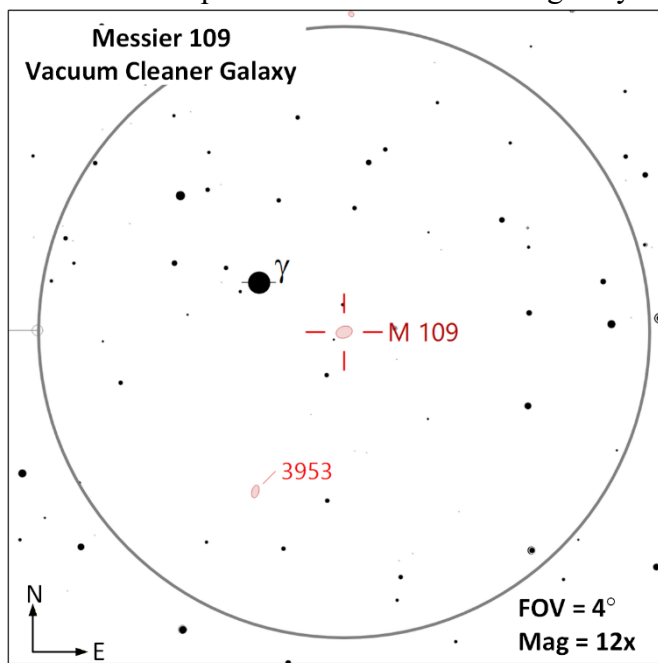


Constellation Guide

Messier 40 (AB | M=9.7, 10.2 | Sep=53" | PA=76°) – This double star was cataloged by [Messier](#) when searching for a nebula reported by [Johannes Hevelius](#) in the area. [Burnham](#) stated that M-40 was one of the few real mistakes in the Messier catalog since the [Messier list](#) was developed to identify nebula. This system is 510 ly from earth and appears to be an optical double.

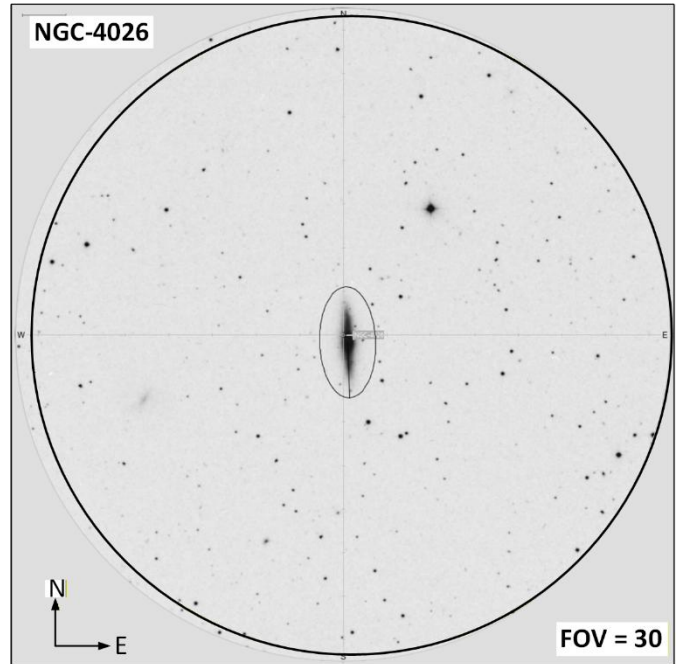
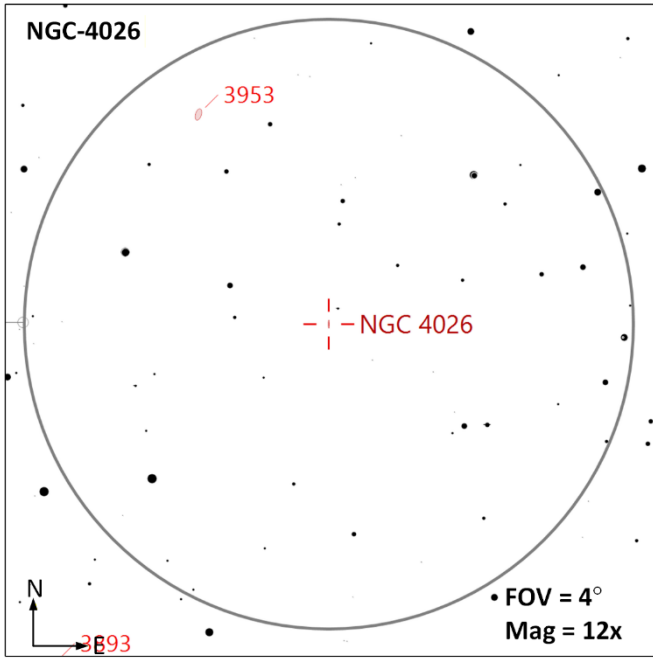


Messier 109 (G | M=9.8 | Size=7.6'x4.7' | SB=23.3 | MC=Sbc) – The Vacuum Cleaner Galaxy (NGC-3992) is a barred spiral galaxy located 67 million light-years from earth and will appear as a pear-shaped hazy spot in smaller telescopes. This galaxy is the brightest member of the [Ursa Major Cluster of galaxies](#). An aperture of 10" or more is required to see the bar in this galaxy.

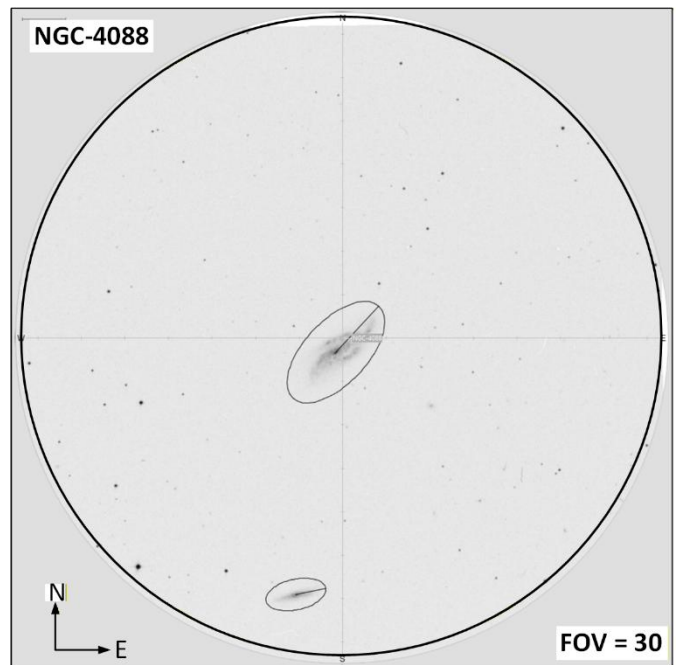
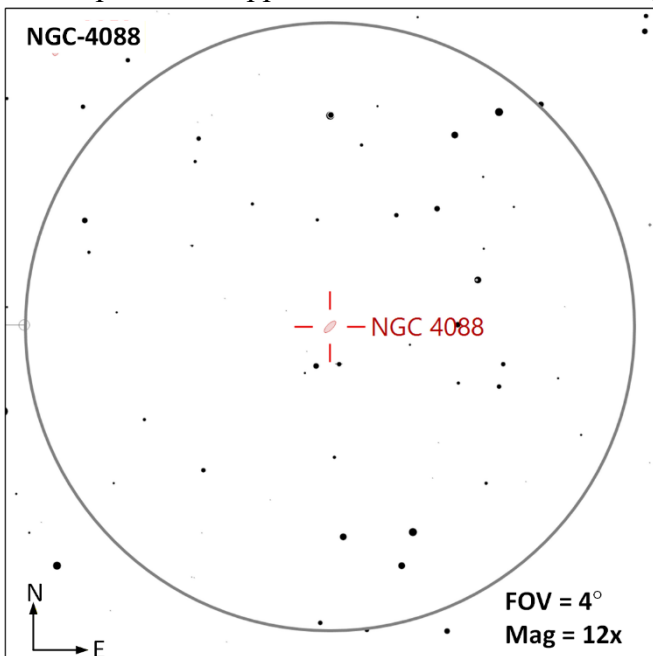


Constellation Guide

NGC-4026 (G | M=10.7 | Size=5.2'x1.3' | SB=12.4 | MC= S0) – A edge-on [lenticular galaxy](#) located 50 million light years from earth measuring 80,000 light years across. NGC-4026 is a member of the [M109 Group](#) of galaxies, the largest subgroup of the [Ursa Major Cluster](#) of galaxies

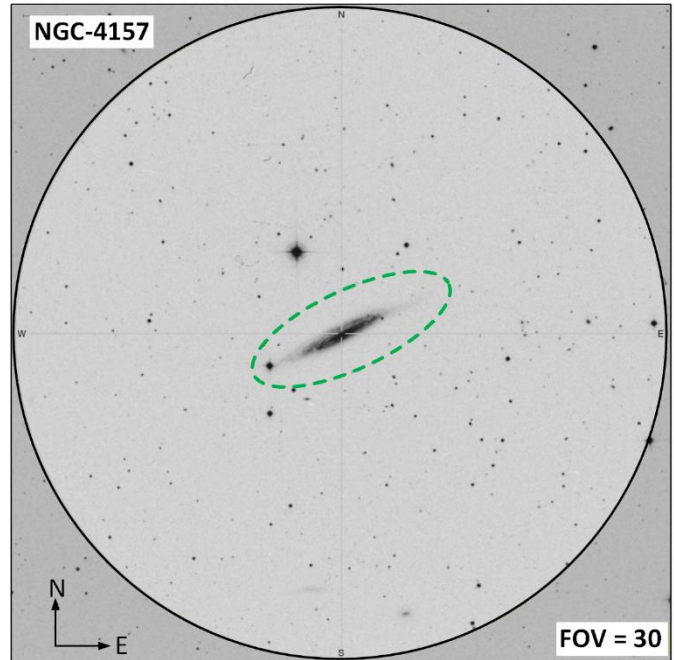
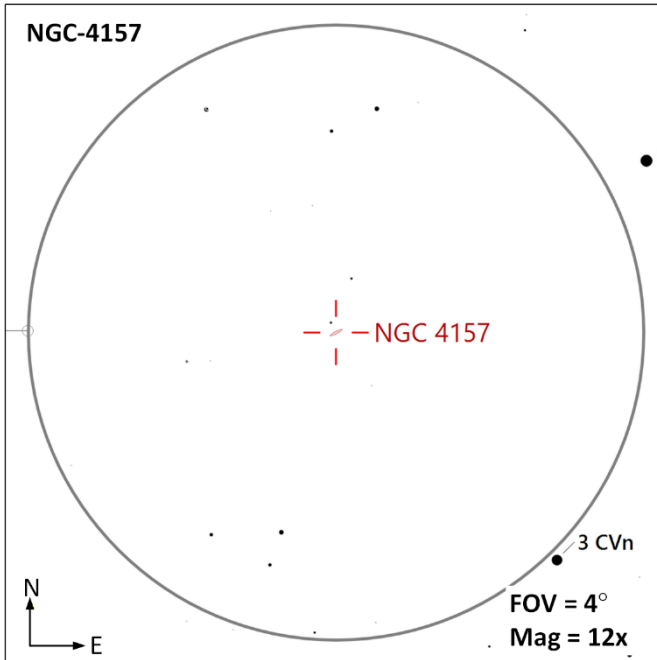


NGC-4088 (G | M=11.2 | Size=5.8'x2.2' | SB=22.6 | MC= SABc) – An [intermediate spiral galaxy](#) located 53 million light years from earth and a member of the [M109 Group](#) of galaxies. In larger telescopes one of the galaxies spiral arms appear to have a disconnected segment.

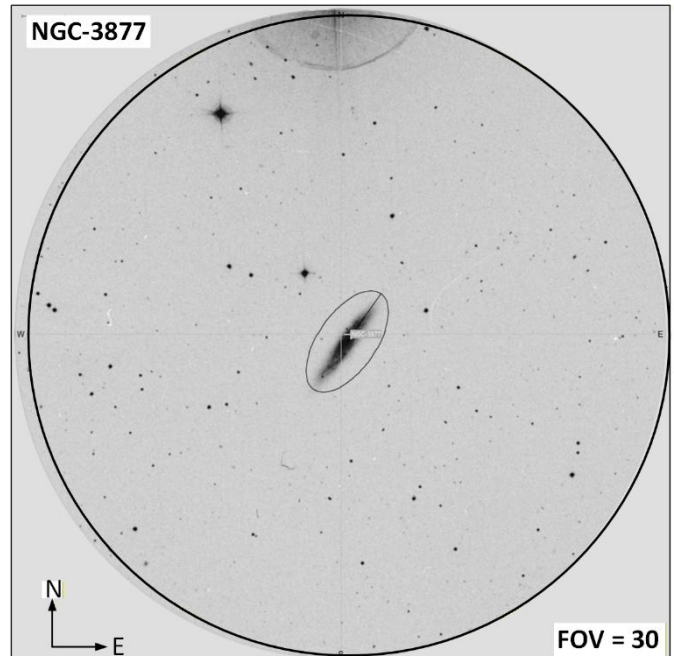
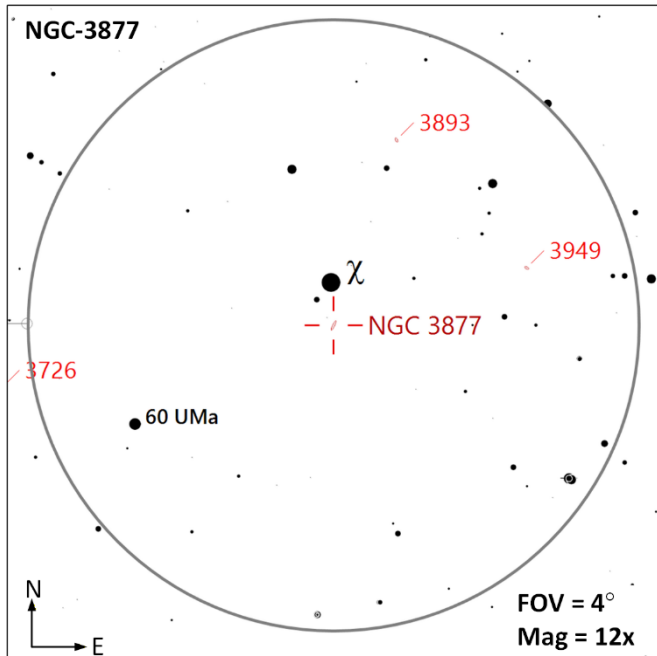


Constellation Guide

NGC-4157 (G | M=11.3 | Size=8.0' x 1.1' | SB=22.3 | MC=SAB(s)b |) – This galaxy appears as a thin needle of light with a noticeable bulge in the middle. This is a spiral galaxy located about 55 million light years away and has a diameter of about 125,000 light years with an estimated mass of 21 million solar masses.

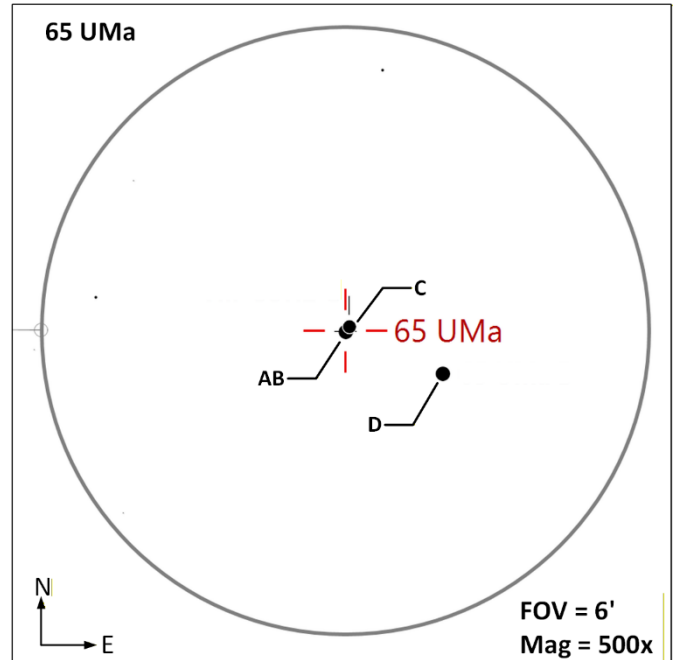
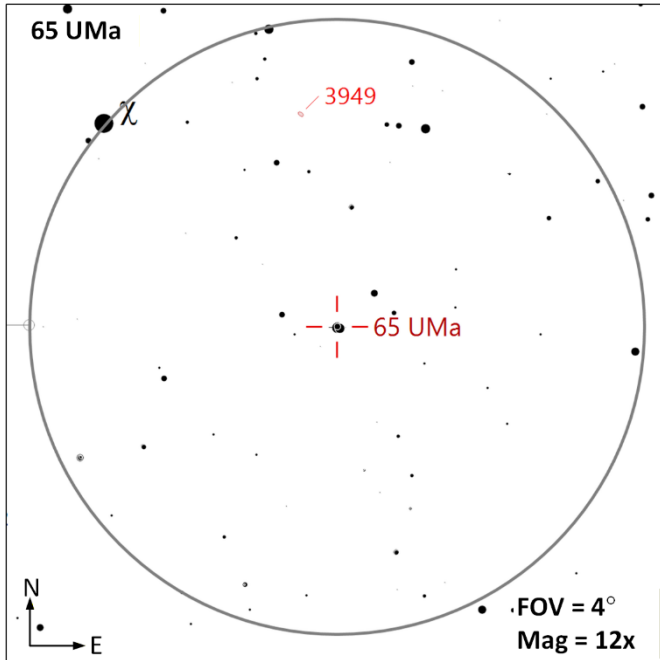


NGC-3877 (G | M=12.1 | Size=4.4'x0.8' | SB=22.1 | MC=Sc |) – A spiral galaxy located 51 million light years from earth. This galaxy located about 20' south of the fourth magnitude star Chi UMA. This galaxy is edge on and will show as a streak in telescopes (Polakis).

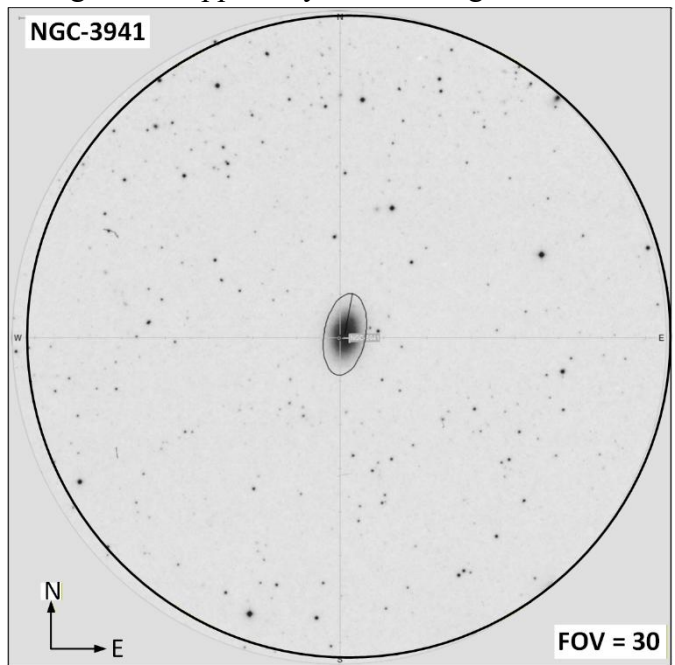
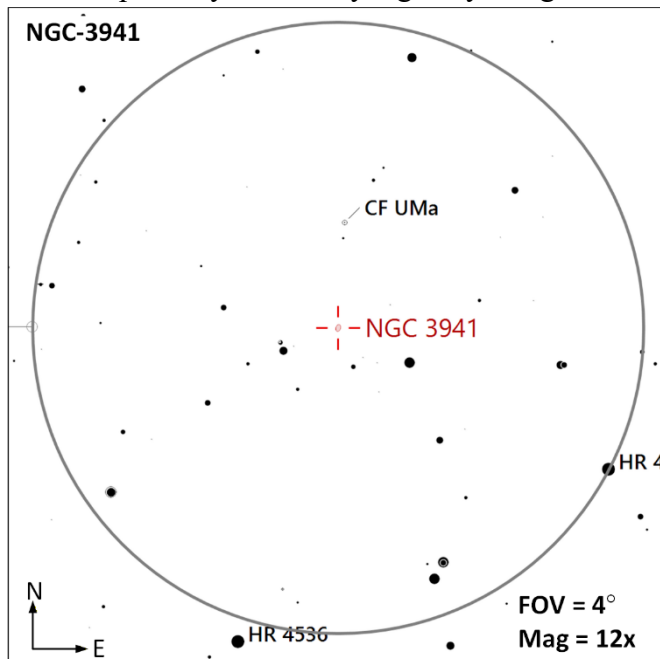


Constellation Guide

65 UMa (MS-3 **AB, C** | M=6.7, 8.3 | Sep=3.8" | PA=43° || **AB, D** | M=6.7, 7.0 | Sep=63" | PA=114° || **CD** | M=8.3, 7.0 | Sep=62" | PA=117°) – Actually a system with five stars but three are seen through a telescope. This system is 970 ly from earth.

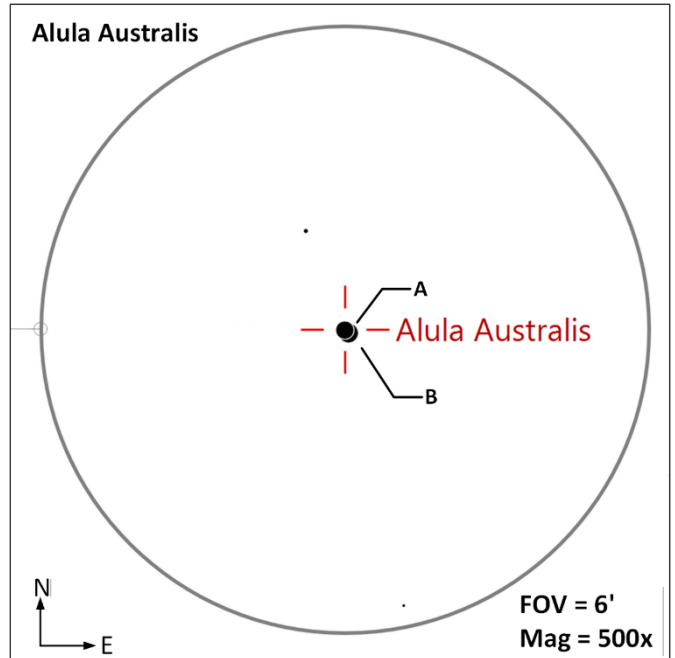
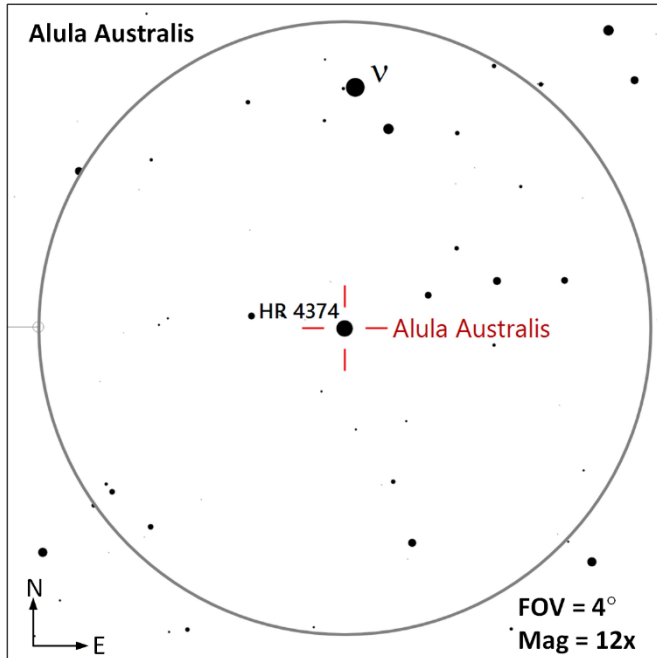


NGC-3941 (G | M=10.3 | Size=3.5'x2.3' | SB=21.2 | MC= S0) – A [barred lenticular galaxy](#) located 40 million light years from earth measuring 40,000 light years across. The galaxy has a counterrotating extended gas disk, which was possibly formed by a galaxy merger of accretion of gas with oppositely directed angular momentum.

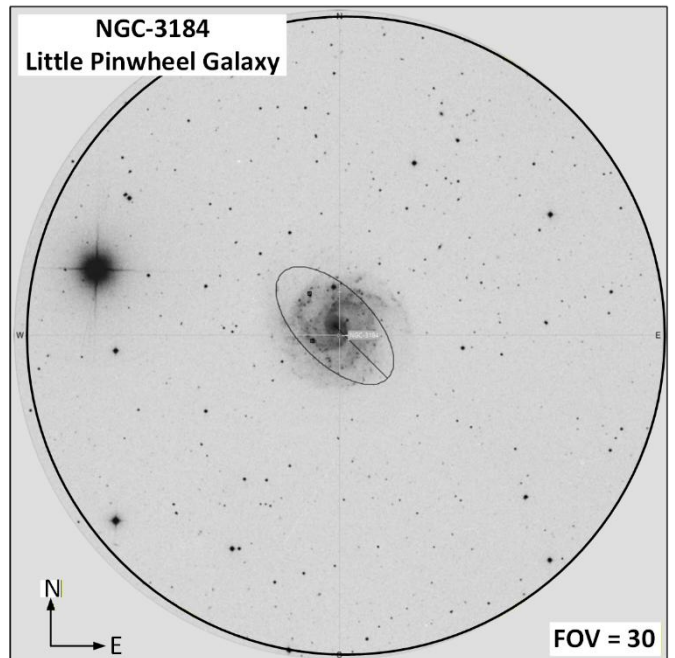
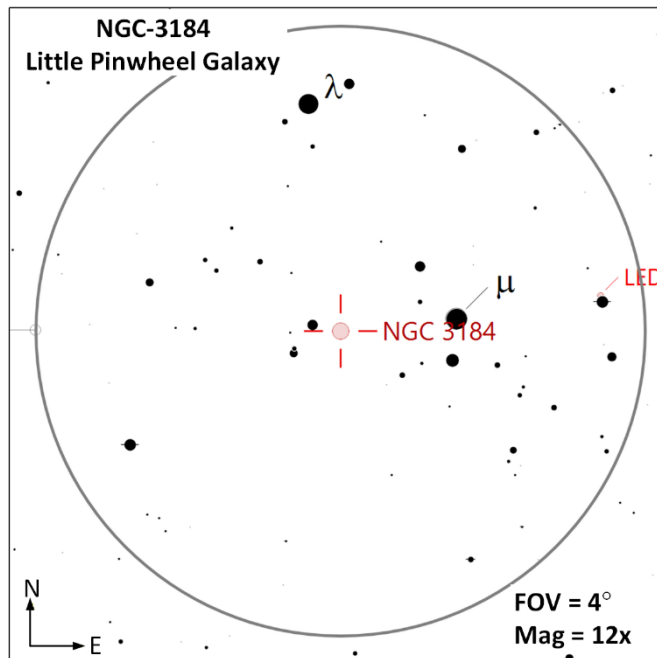


Constellation Guide

Alula Australis (DS | AB | M=4.3, 4.8 | Sep=2.6" | PA=136°) – Xi Ursae Majoris is a nearby multiple star system located 27 ly from Earth. The two components orbit each other at an average radius of 21 AU over a period of 60 years. The primary component has a very long rotation period of about 30 years due to [magnetic braking](#).

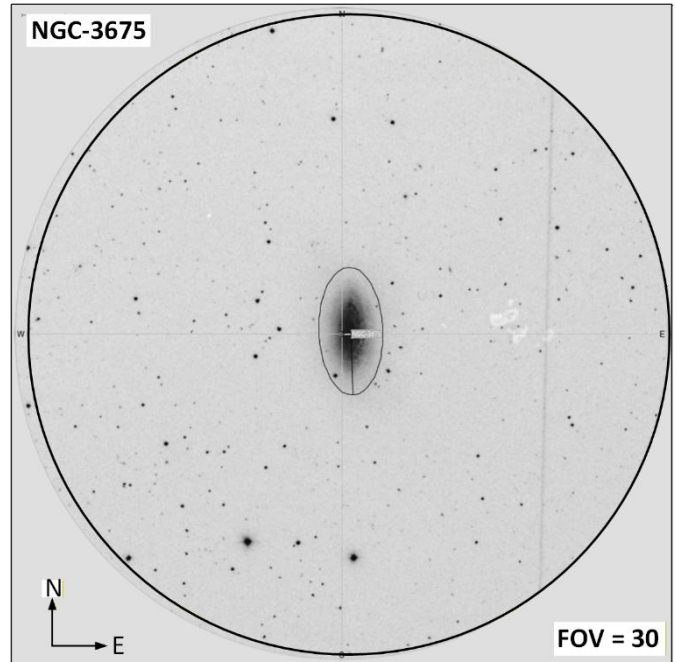
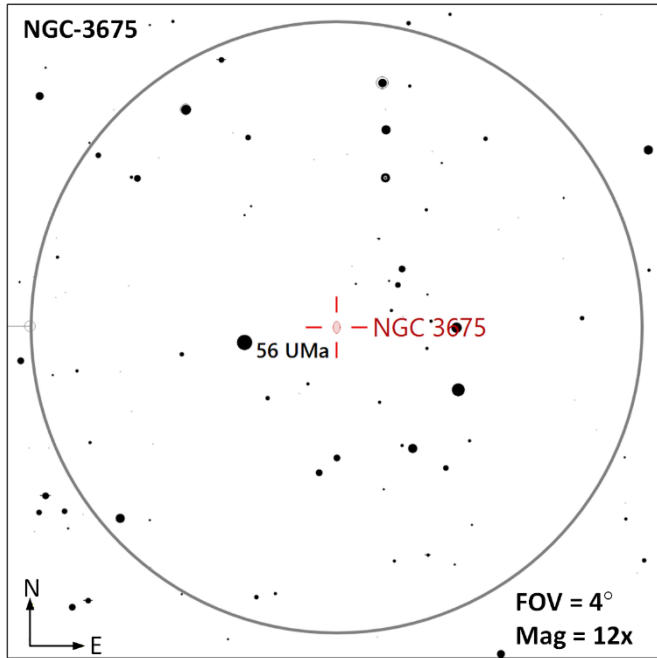


NGC-3184 (G | M=10.4 | Size=7.4'x6.9' | SB=23.3 | MC= SABc) – The Little Pinwheel Galaxy is a face-on spiral galaxy located 40 million light years from earth and measures 50,000 light years across.

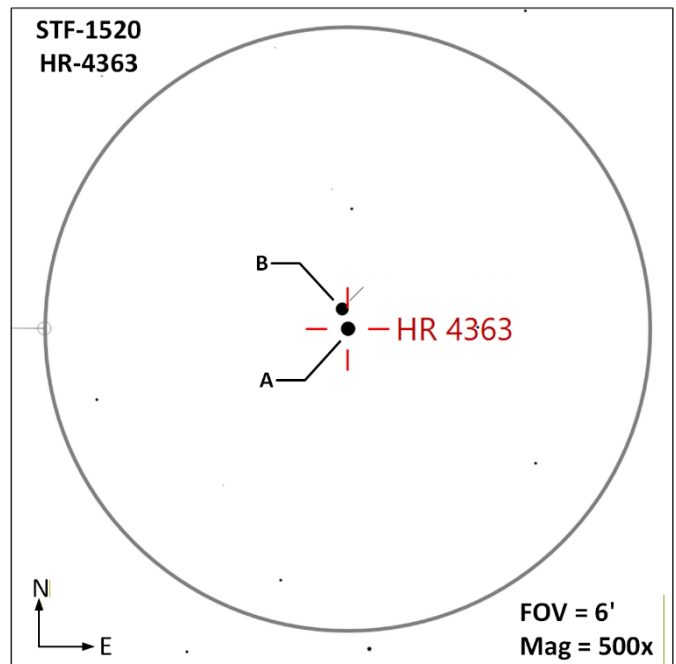
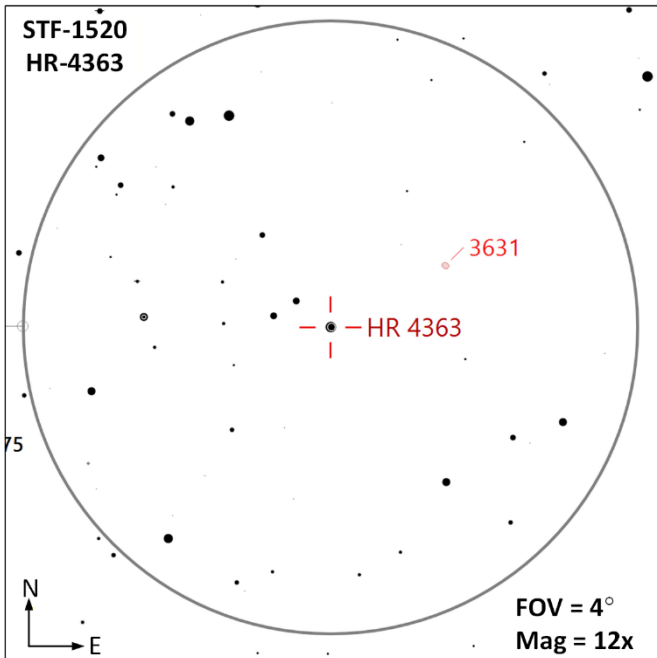


Constellation Guide

NGC-3675 (G | M=10.0 | Size=5.9'x3.1' | SB=21.8 | MC= Sb |) – A spiral galaxy located 50 million light years from earth with a diameter of 100,000 light years across. This galaxy is part of the [Ursa Major Cluster](#) of galaxies.

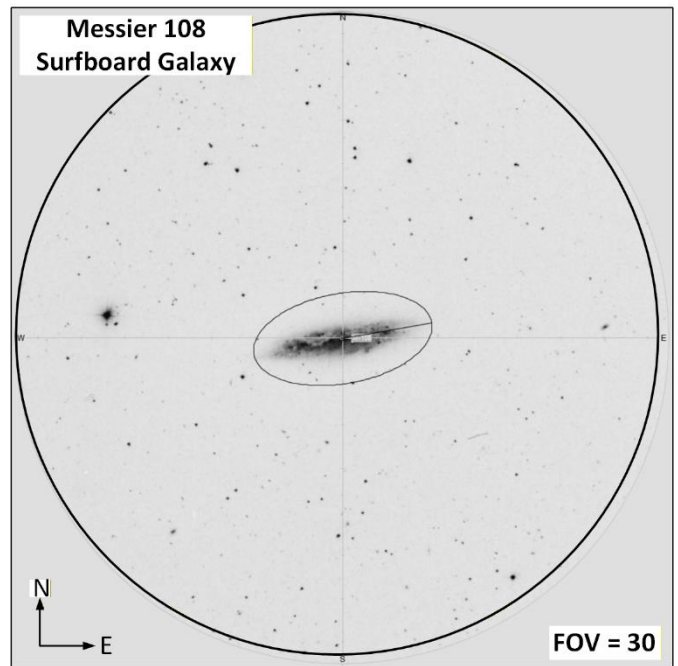
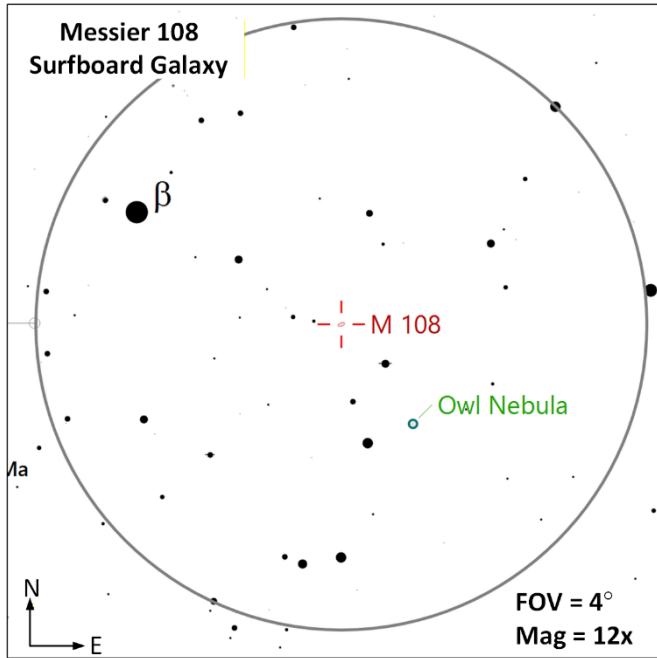


STF-1520 (DS | AB | M=6.5, 7.8 | Sep=12" | PA=343° |) – This double star system is 111 ly from Earth. The orbital distance of the secondary is estimated to be 423 AU from the primary. This pair is described as having yellow and red components.

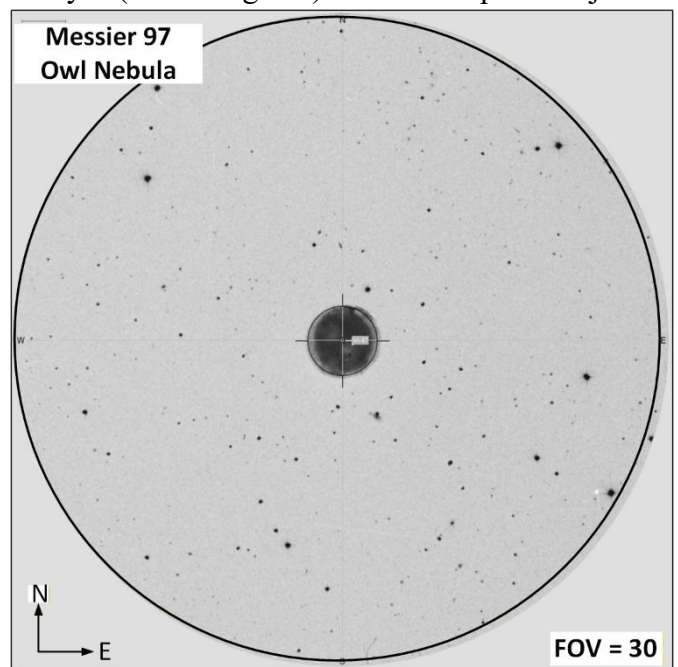
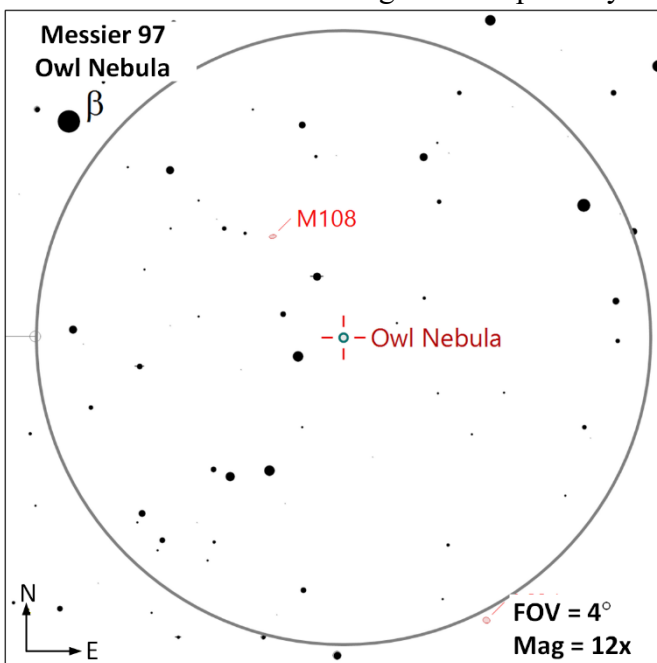


Constellation Guide

Messier 108 (G | M=10.0 | Size=8.7'x2.2' | SB=23.3 | MC= Sc |)– The Surfboard Galaxy (NGC-3556) is a barred spiral galaxy and part of the [Ursa Major Cluster of galaxies](#). And part of the [Virgo Supercluster](#). The galaxy is located about 46 million light years from earth and appears as a conspicuous streak in dark skies.

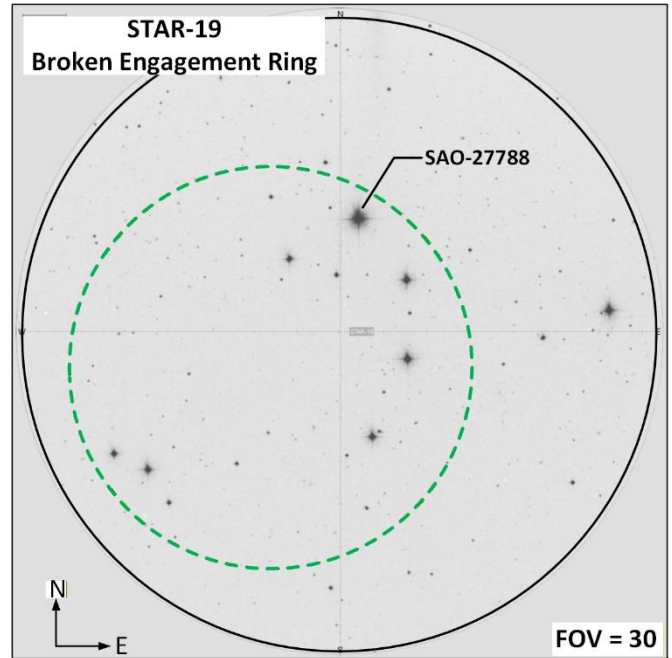
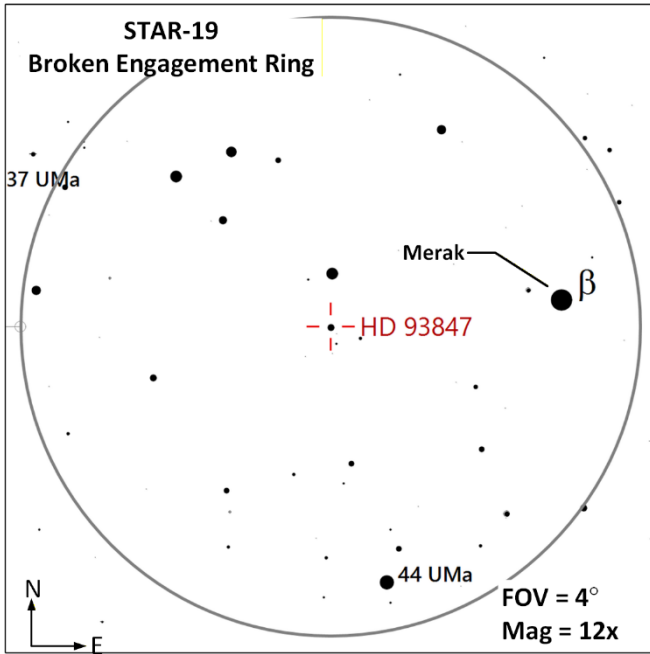


Messier 97 (PN | M=9.9 | Size=3.4'x3.3' | SB=21.2 |) – The Owl Nebula (NGC-3587) is estimated to be 8,000 years old and is located 2,000 ly from earth. This is a fairly dim object that will probably benefit from using an O III filter for observation. Larger telescopes may reveal the eyes (darker regions) that make up this object.

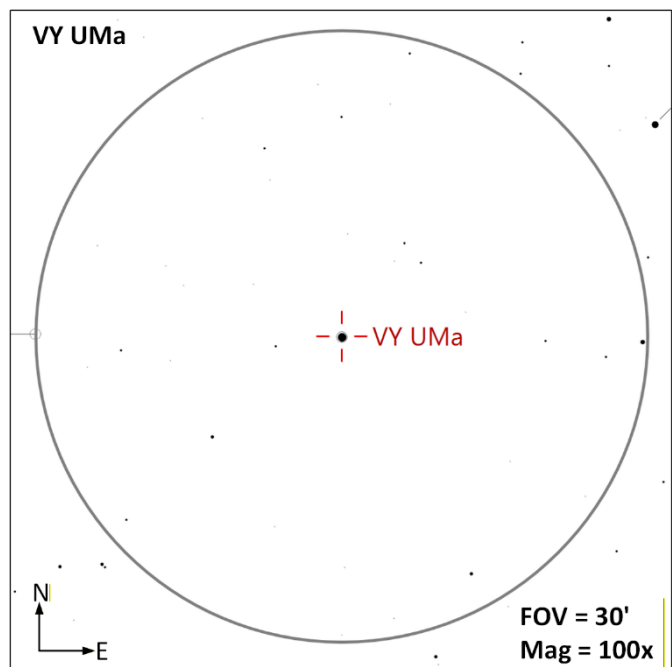
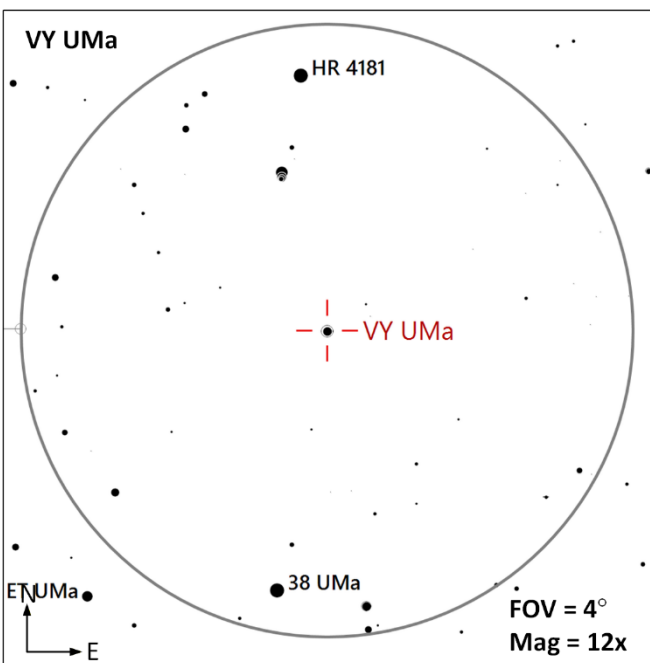


Constellation Guide

STAR 19 (AS | Size=20' | Stars=10 | Ref Stars: SAO-027788, HIP 53036, HD 93847) – The Broken Engagement Ring (AKA The Crown) is an arrangement of 10 stars seemingly forming a broken circle of stars. The provided reference star is the brightest star in this asterism.

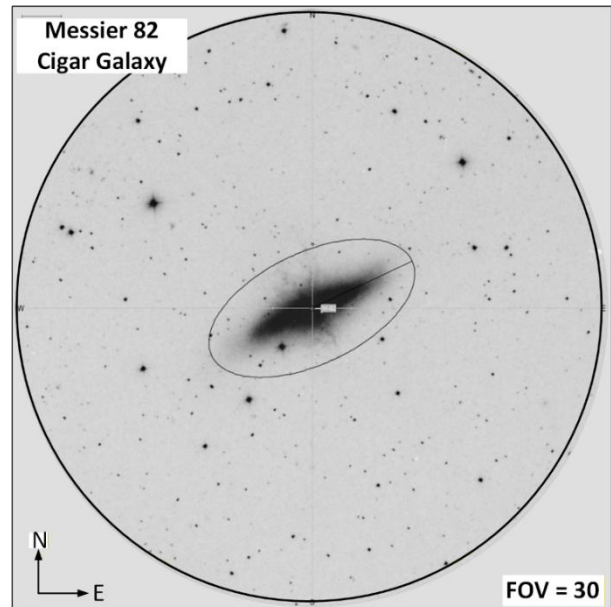
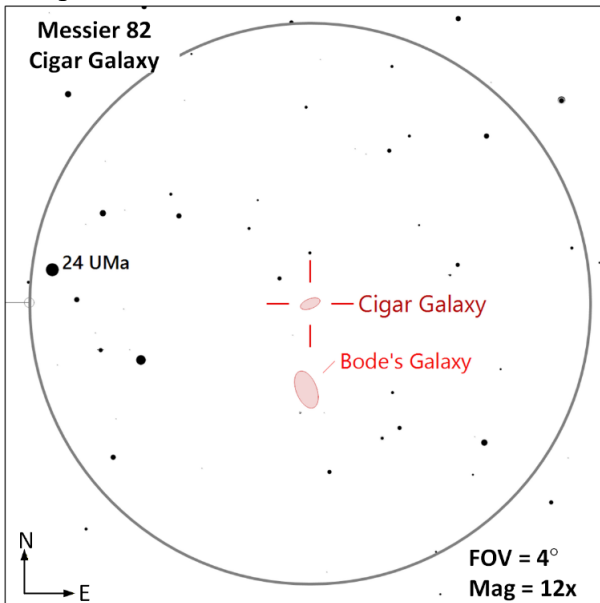


VY UMa (CS | Mag Range: 5.9 to 7.0 | Unknown Period |) – A carbon star located 1240 ly from Earth appearing orange to orange-red when viewed (Birren) and has been described as [Betelgeuse](#) on steroids. One of the first radio masers discovered.

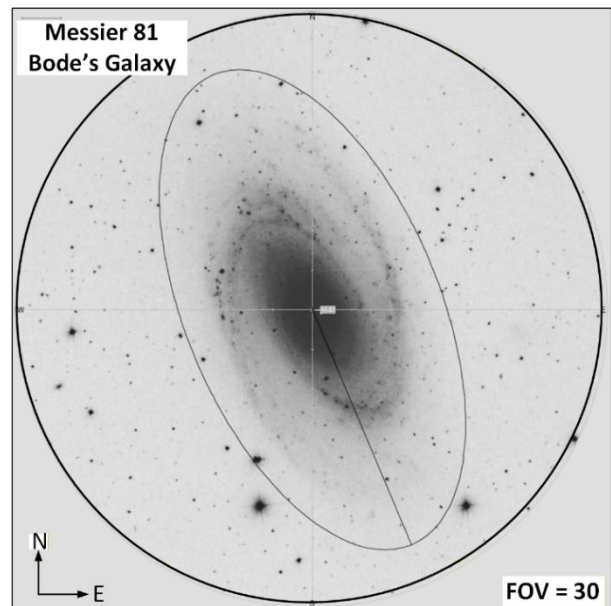
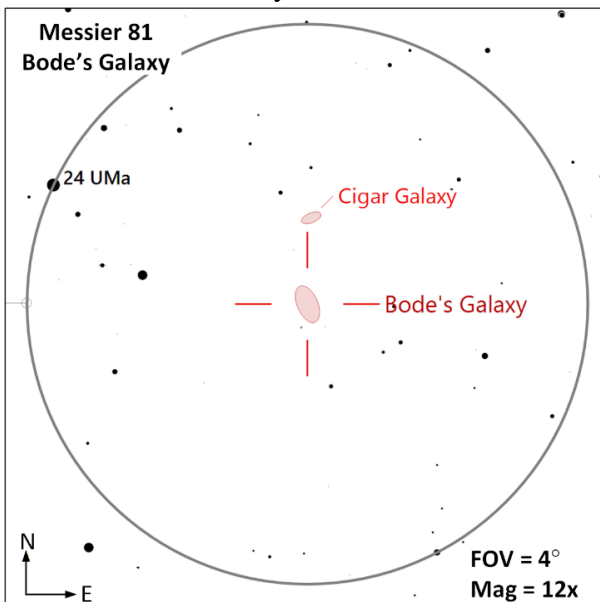


Constellation Guide

Messier 82 (G | M=8.4 | Size=11'x4' | SB=21.1 | MC= I0) – The Cigar Galaxy (NGC-3034) is a [starburst galaxy](#) (has exceptionally high star formation). It is suspected that the high star formation is being induced by its interaction with Bode's Galaxy (M-81). When viewed through a telescope this galaxy does indeed have a cigar shape.

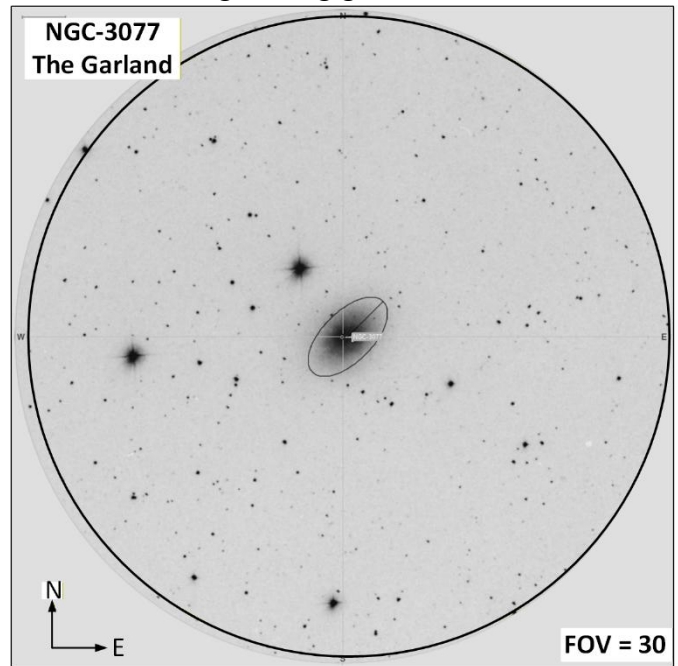
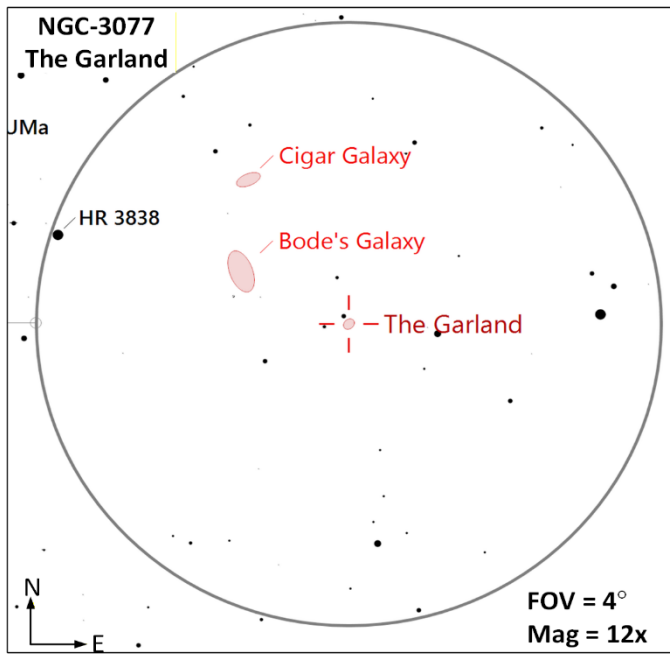


Messier 81 (G | M=6.9 | Size=27'x14' | SB=22.0 | MC= Sab) – Bode's Galaxy (NGC-3031) is a [grand design spiral galaxy](#) (contains prominent and well-defined spiral arms) 12 million light-years away. This object is quite bright and a great target for small telescopes and binoculars. Using low enough power, you should be able to fit both M-81 and M-82 in the same field of view. Both M-81 and M-82 are suspected of interacting with each other. These two galaxies are part of the M-81 group of galaxies composed of about a dozen galaxies located about 12 million ly from earth.

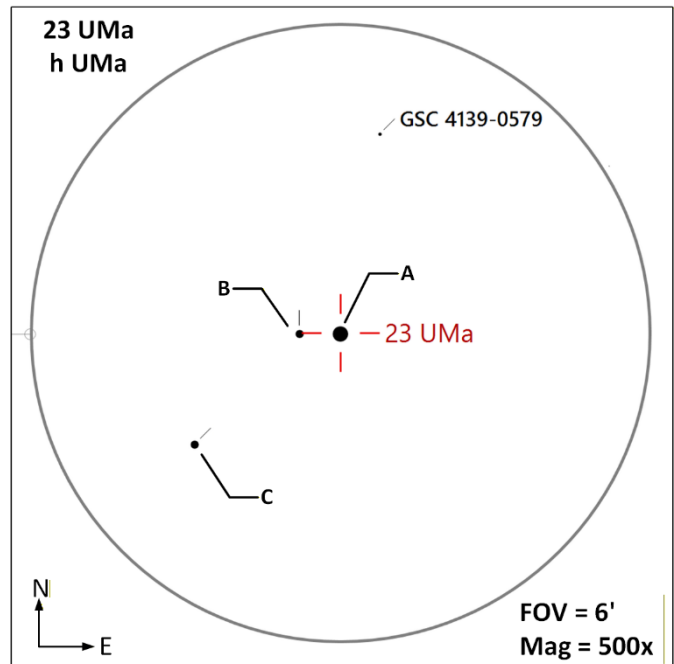
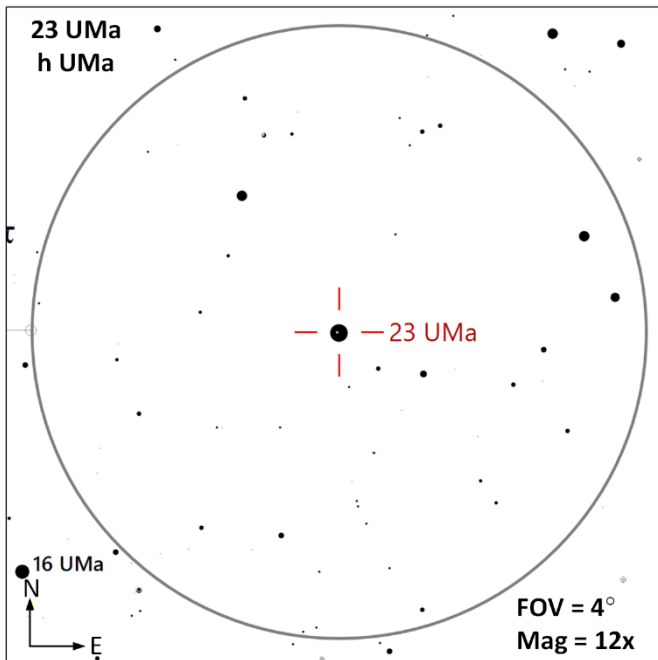


Constellation Guide

NGC-3077 (G | M=10.6 | Size=5.4'x4.5' | SB=22.7 |)– A small elliptical galaxy located 12.8 million light years from earth and is a member of the [M-81 Group of galaxies](#). This object exhibits a couple of characteristics unusual for an elliptical galaxy including wispy edges and scattered dust clouds visible in photographs. It is suspected these characteristics are due to gravitational interaction with neighboring galaxies.

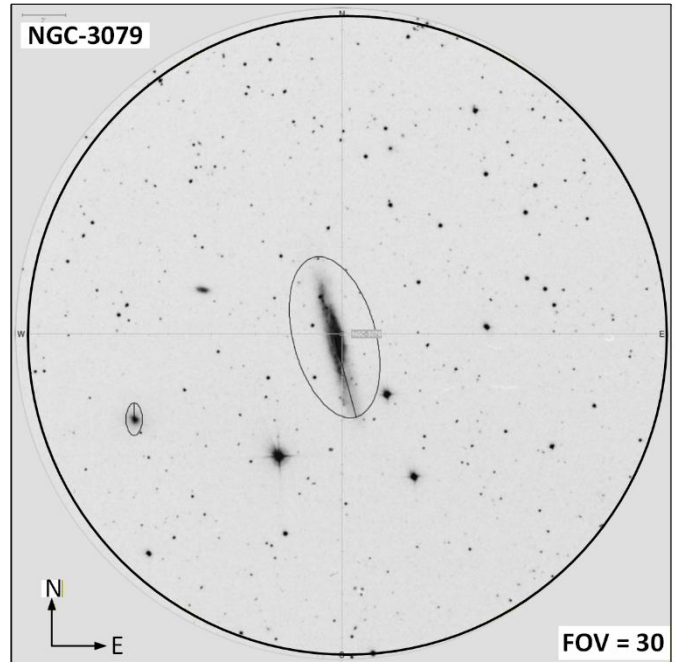
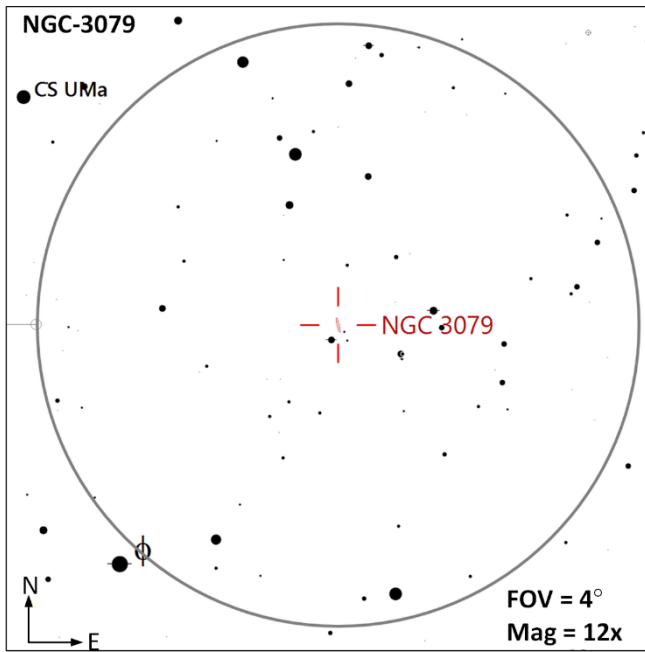


23 UMa (DS | AB | M=3.7, 9.2 | Sep=23" | PA=367° |) – h Ursae Majoris is a double star located 78 ly from Earth. The secondary orbits at 545 AU from its primary.

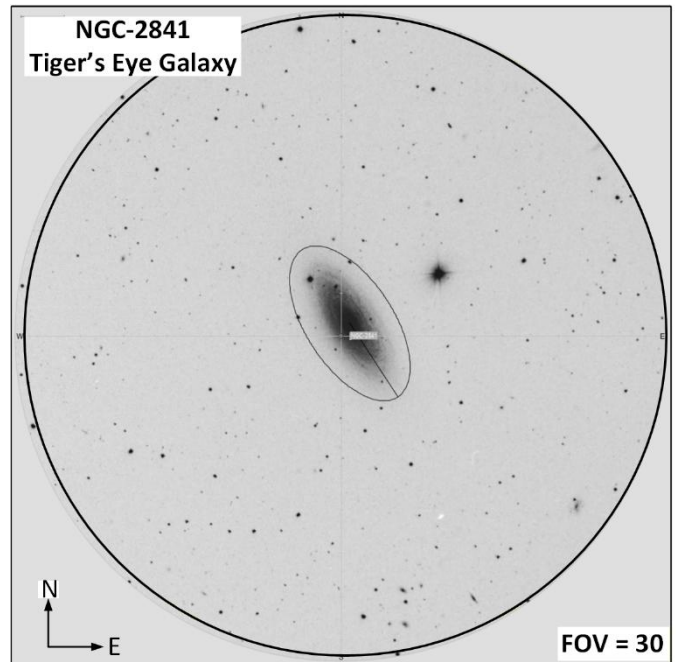
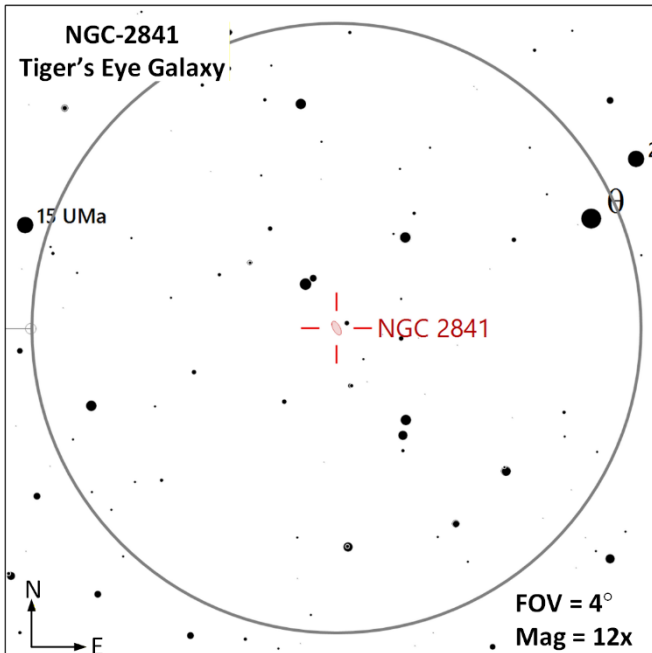


Constellation Guide

NGC-3079 (G | M=11.5 | Size=7.9'x1.4' | SB=22.7 | MC=SBc |) – A [barred spiral galaxy](#) located 50 million light years from earth. The galaxy is listed as a [Seyfert II](#) Galaxy and has a quasar-like nucleus with a very high surface brightness. There is a large “bubble” forming in the center of the galaxy rising 3,500ly above the disk of the galaxy and visible in long exposure photographs causing a large burst of star formation.

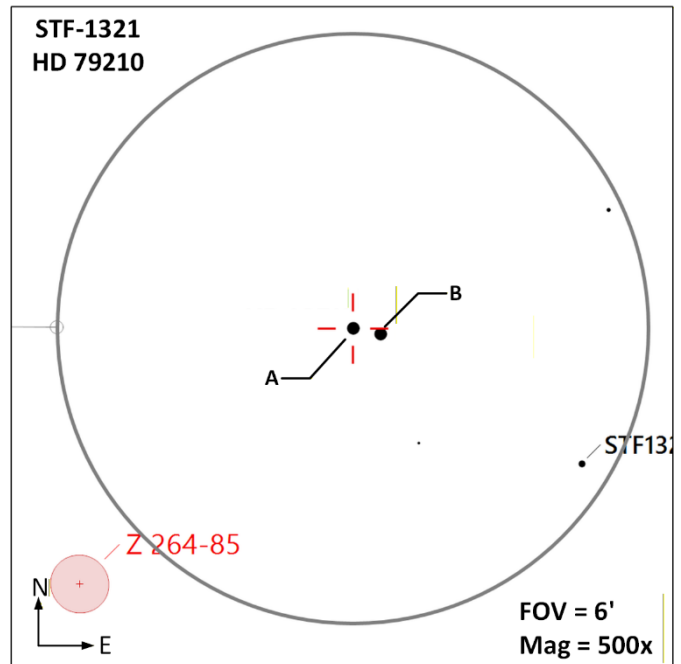
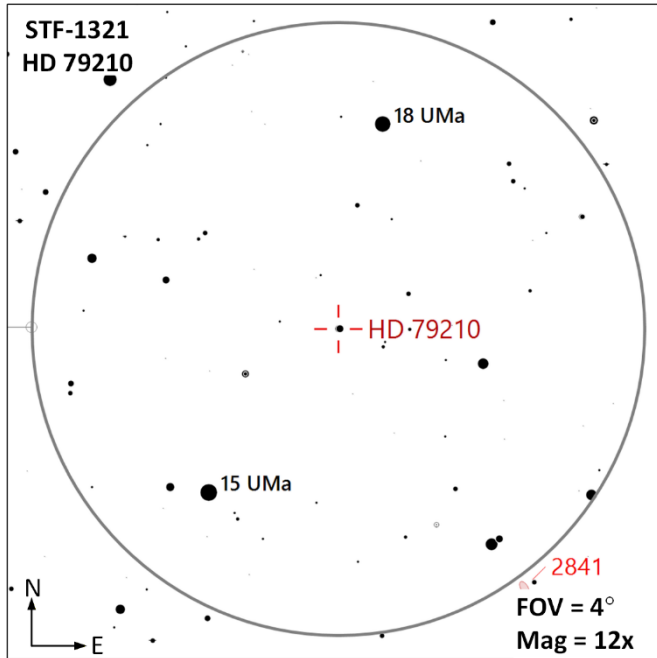


NGC-2841 (G | M=10.1 | Size=8.1'x3.5' | SB=22.4 | MC=SBb |) – The Tiger’s Eye Galaxy is a spiral galaxy located 50 million light-years from earth. Described as a fine spiral with symmetrical whorls (SAC DB).



Constellation Guide

STF-1321 (DS | AB | 7.8, 7.9 | Sep=17" | PA=100° | Period=2,000 y | MC = M0V, K7V |) – This colorful double star system has yellow and blue components that orbit each other about every 2,000 years. This system is located 20 light years from earth.



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Constellation Guide

Observation Log: Ursa Major (UMa)

Equipment Config A: _____ **Config B:** _____

Notes: _____

Date	Time	Config	Target	Notes

Date	Time	Config	Target	Notes

Constellation Guide

Observation Log: Ursa Major (UMa)

Equipment Config A: _____ **Config B:** _____

Notes: _____

Date	Time	Config	Target	Notes

Date	Time	Config	Target	Notes

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
 - Celestial Portraits: [Tom Polakis](#)
 - [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