

Constellation Guide

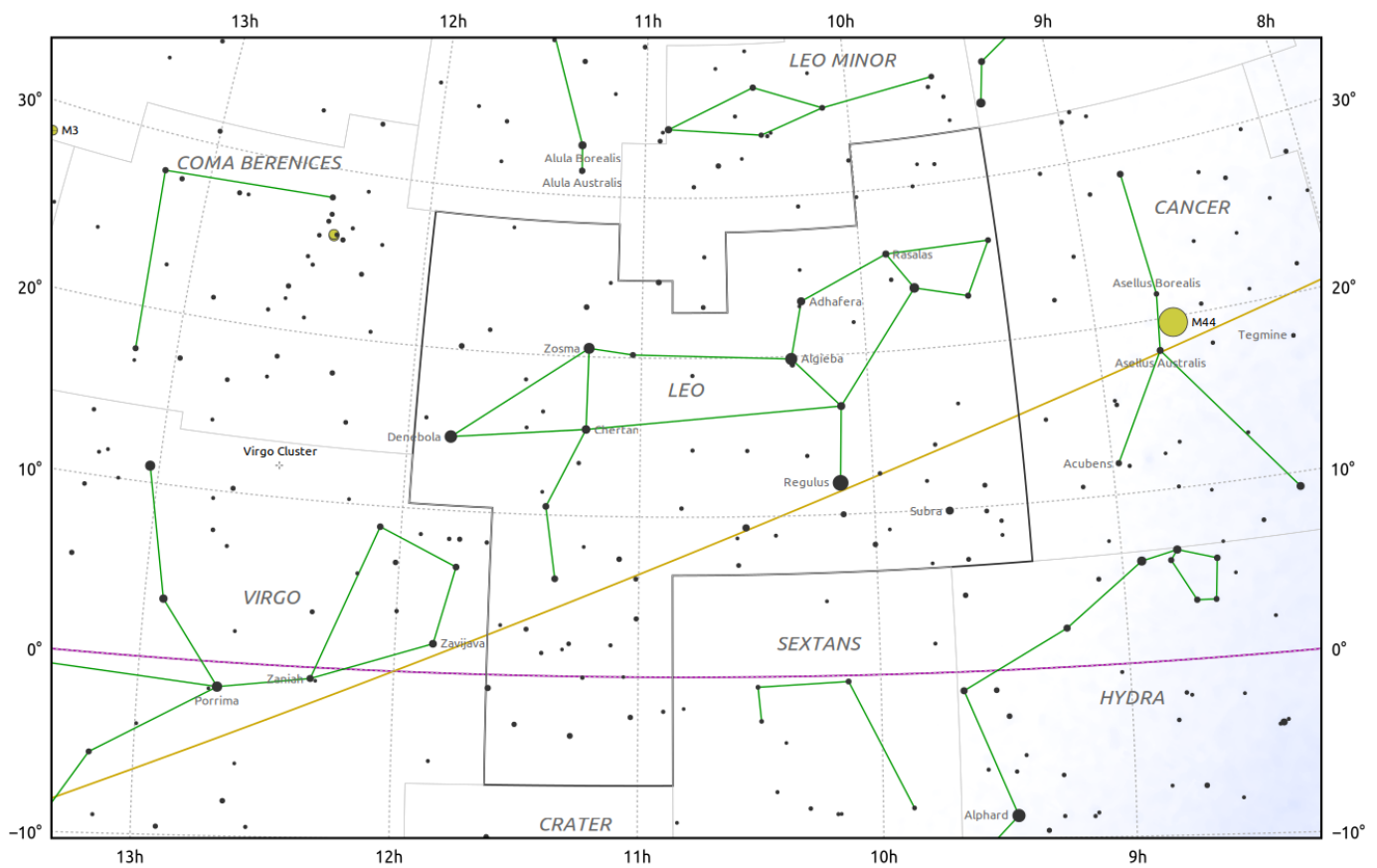
Leo (Leo)

Evening Visibility: **February - April**

Online Information: [Leo](#)

More Online Information: [Abell 1367](#), [NGC-3626](#), [NGC-3607](#), [NGC-3605](#), [NGC-3608](#), [M-65](#), [M-66](#), [NGC-3628](#), [84 Leo](#), [NGC-3521](#), [54 Leo](#), [M-105](#), [NGC-3371](#), [NGC-3373](#), [M-95](#), [M-96](#), [Algieba](#), [Regulus](#), [Leo I](#), [R Leo](#), [NGC-2903](#), GS Leo, 6 Leo

[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

Leo can be seen at latitudes between $+90^\circ$ and -65° , is the 12th largest constellation and is one of the few constellations that look like the figure it is supposed to represent. Leo is one of the oldest constellations in the sky with archaeological evidence suggesting that Mesopotamians had a constellation similar to Leo as early as

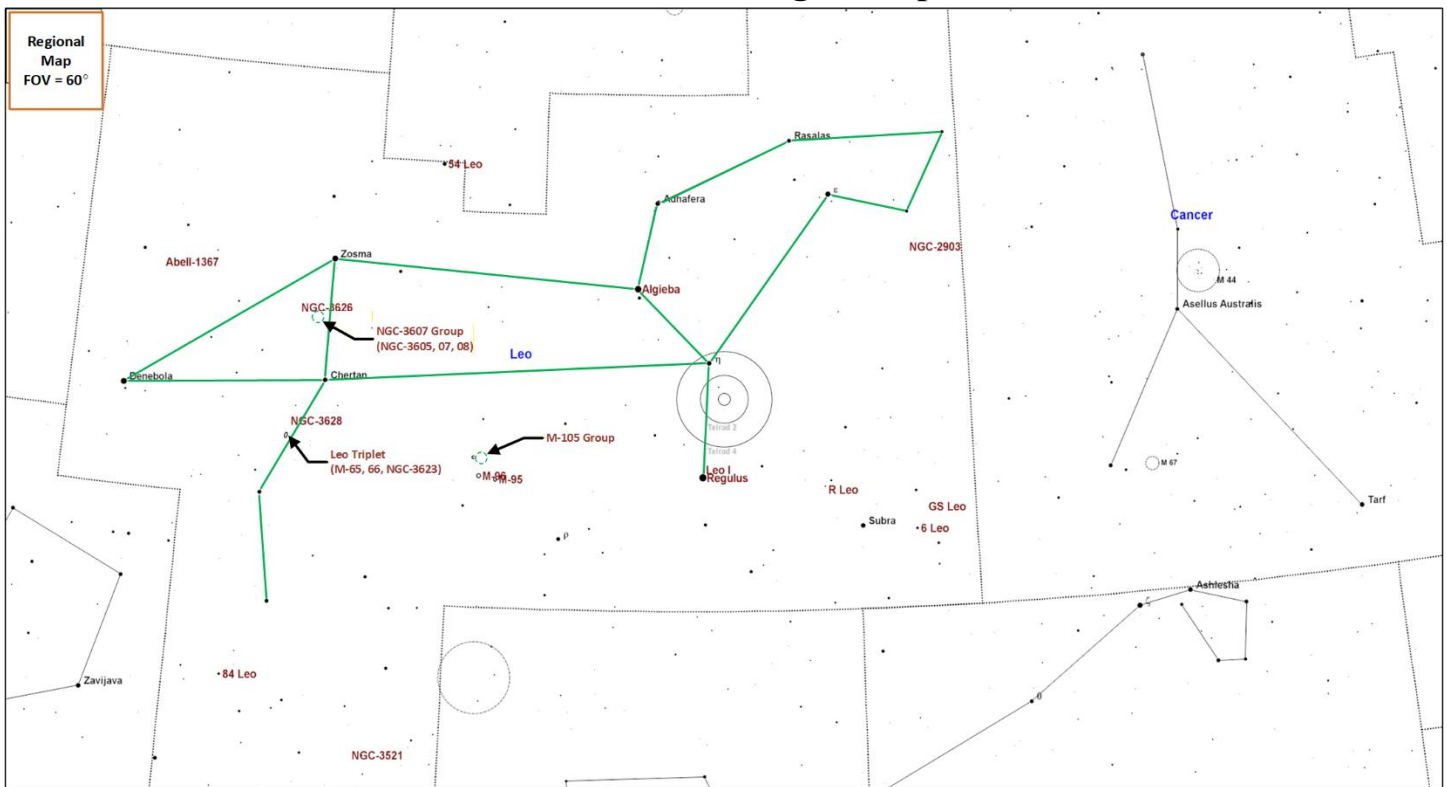
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4,000 BC. The Greeks associated Leo with the lion that Heracles slayed during the first of his twelve labors. The constellation contains many deep sky objects including five Messier objects (all galaxies), and a number of galaxy groups (3607 Group, Leo Triplet, M-105 Group and the M-96 Group). There are also a number of nice multiple star systems in this constellation.

Constellation Highlights

- **Abell 1367 (GCl)** – For larger aperture telescopes, contain over 70 major galaxies.
- **NGC-3607 Group (3 Galaxies)** – Three galaxies in a 30 Arcminutes field of view.
- **Leo Triplet (3 Galaxies)** – Three galaxies within 1 degree of each other.
- **M-105 Group (Galaxies)** – Messier 105, NGC-3371 & NGC 3373 within 30 Arcminutes of each other.
- **54 Leonis (DS)** – A Blue/Green double star system.
- **Algieba (DS)** – Another colorful double star system.
- **NGC-2903(G)** – One of the brighter galaxies visible in the northern hemisphere.
- **GS Leonis (DS)** – A binocular and small telescope double with blue and green colored stars.

Constellation Targets Map



Region Objects Summary

Object (Type)	Ref	Aliases	Stats
Abell 1367 (GCl)	1	ACO-1367, Leo Cluster	Galaxy Cluster of over 70 major galaxies
3607 Group		NGC-3607, NGC-3605, NGC-3608	

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Object (Type)	Ref	Aliases	Stats
NGC-3607 (G)	1	UGC 6297, PGC 34426, MCG 3-29-20	M=10.8 Size=4.9' x 2.5' SB=21.2 MC=SA(s)0
NGC-3605 (G)	1	UGC 6295, PGC 34415, MCG 3-29-19	M=12.1 Size=1.7' SB=21.9 MC=E4-5
NGC-3608 (G)	1	UGC 6299, PGC 34433, MCG 3-29-22	M=11.7 Size=3.0' SB=22.7 MC=E1-2
NGC-3626 (G)	1	NGC-3632, C-40, UGC 5343, PGC 34684, MCG 3-29-32, Caldwell 40	M=11.0 Size=3.0 x 2.0 SB=21.6 MC=(R) SAO+(rs)
54 Leonis (DS)	1 , 2	SAO-081583, HIP-53417, HR 4259, HD 94601, STF 1487, ADS 7979, 54 Leo	AB M=4.5, 6.3 Sep=6.6" PA=113°
Leo Triplet		Messier-65, Messier-66, NGC-3628	
Messier 65 (G)	1	NGC-3623, UGC 5328, PGC 34612, MCG 2-29-18, VV 308, Leo Triplet [1]	M=9.3 Size=9.0' x 2.3' SB=21.2 MC=SAB(rs)a
Messier 66 (G)	1	NGC-3627, UGC 5346, PGC 34695, MCG 2-29-19, Arp 16, Arp 317, VV 308, Arak 288, Leo Triplet [2]	M=8.9 Size=9.1' x 4.2' SB=21.5 MC=SAB(s)b
NGC-3628 (G)	1	UGC 6350, PGC 34697, MCG 2-29-20, Arp 317, VV 308, The Hamburger Galaxy, Sarah's Galaxy, Leo Triplet [3]	M=9.5 Size=14' x 3.6' SB=22.4 MC=Sab pec
84 Leonis (DS)	1 , 2	SAO-118875, HIP-55945, HR 4418, HD 99648, STFA 19, Tau Leo, τ Leo, 84 Leo	AB M=5.1, 7.5 Sep=89" PA=181°
NGC-3521 (G)	1	UGC 6150, PGC 33550, Bubble Galaxy	M=9.0 Size=11.0' x 5.1' SB=22.0 MC=SAB(rs)bc
M-105 Group		Messier-105, NGC-3371, NGC-3373	
Messier 105 (G)	1	NGC-3379, UGC 3379, UGC 5902, PGC 32256	M=9.3 Size=5.4x4.8 SB=21.5 MC=E1
NGC-3371 (G)	1	NGC-3384, UGC 5911, PGC 32292	M=10.9 Size=5.5' x 2.5' SB=22.4 MC=E7
NGC-3373 (G)	1	NGC-3389, UGC 5914, PGC 32306	M=12.3 2.8' x 1.3' SB=22.3 MC=SA(s)c
M96 Group		Messier 95, Messier 96	
Messier 95 (G)	1	NGC-3351, UGC-5850, PGC 32007	M=9.7 Size= 7.4' x 5.0' SB=22.2 MC=SB(r)b
Messier 96 (G)	1	NGC-3368, UGC 5882, PGC 32192	M=9.2 Size=7.6' x 5.2' SB=21.8 MC=SAB(rs)ab
Algieba (DS)	1 , 2	SAO-081298, HIP-50583, 41 Leo, HR 4057, HD 89484, STF-1424, ADS 7724, Gamma Leonis, Gam Leo, γ Leo, Juba	AB M=2.4, 3.6 Sep=4.8" PA=127°
Regulas (MS-4)	1 , 2	SAO-098967, HIP-49669, Alpha Leonis, 32 Leo, HR 3982, HD 87901, STFB 6, ADS 7654, Basilicus, Kalb	AB M=1.4, 8.2 Sep=176" PA=308° AD M=1.4,12.1 Sep=195" PA=274° BC M=8.2, 13.2 Sep=2.1" PA=94° BD M=8.2, 12.1 Sep=109" PA=211°
Leo I (G)	1	UGC 5470, PGC 29488, MCG 2-26-27, DDO 74, A1006, Regulus Dwarf	M=11.2 Size=9.8' x 7.4' SB= 24.5 MC=E;dSph
R Leonis (CS)	1	SAO-098769, HIP-48036, HR 3882, HD 84748	Mag Range: 4.3 – 11.6 Period: 312 days
NGC-2903 (G)	1	UGC-5079, PGC-27077, NGC 2905	M=9.0 Size=11.5' x 5.2" SB=22.1 MC=SAB(rs)bc
GS Leonis (DS)	1	SAO-098615, HIP-46637, STF-1360, HD 82159, ADS 7406	AB Mag=8.9, 8.9 Sep=13.8" PA=242°
6 Leonis (DS)	1	SAO-117751, HIP 46774, 6 Leo, HR 3779, HD 82381, SHJ 107, ADS 7416, h Leonis	AB Mag=5.2, 9.3 Sep=37.1" PA=76.9°

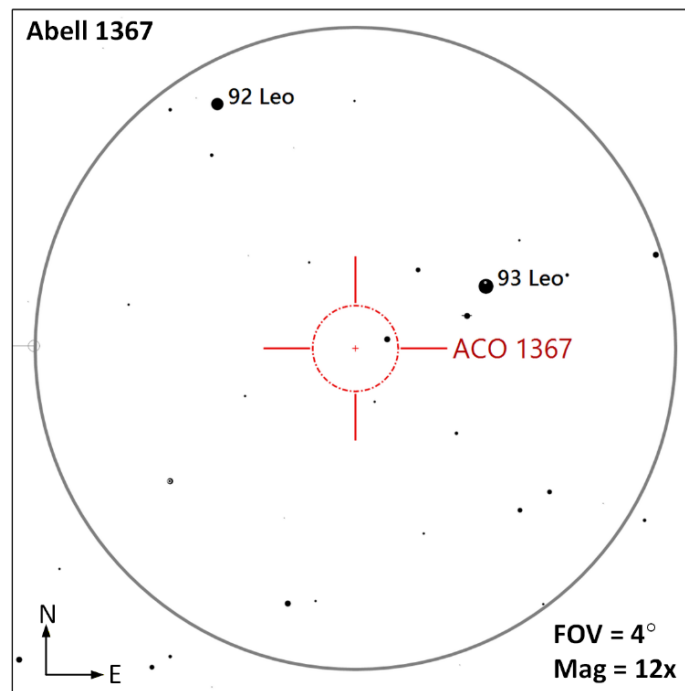
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Abell 1367 (GCl | Galaxy Cluster of over 70 major galaxies |) – The [Leo Cluster](#) of galaxies (ACO 1367) is 222 million light years away and has a physical diameter of 5.07 million light years. This cluster contains over 70 major galaxies over an area of approximately 2 degrees. [NGC-3842](#) is the brightest of the many galaxies in this cluster and contains one of the largest black holes ever detected estimated to have a mass of 34.6 billion solar masses.

The Leo cluster along with the [Coma Cluster](#) is one of the two major cluster making up the [Coma Super Cluster](#) that is part of the [CfA2 Great Wall](#), one of the largest known structures in the universe.

Most dense galaxy clusters are composed mostly of elliptical galaxies. The Leo Cluster, however, mostly contains spiral galaxies, suggesting that it is much younger than other comparable clusters, such as the Coma Cluster.

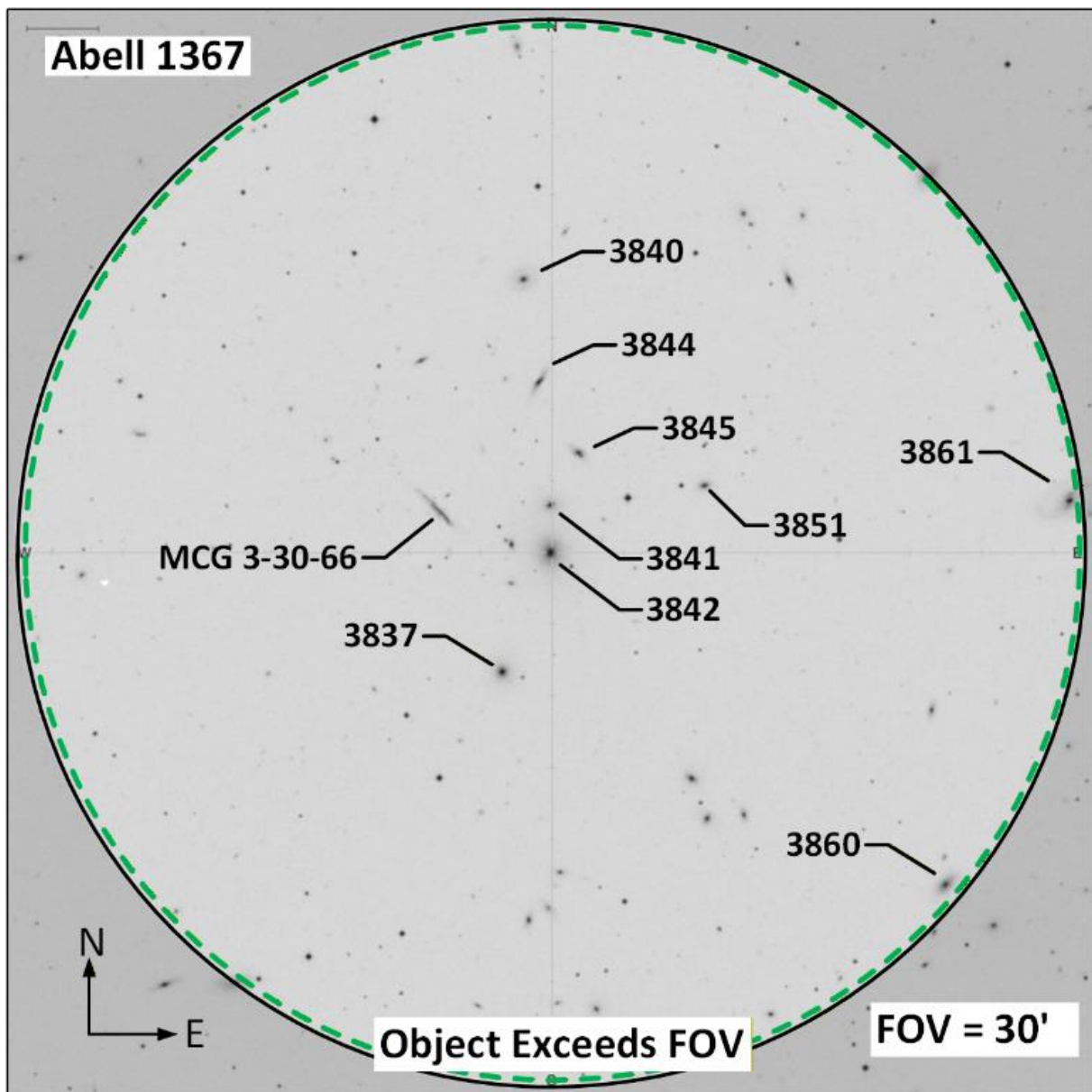
There appears to be a number of subpopulations within the Leo Cluster. The first consists of elliptical galaxies that seem to be roughly as old as the universe. The second subpopulation contains red-sequence [lenticular galaxies](#) whose ages are directly tied to their mass. The third and final subpopulation is of galaxies where star formation is still taking place.



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Some galaxies identified in 30' image following include:

- | NGC 3837 | M=14.2 | Size=0.6' x 0.6' | SB=21.7 | MC=E |
- | NGC 3840 | M=14.5 | Size=1.1' x 0.8' | SB=23.0 | MC=Sa |
- | NGC 3841 | M=14.6 | Size=0.7' x 0.7' | SB=22.5 | MC=E-S0 |
- | NGC 3842 | M=12.8 | Size=1.4' x 1.0' | SB=21.8 | MC=E |
- | NGC 3844 | M=14.8 | Size=1.2' x 0.2' | SB=21.9 | MC=S0/a |
- | NGC 3845 | M=15.0 | Size=0.8' x 0.3' | SB=22.1 | MC=SB0 |
- | NGC 3851 | M=15.1 | Size=0.25' x 0.2' | SB=20.5 | MC=E/S0 |
- | NGC 3860 | M=14.2 | Size=1.0' x 0.5' | SB=22.1 | MC=Sa |
- | NGC 3861 | M=13.7 | Size=2.5' x 1.0' | SB= 23.3 | MC=(R')SAB(r)b |
- | MCG 3-30-66 | M=14.1 | Size=1.9' x 0.3' | SB=22.1 | MC= I |

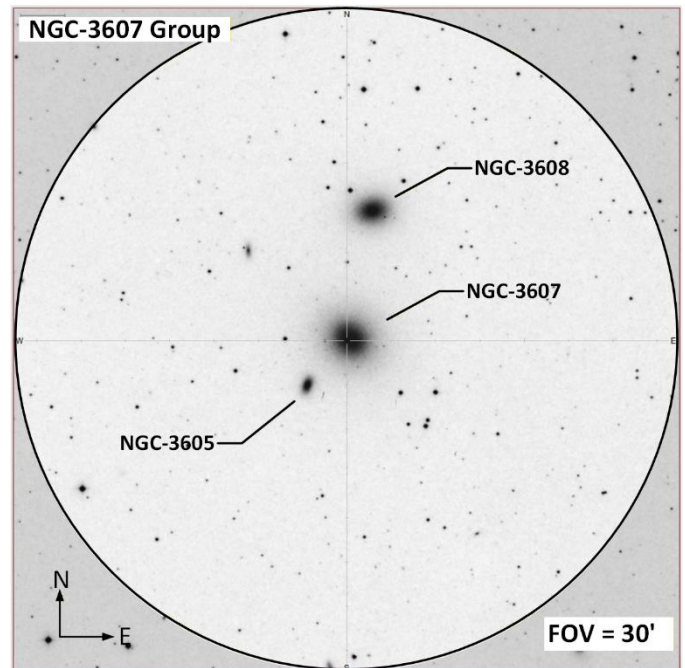
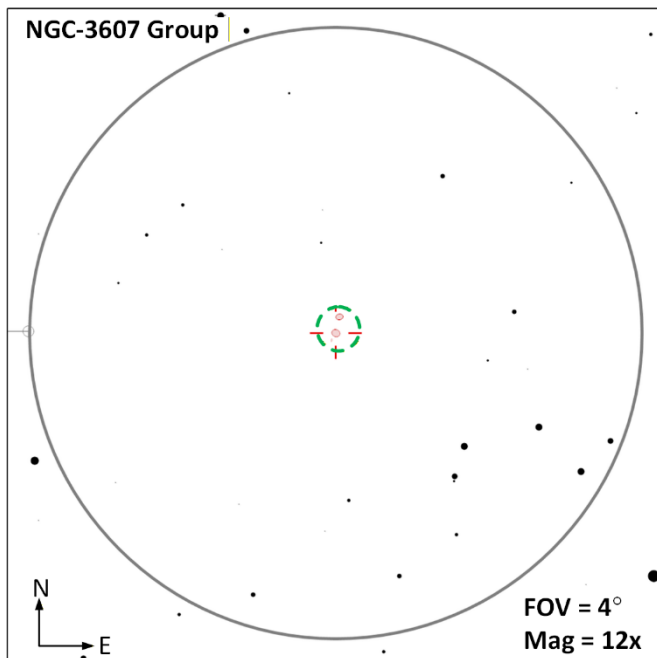


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NGC-3607 Group

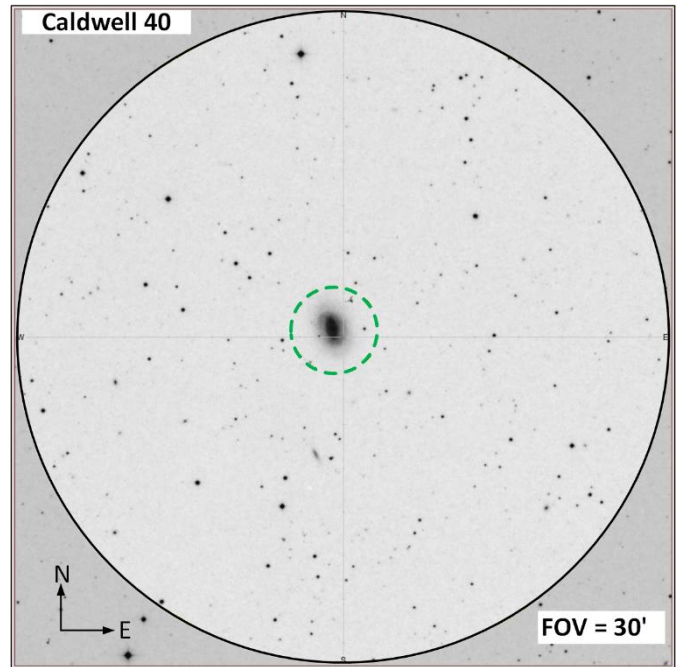
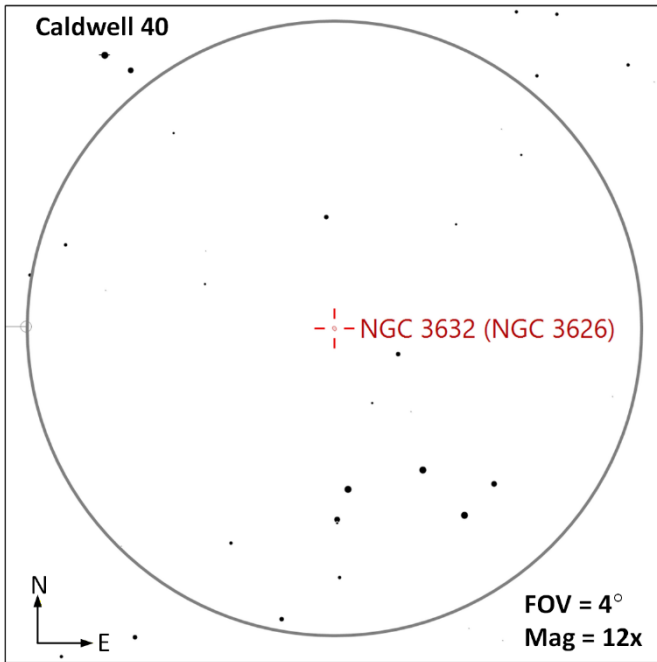
The three galaxies NGC-3607, NGC-3605 & NGC 3608 are part of the [Leo II Group](#) of galaxies, Leo II Cloud, or the Leo Cloud is a [galaxy filament](#) consisting of at least 18 galaxy groups located approximately 86 Million light years from our solar system. The three galaxies identified here appear in a 30-arcminute field of view.

- **NGC-3607** (G M=10.8 | Size=4.9' x 2.5' | SB=21.2 | MC=SA(s)0 |) – A small [lenticular galaxy](#) (intermediate between a elliptical and spiral galaxy) located 73 million light years away. This galaxy is the largest of three galaxies (NGC-3607, NGC-3605, NGC-3608) in tight proximity to each other.
- **NGC-3605** (G | M=12.1 | Size=1.7' | SB=21.9 | MC=E4-5 |) – The smallest of three galaxies (NGC-3607, NGC-3605, NGC-3608) in tight proximity to each other. This is a low mass galaxy located 66 million light years away.
- **NGC-3608** (G | M=11.3 | Size=6.6'x1.6' | SB=22.5 | MC=SB(s)m |) – An elliptical galaxy that is expected to be 13 billion years old. This is one of three galaxies (NGC-3607, NGC-3605, NGC-3608) in tight proximity to each other.

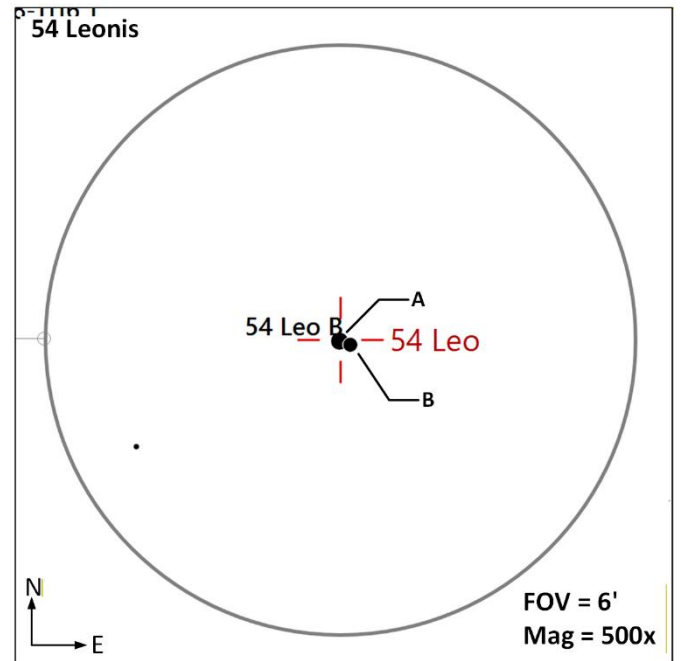
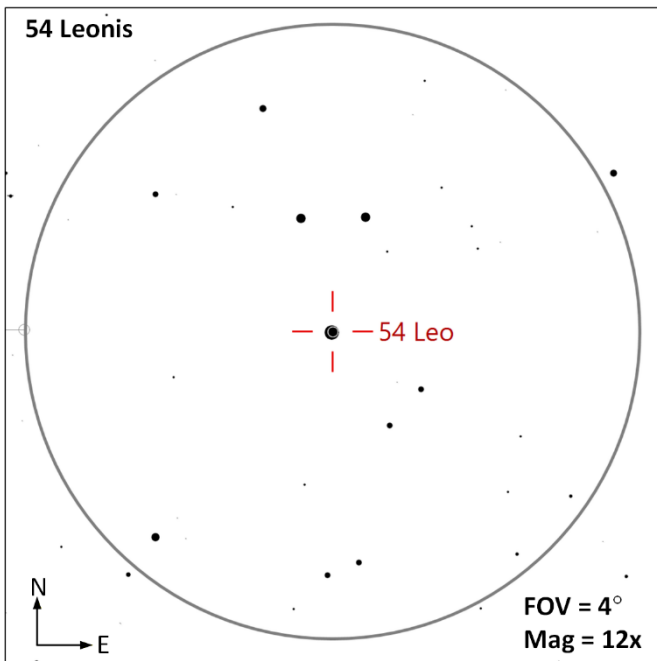


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NGC-3626 (G | M=11.0 | Size=3.0 x 2.0 | SB=21.6 | MC=(R) SAO+(rs) |) – Caldwell 40 is also known as NGC-3626 and is an unbarred [lenticular galaxy](#) (has elliptical and spiral galaxy properties) and is about 70 million light years away.



54 Leonis (DS AB | M=4.5, 6.3 | Sep=6.6" | PA=113° |) – A beautiful but little-known double star system consisting of a bluish and greenish white pair at 320 ly from earth.



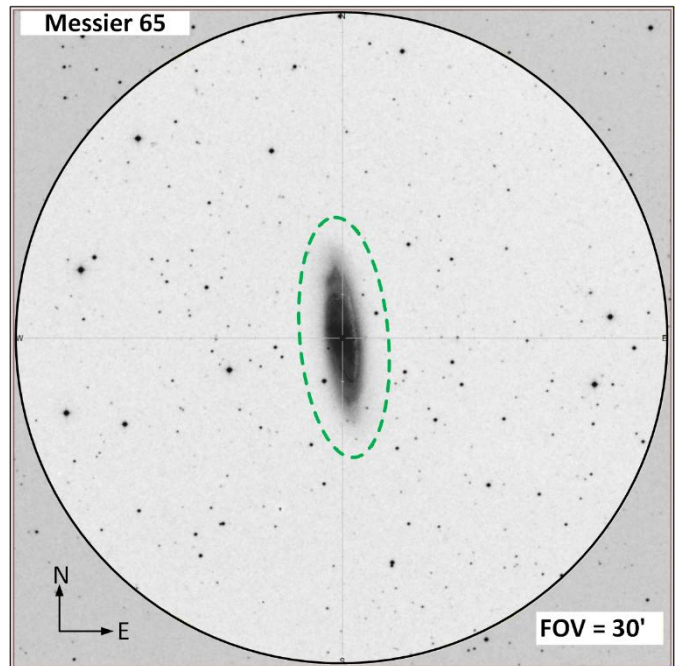
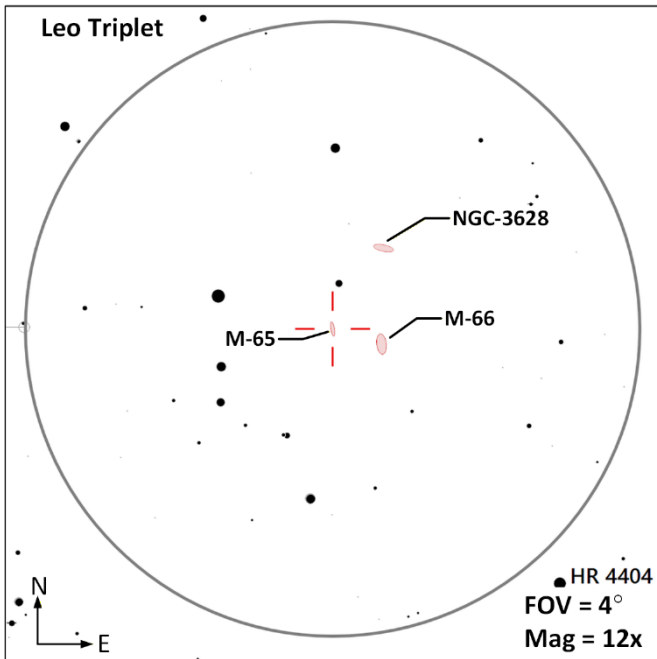
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Leo Triplet

The three galaxies Messier 65, Messier 66 and NGC-3628 make up the [Leo Triplet](#) of galaxies and all lie within about 30 arch minutes of each other. This small group of galaxies are located about 41 million light years away.

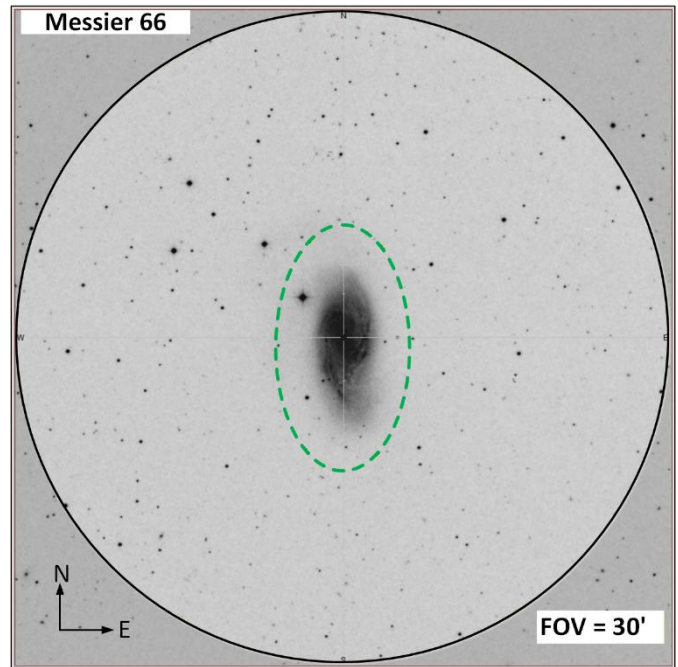
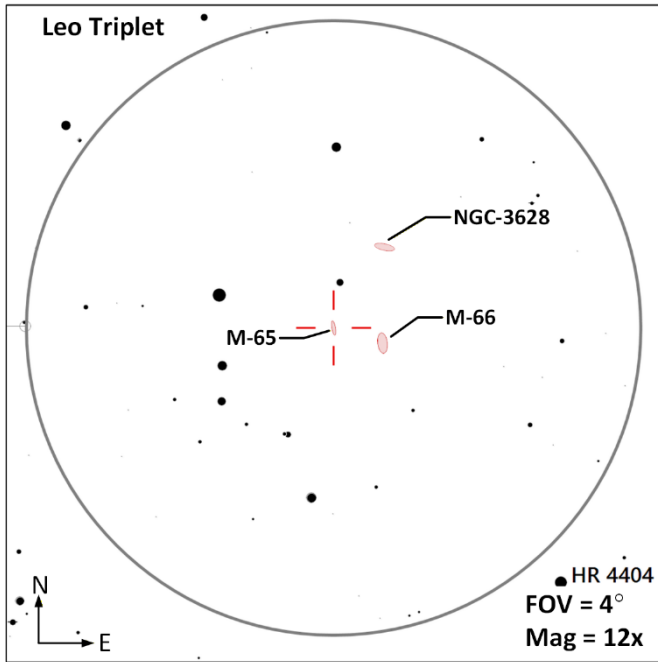
Both M-65 and M-66 should be easy seen with 10x magnification in a good set of binoculars.

Messier 65 (G | M=9.3 | Size=9.0' x 2.3' | SB=21.2 | MC=SAB(rs)a |) – NGC 3623 is an intermediate spiral galaxy that is highly inclined relative to earth and is located about 45 million light years away. A prominent dust lane extending across the side of its disk may be visible in telescopes of moderate aperture.

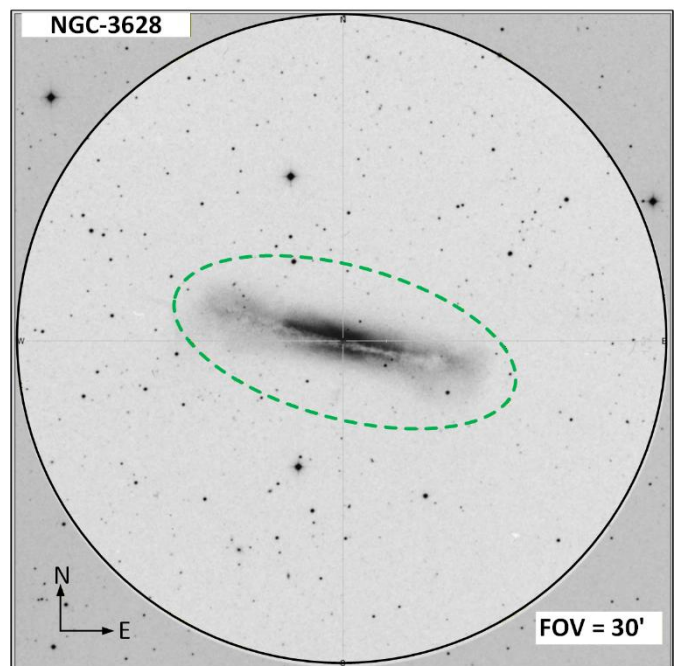
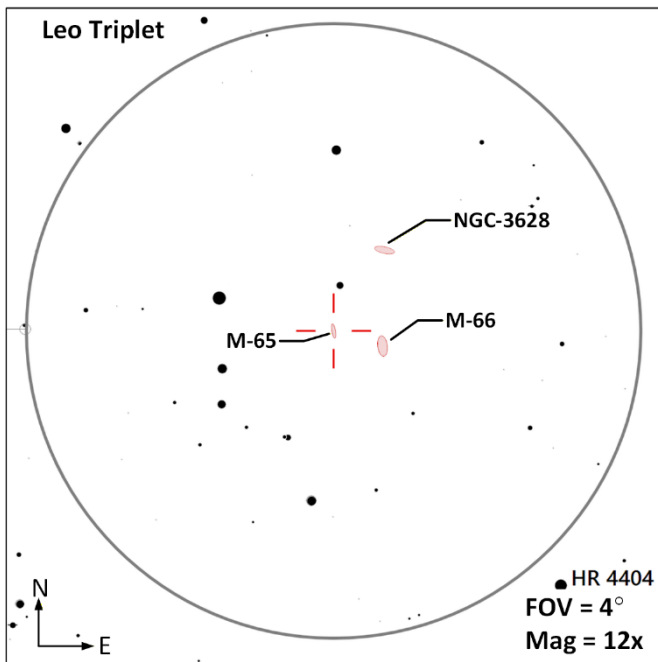


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Messier 66 (G | M=8.9 | Size=9.1' x 4.2' | SB=21.5 | MC=SAB(s)b |) – NGC 3623 is in intermediate spiral galaxy with a weak bar feature and loosely would arms and is about 95 thousand light years across. Close observations may reveal two bright arms looping outward from the nucleus. These arms are among the most easily seen of all spiral galaxies.

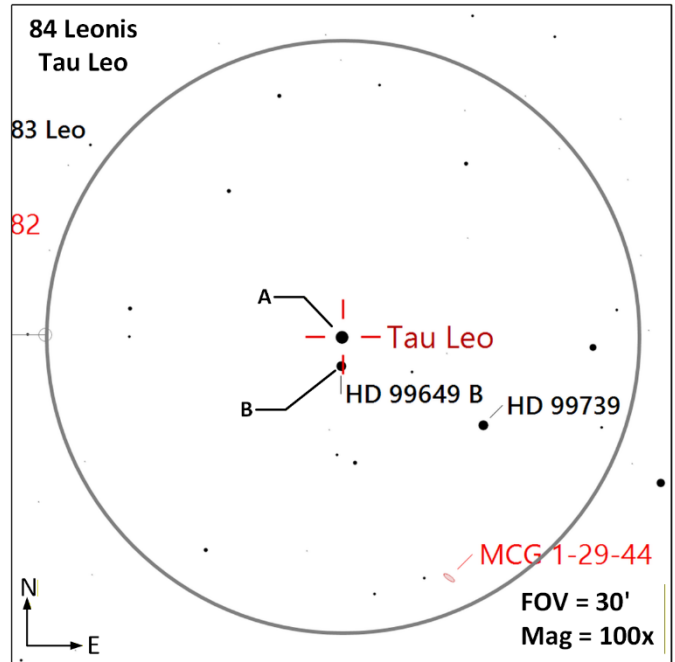
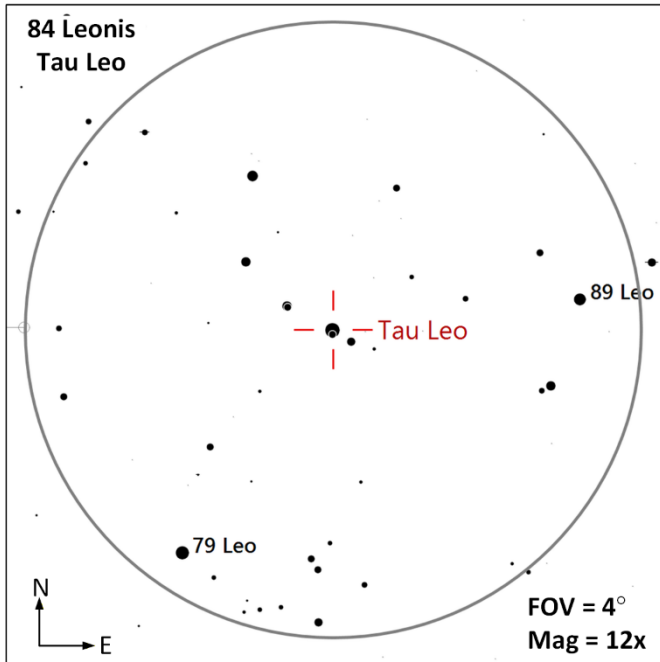


NGC-3628 (G | M=9.5 | Size=14' x 3.6' | SB=22.4 | MC=Sab pec |) – The Hamburger Galaxy is the faintest of the three galaxies making up the Leo Triplet. This is an edge-on galaxy with a conspicuous equatorial band of dark dust obscuring the galaxy central region.

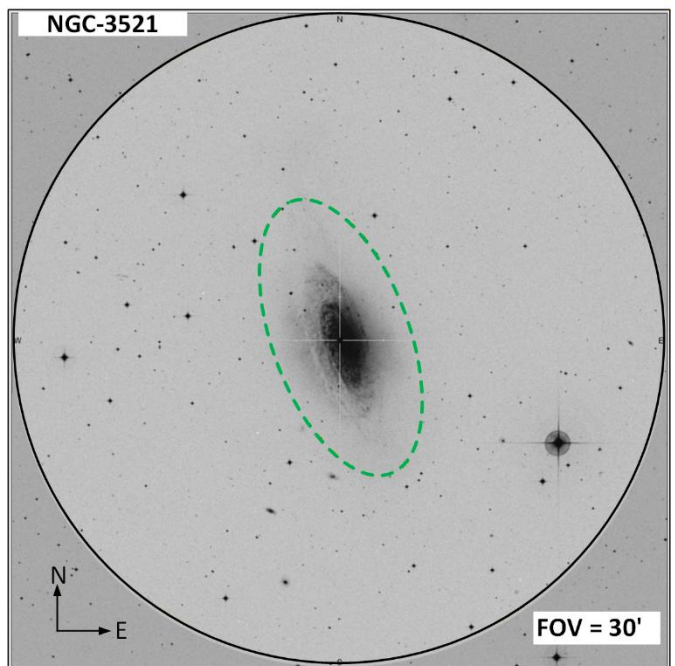
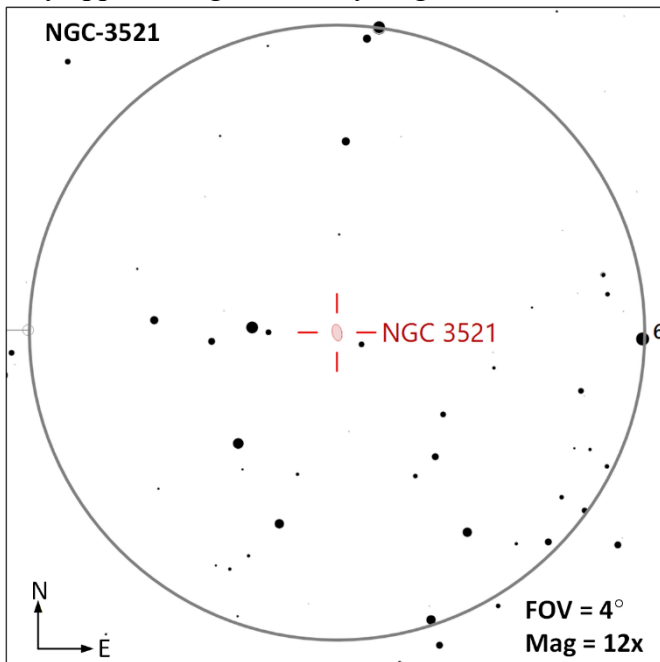


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84 Leonis (DS AB | M=5.1, 7.5 | Sep=89" | PA=181°) – This double is 562 ly away. The primary component is an orange giant.



NGC-3521 (G | M=9.0 | Size=11.0' x 5.1' | SB=22.0 | MC=SAB(rs)bc) – The Bubble Galaxy is a [flocculent](#) (patchy with discontinuous spiral arms) intermediate spiral galaxy located 37 million light years away. The galaxy appears large and fairly bright.



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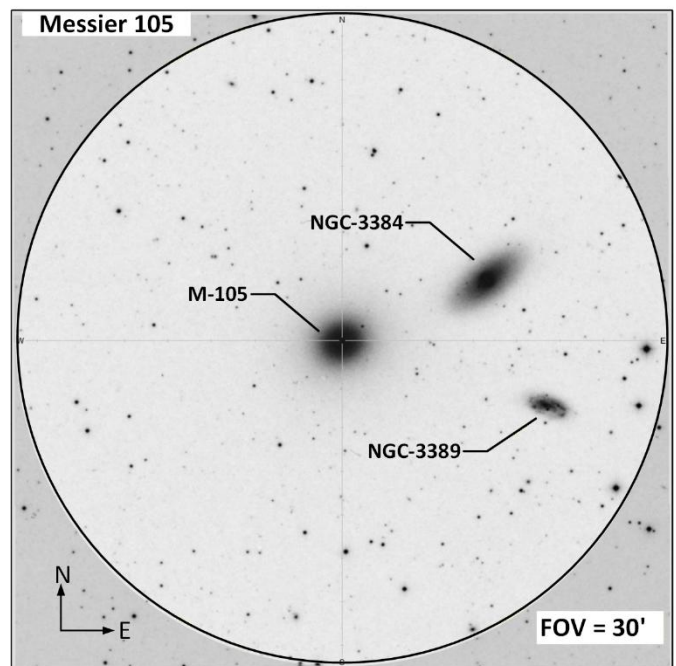
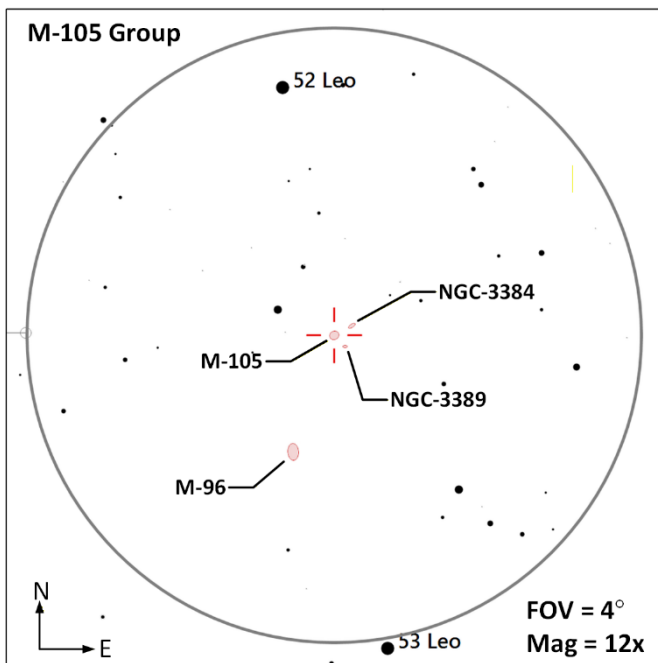
Messier 105 Group

The three galaxies Messier 105, NGC-3371, and NGC-3373 all lie within 0.5° degree of each other. Messier 105 is physically associated with NGC-3371, both estimated to be about 36 million light years away and are part of the [M96 Group](#) while NGC-3373 is estimated to be about 71 million light years distant, indicating that this galaxy just happens to be in the same line of sight and not associated with this group of galaxies.

Messier 105 (G | M=9.3 | Size=5.4x4.8 | SB=21.5 | MC=E1 |) – This is an elliptical galaxy 36.6 million light years away. This galaxy is known to contain a supermassive black hole at its core with an estimated mass between 140 to 200 million solar masses.

NGC-3371 (G | M=10.9 | Size=5.5' x 2.5' | SB=22.4 | MC=E7 |) – Also known as NGC-3384 is an elliptical galaxy, with a super massive black hole estimated to be 16 million solar masses.

NGC-3373 (G | M=12.3 | 2.8' x 1.3' | SB=22.3 | MC=SA(s)c |) – Has been listed under two different NGC numbers including NGC-3389 and NGC-3373 this spiral galaxy is not physically associated with the other two galaxies appearing in this group.

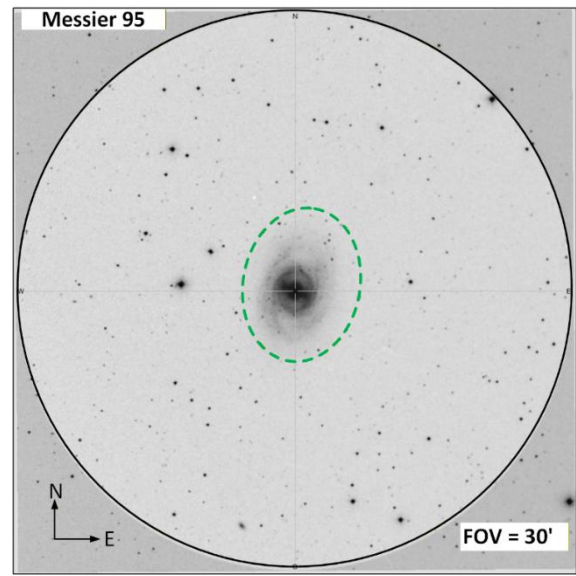
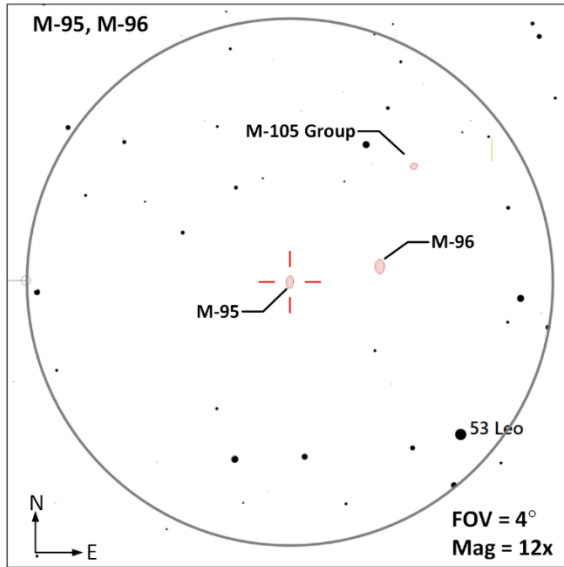


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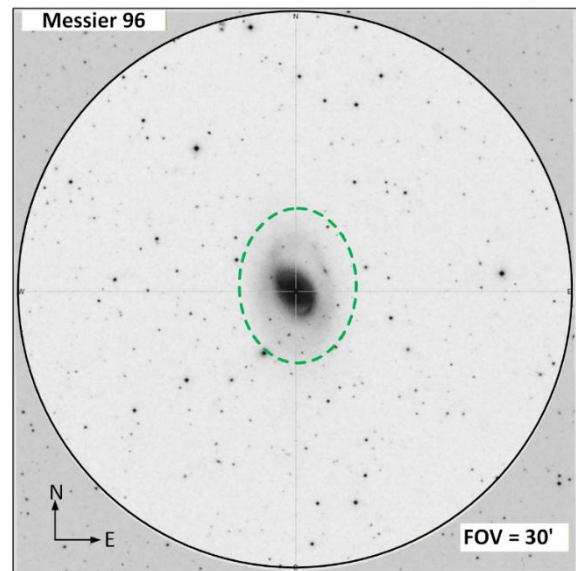
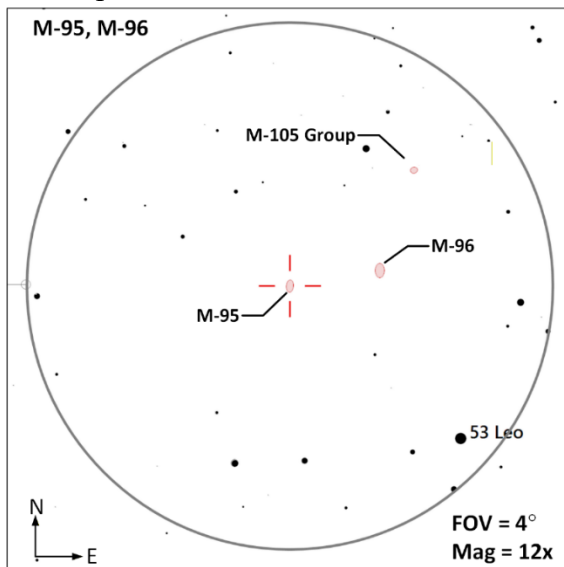
Messier 96 Group

The [M96 Group](#) consists of nine galaxies including the M-105 group detailed above the apparent distance between M-95, M-96 and the M-105 group is roughly 0.5° .

Messier 95 (G | M=9.7 | Size= $7.4' \times 5.0'$ | SB=22.2 | MC=SB(r)b |) – A barred spiral galaxy about 33 million light years from our sun and located in the main body of Leo, this is one of the fainter Messier objects and is part of the Leo I group of galaxies composed of M-95, M-96, M-65 and M-66.

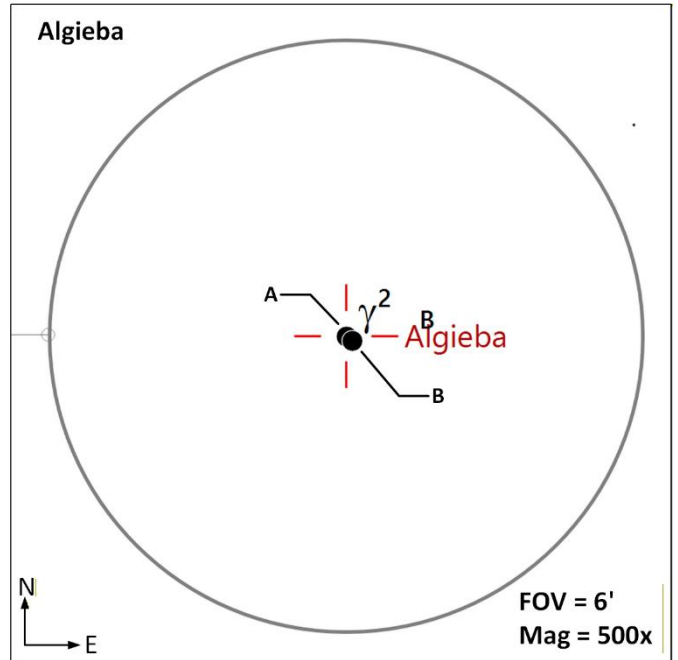
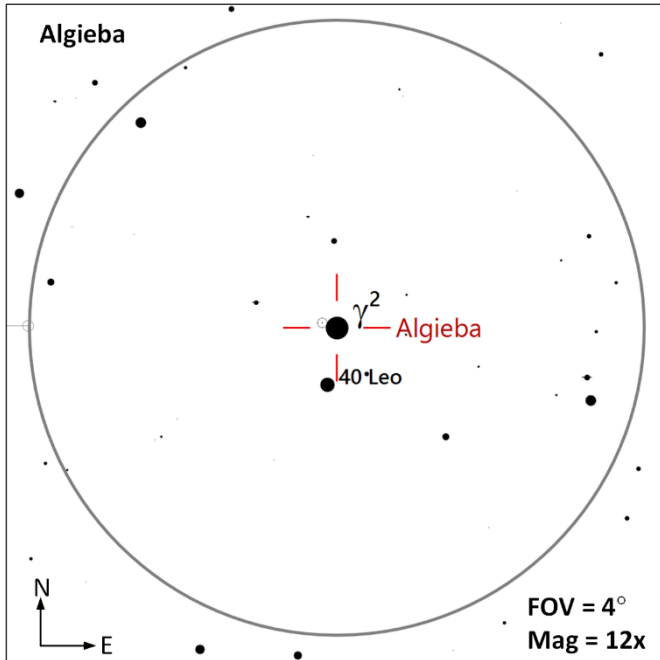


Messier 96 (G | M=9.2 | Size= $7.6' \times 5.2'$ | SB=21.8 | MC=SAB(rs)ab |) – The brightest of the Leo I group of galaxies composed of M-95, M-96, M-65 and M-66. This galaxy is estimated to be 35 million light years away.

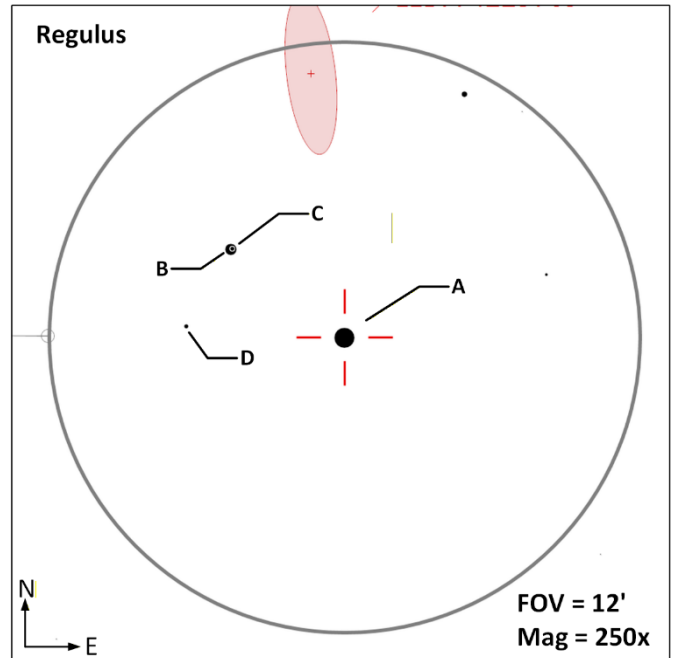
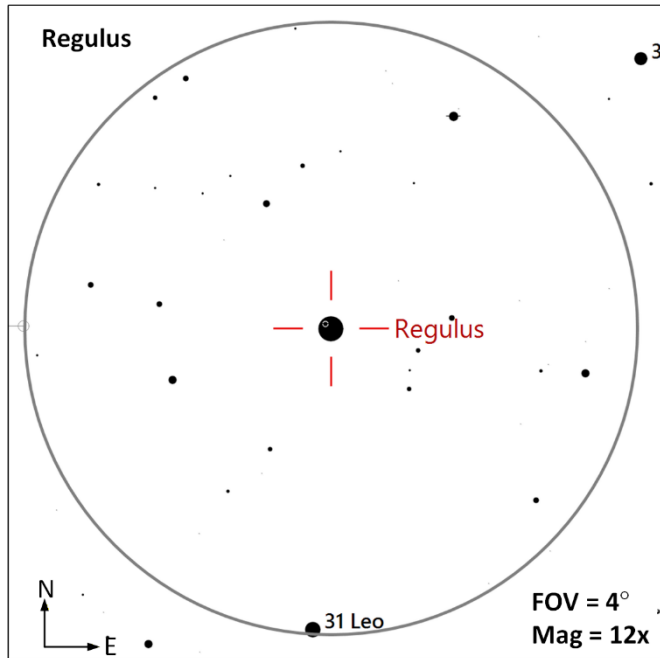


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Algieba (DS | **AB** | $M=2.4, 3.6$ | $Sep=4.8''$ | $PA=127^\circ$) – A colorful double, some report seeing an orange/yellow pair while others report yellow/greenish pair. This star marks the radiant of the annual Leonid meteor shower and is located 130 ly from Earth.

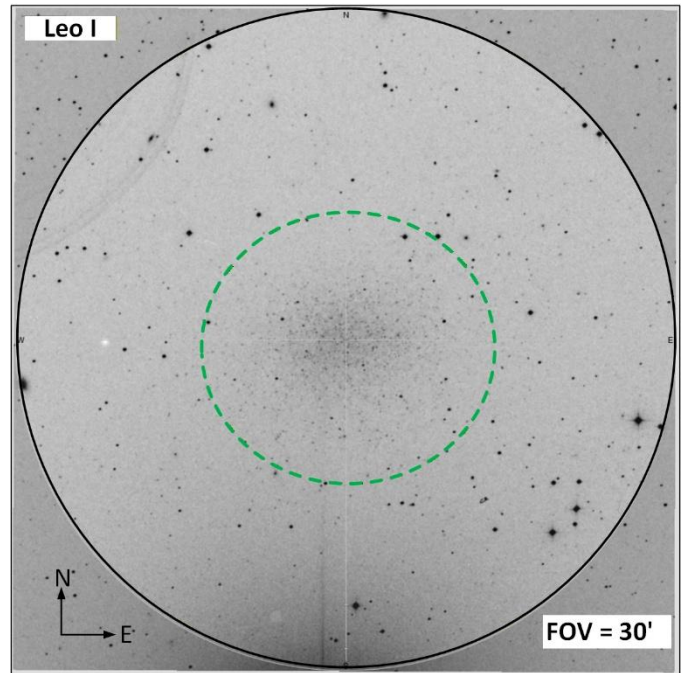
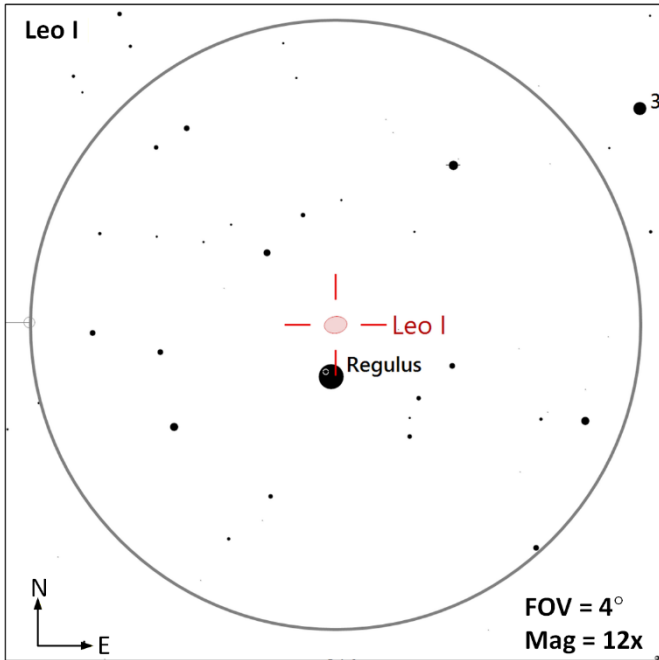


Regulus (MS-4 | **AB** | $M=1.4, 8.2$ | $Sep=176''$ | $PA=308^\circ$ || **AD** | $M=1.4, 12.1$ | $Sep=195''$ | $PA=274^\circ$ || **BC** | $M=8.2, 13.2$ | $Sep=2.1''$ | $PA=94^\circ$ || **BD** | $M=8.2, 12.1$ | $Sep=109''$ | $PA=211^\circ$) – Regulus is the brightest star in this constellation. This is a binocular double. There are three other dimmer components. The “D” component is suspected of being an optical double and not associated with the three other stars.

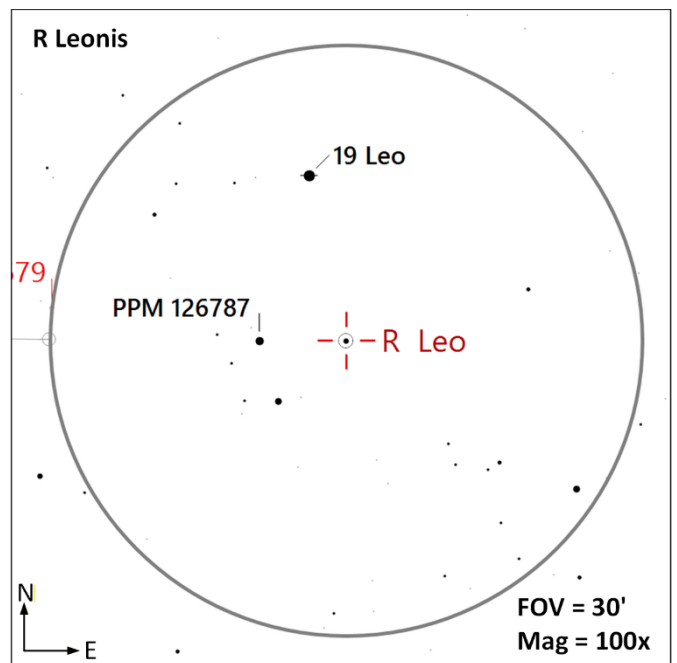
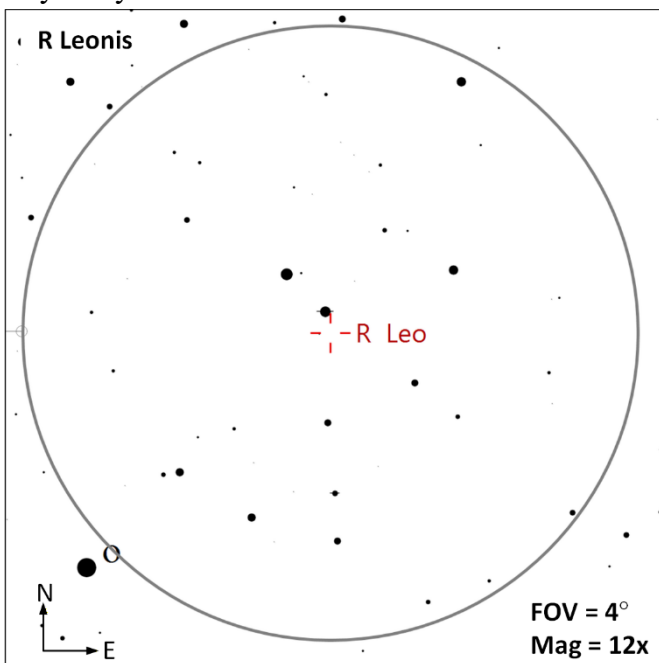


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Leo I (G | M=11.2 | Size=9.8' x 7.4' | SB= 24.5 | MC=E;dSph) – Located next to Regulus, this star may make it difficult to identify this [dwarf spheroidal galaxy](#), a galaxy with an older stellar population and very little dust and are spheroidal in shape located 820,000 light years away.

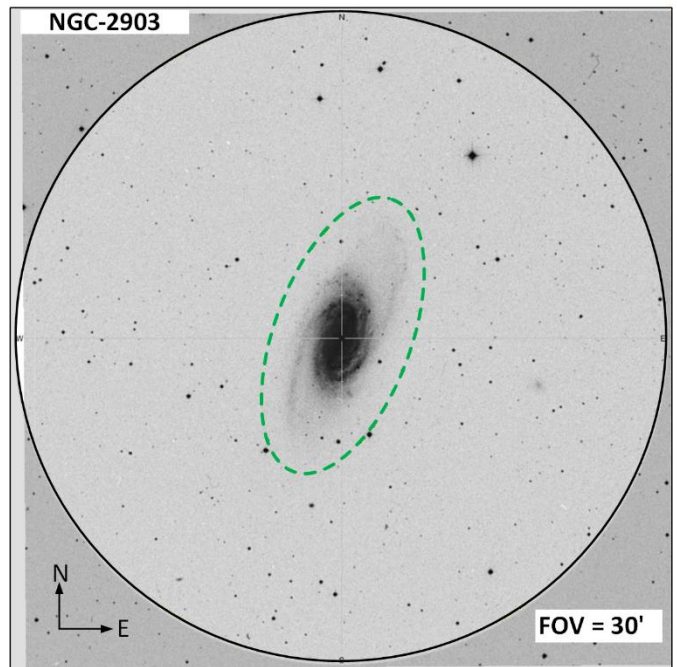
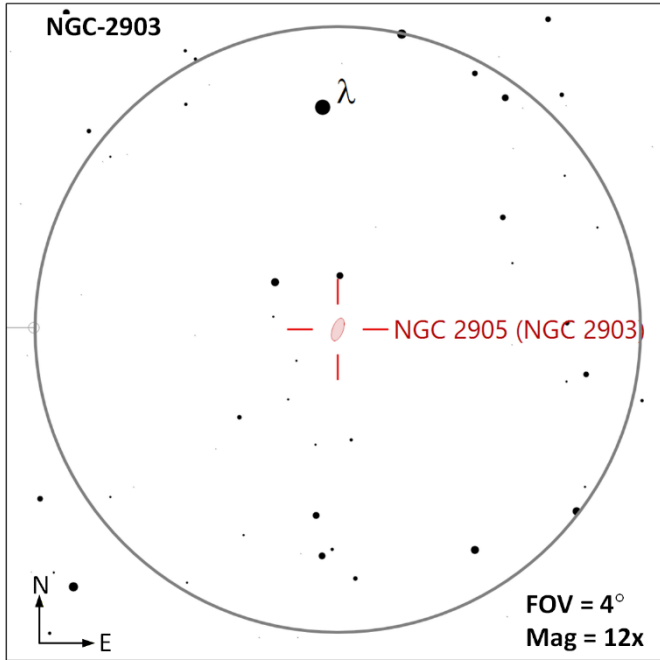


R Leonis (CS | Mag Range: 4.3 – 11.6 | Period: 312 days) – This star varies between magnitude 4.3 and 11.6 over a period of 312 days. This is one of the brightest of the long period Mira variables and is located about 232 ly away.

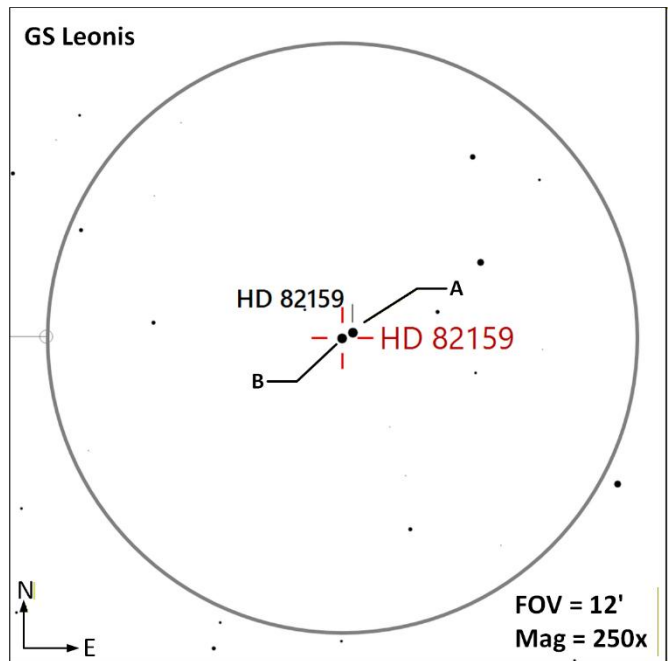
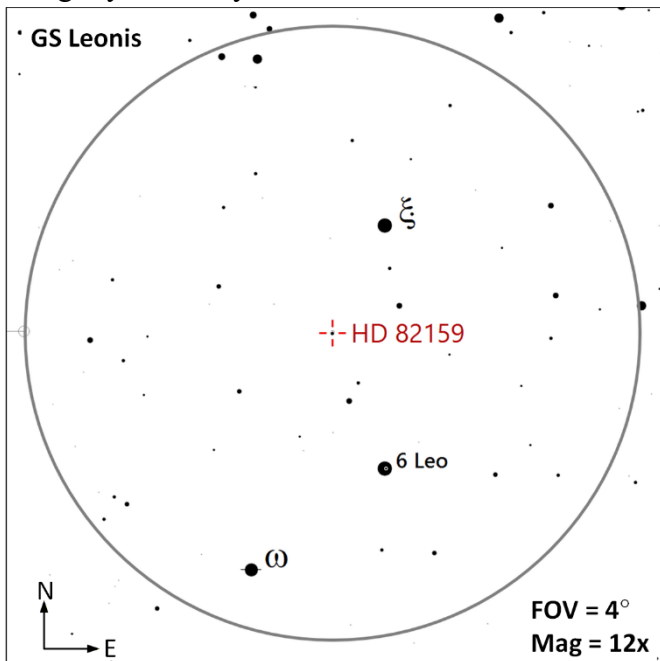


Constellation Guide

NGC-2903 (G | M=9.0 | Size=11.5' x 5.2'' | SB=22.1 | MC=SAB(rs)bc |) – One of the brighter galaxies visible in the northern hemisphere. This is a [field galaxy](#) (does not belong to a larger galaxy group) and located about 30 million light years from earth.

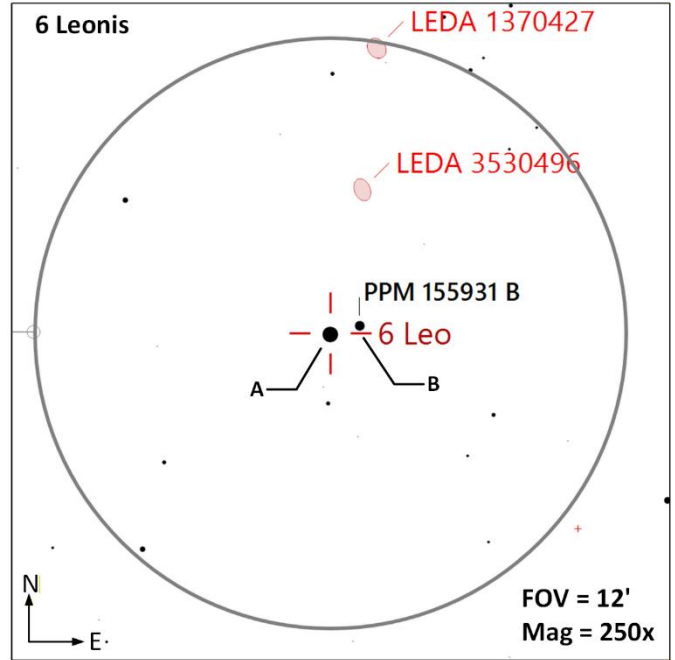
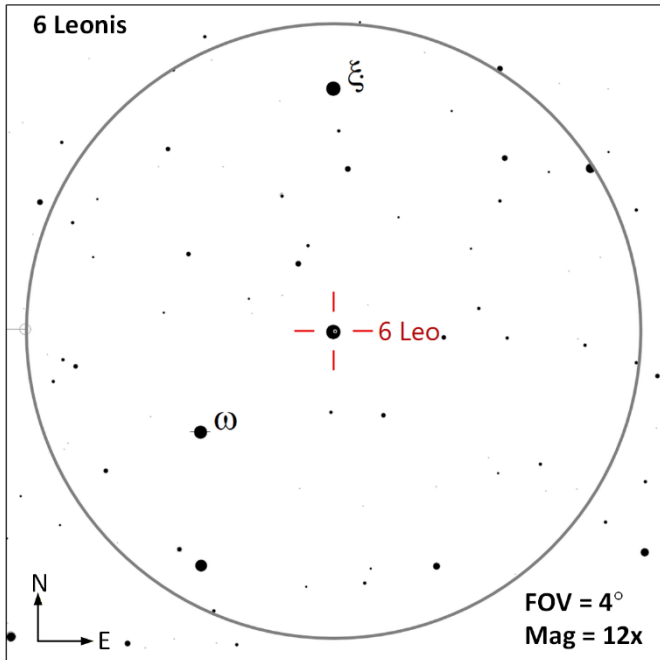


GS Leonis (DS AB | Mag=8.9, 8.9 | Sep=13.8'' | PA=242° |) – This double star is composed of blue and green colored stars of almost equal brightness that orbit each other at a distance of about 260 AU. This star system is 51.6 light years away.



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6 Leonis (DS AB | Mag=5.2, 9.3 | Sep=37.1" | PA=76.9°) – Located 499 ly away, this colorful double star system is composed of an orange-red giant and a dimmer green companion. These stars orbit each other at 5,681 AU from each other.



Constellation Guide
Observation Log: Leo (Leo)

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

Notes: _____

Date	Time	Config	Target	Notes

Date	Time	Config	Target	Notes

Constellation Guide
Observation Log: Leo (Leo)

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](#)
 - [NASA/IPAC Extragalactic Database](#)

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