

# Exploring the Universe Using Binoculars

Midcoast Senior College

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Unit 10

Galaxies

# Galaxy

A galaxy is a huge collection of stars, gas, dust, and dark matter all held together by gravity.

A galaxy is like a vast “island” in space containing millions to trillions of stars. These stars, along with clouds of gas and dust, orbit a common center because of gravity — often with a supermassive black hole at the core.

Galaxies come in many shapes, such as spirals, ellipticals, and irregulars, and our home galaxy, the Milky Way, is a spiral galaxy. They are the major building blocks of the universe, with enormous empty spaces between them.

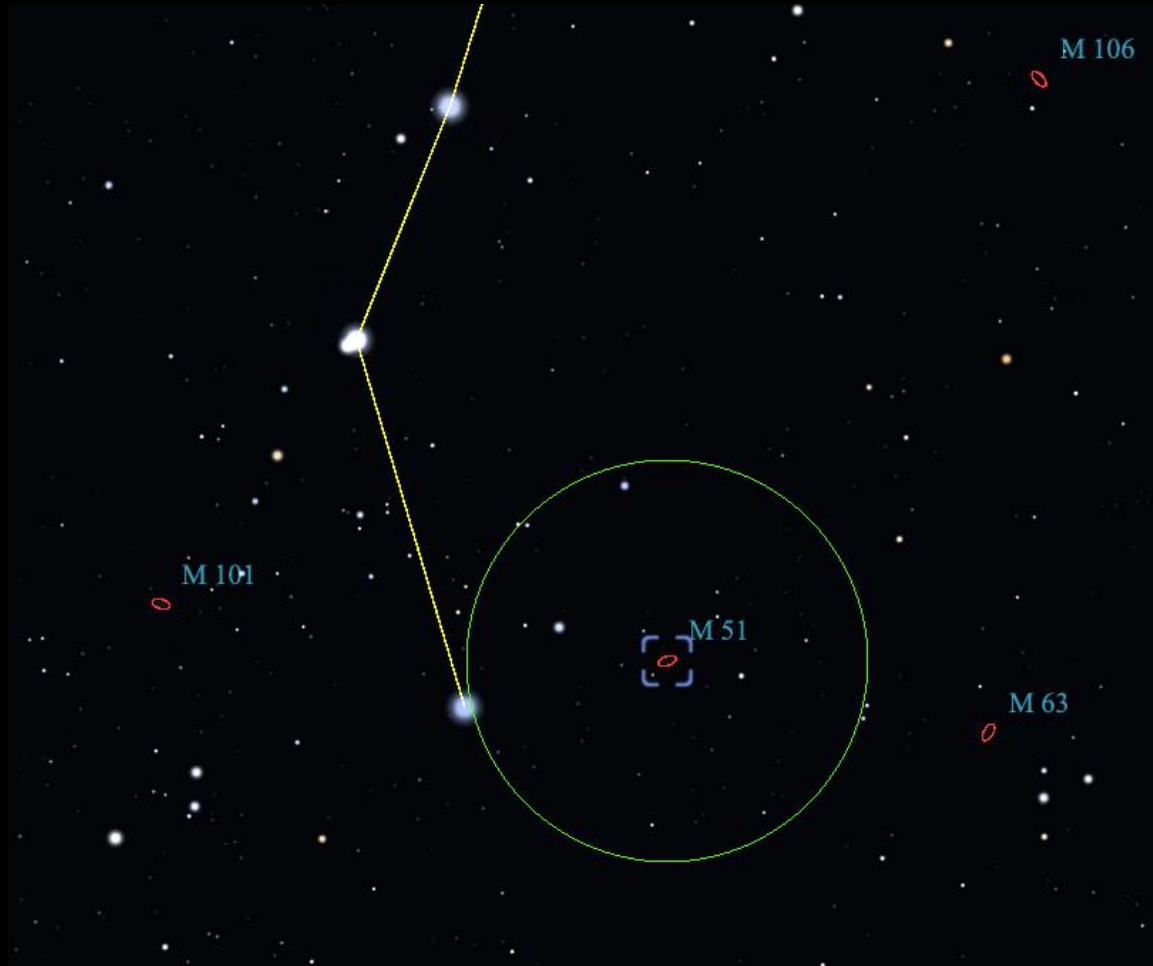
<b>Binocular Galaxies</b>					
<b>Name</b>	<b>Const</b>	<b>R.A.</b>	<b>Dec.</b>	<b>Mag.</b>	<b>Comment</b>
M31 - Andromeda Galaxy	And	00 42 44	+41 16 01	3.28	
M33 - Triangulum Galaxy	Tri	01 33 50	+30 39 29	5.79	
M81 - Bode's Galaxy	UMa	09 55 31	+69 03 57	6.77	
M82 - Cigar Galaxy	UMa	09 55 50	+69 40 49	8.02	
M51 - Whirlpool Galaxy	CVn	13 29 52	+47 11 50	7.92	
M104 - Sombrero Galaxy	Vir	12 39 59	-11 37 16	8.12	
M94	CVn	12 50 52	+41 07 20	7.88	
M63 - Sunflower Galaxy	CVn	13 15 48	+42 01 52	8.52	
M101 - Pinwheel Galaxy	UMa	14 03 12	+54 21 04	7.77	
NGC 253 - Sculptor Galaxy	Scl	00 47 32	-25 17 25	6.99	Southern Skies
NGC 5128 - Centaurus A	Cen	13 25 25	-43 00 51	6.64	Southern Skies
Large Magellanic Cloud - LMC	Dor	05 23 35	-69 45 29	0.80	Southern Skies
Small Magellanic Cloud - SMC	Tuc	00 52 36	-72 48 08	2.74	Southern Skies
<b>Galaxy Pairs and Groups</b>					
M81 and M82	UMa				
M65, M66, NGC 3628 - Leo Triplet	Leo				
Virgo Cluster - Markarian's Chain	Vir/Com				
<b>Challenging, for Dark Skies</b>					
M108	UMa	11 11 29	+55 40 31	9.96	
M109	UMa	11 57 35	+53 22 34	9.62	
IC 342 - Hidden Galaxy	Cam	03 46 47	+68 05 38	8.57	



The image displays the Whirlpool Galaxy (M51) in a composite format. The primary structure is a bright, yellowish-white spiral galaxy with a dense central core and well-defined spiral arms. Overlaid on this are numerous bright red spots and streaks, which represent the emission from molecular hydrogen (H2) in the galaxy's interstellar medium. These red features are concentrated along the spiral arms, highlighting regions of active star formation. The background is a deep black space filled with distant, faint stars.

**M51 – Whirlpool Galaxy**

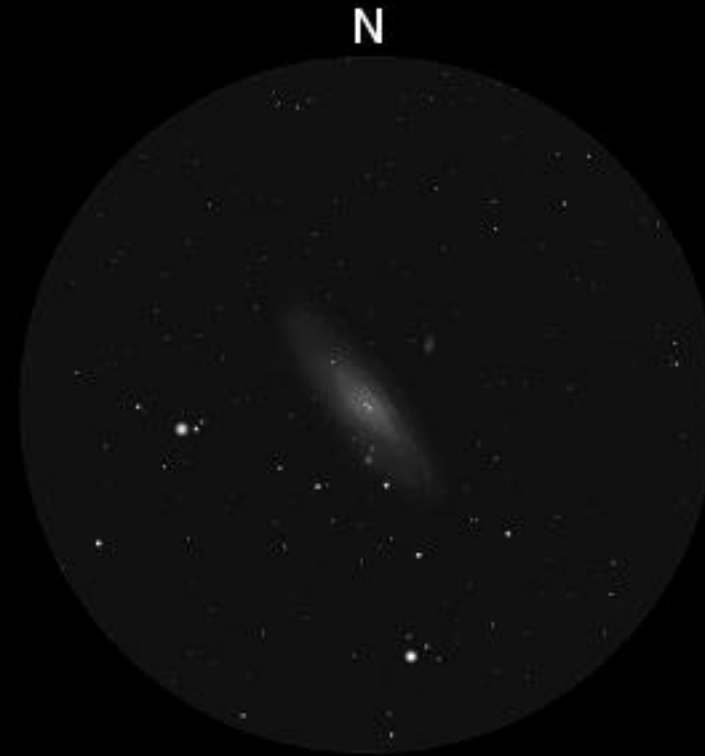
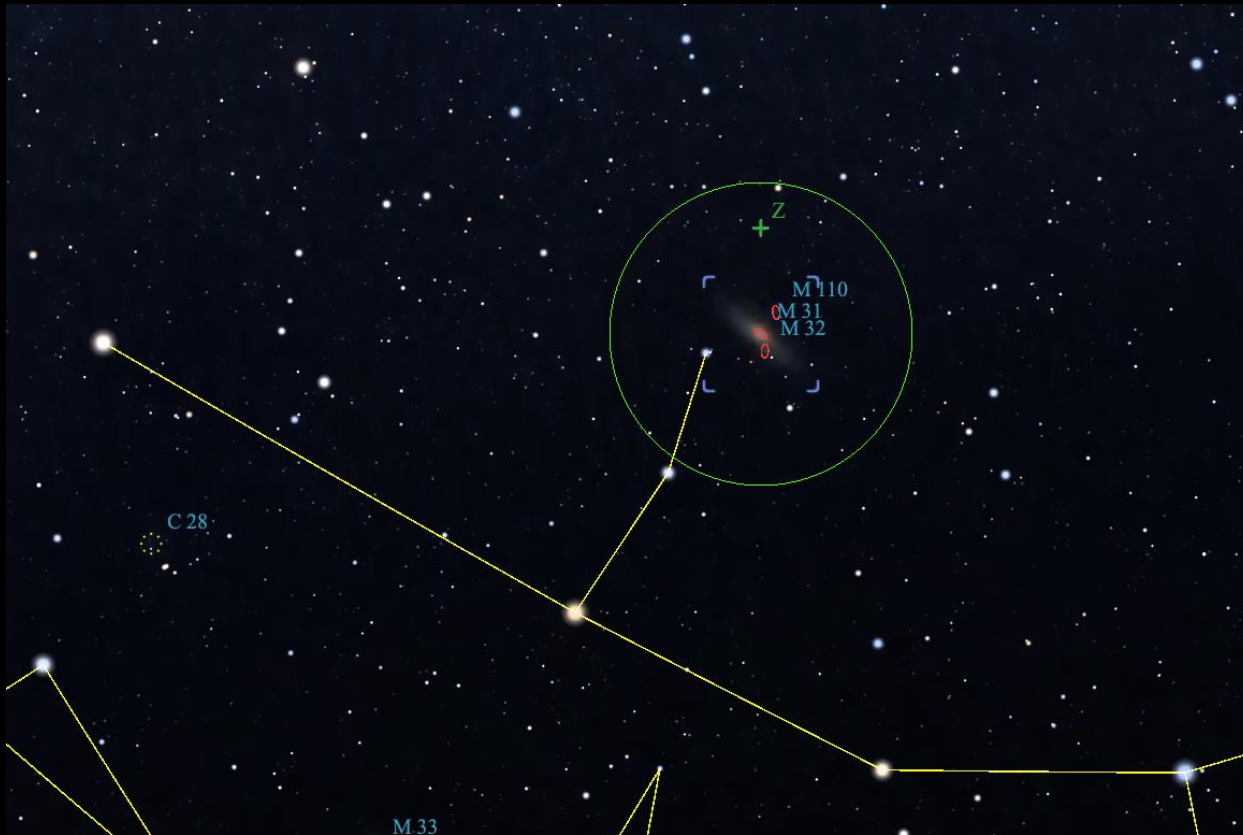
# M51 – Whirlpool Galaxy



<https://binocularsky.com>



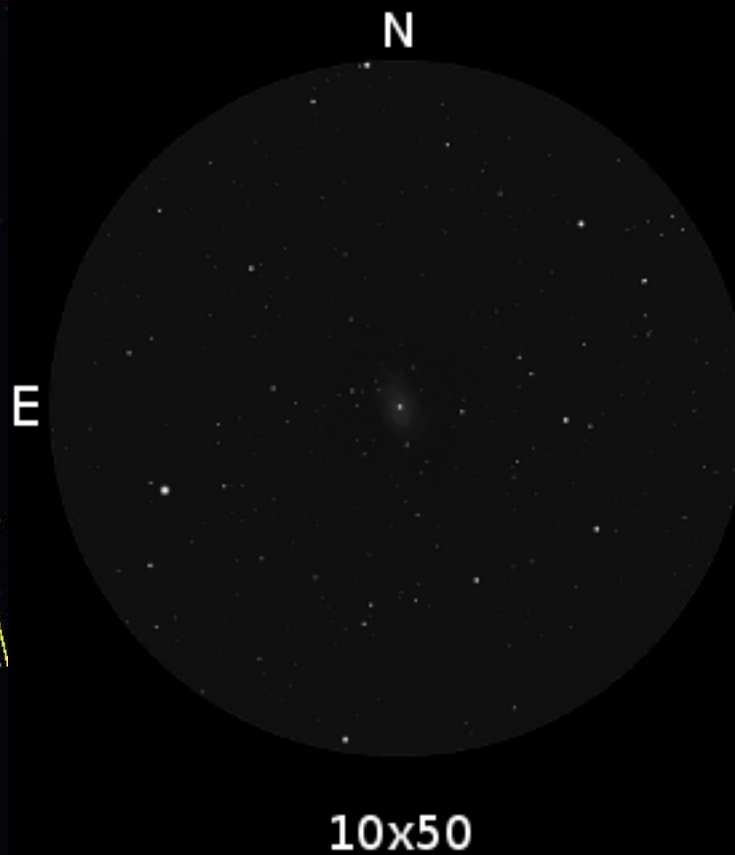
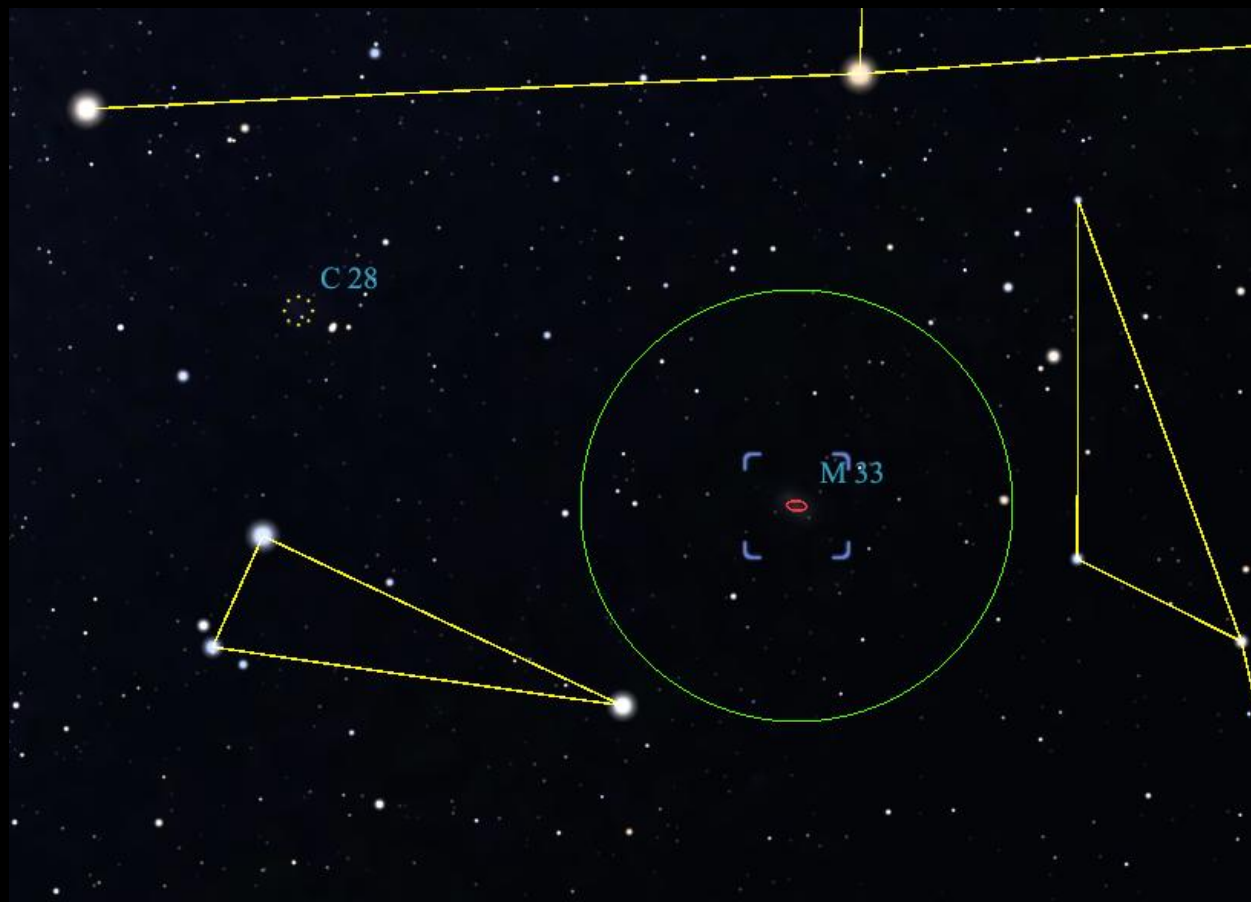
# M31 – Andromeda Galaxy



10x50

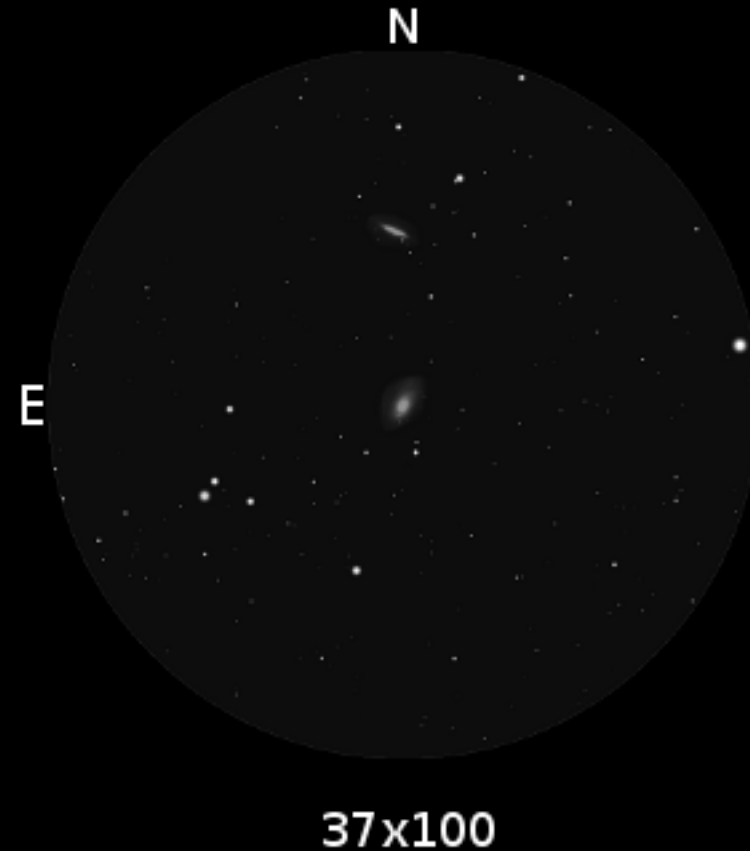
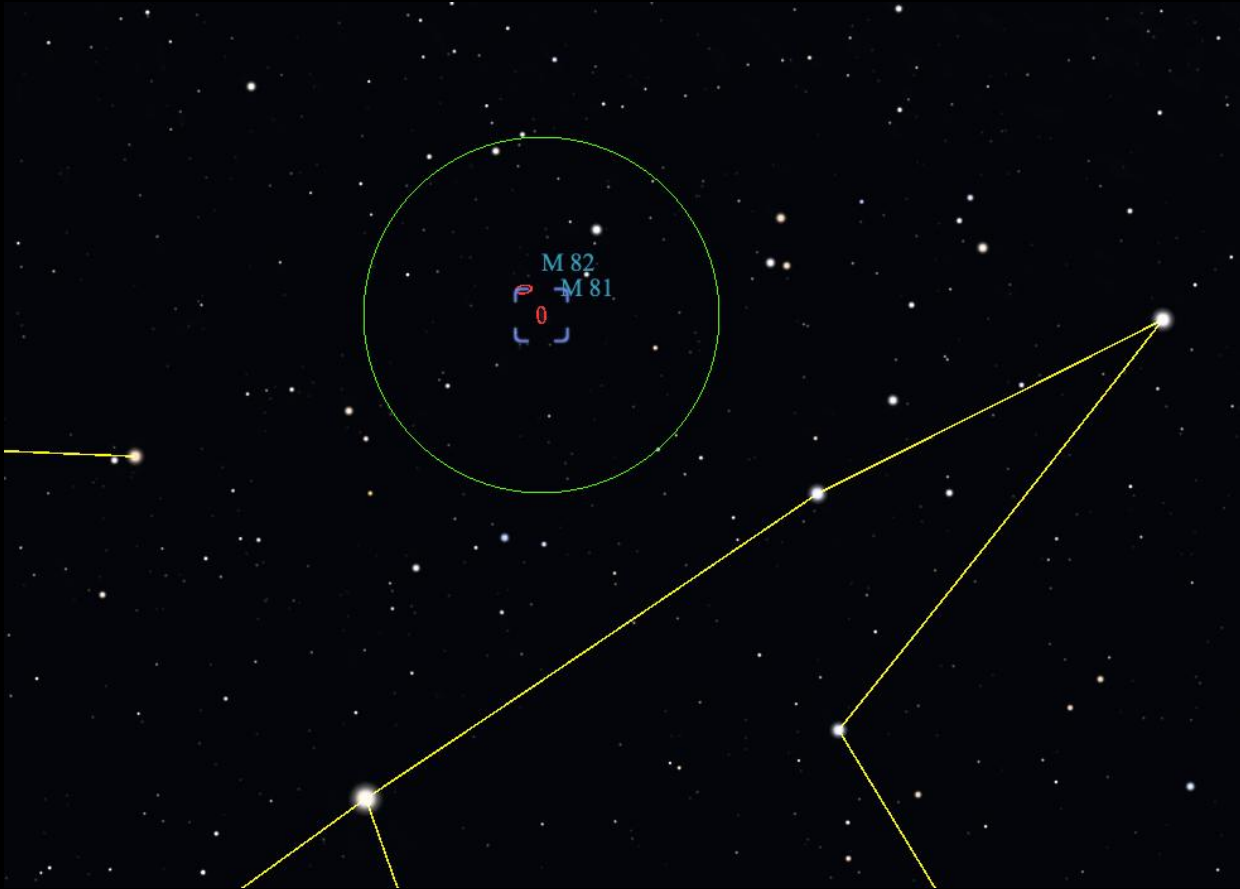
<https://binocularsky.com>

# M33 – Pinwheel Galaxy



<https://binocularsky.com>

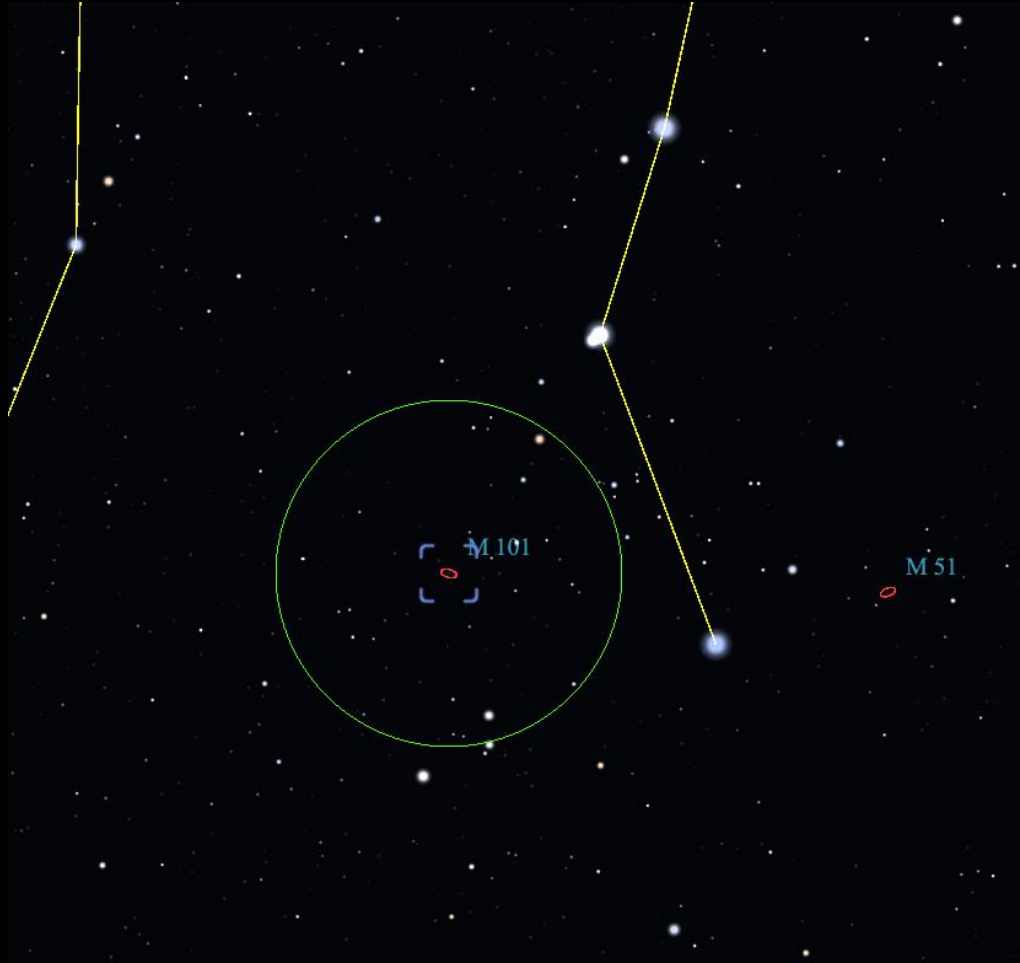
# M81 and M82 – Bode's Nebulae



<https://binocularsky.com>

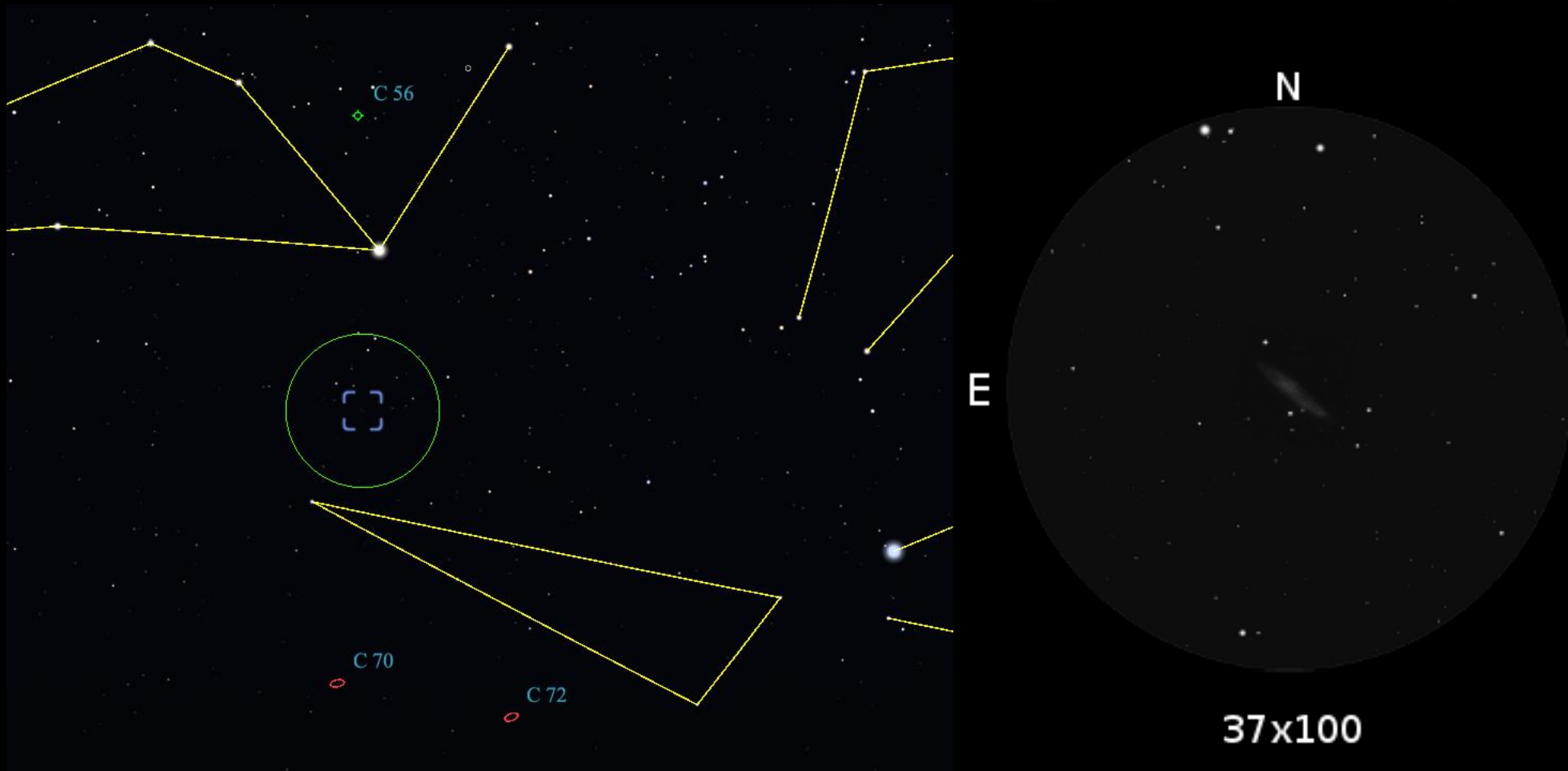


# M101 – Ursa Major



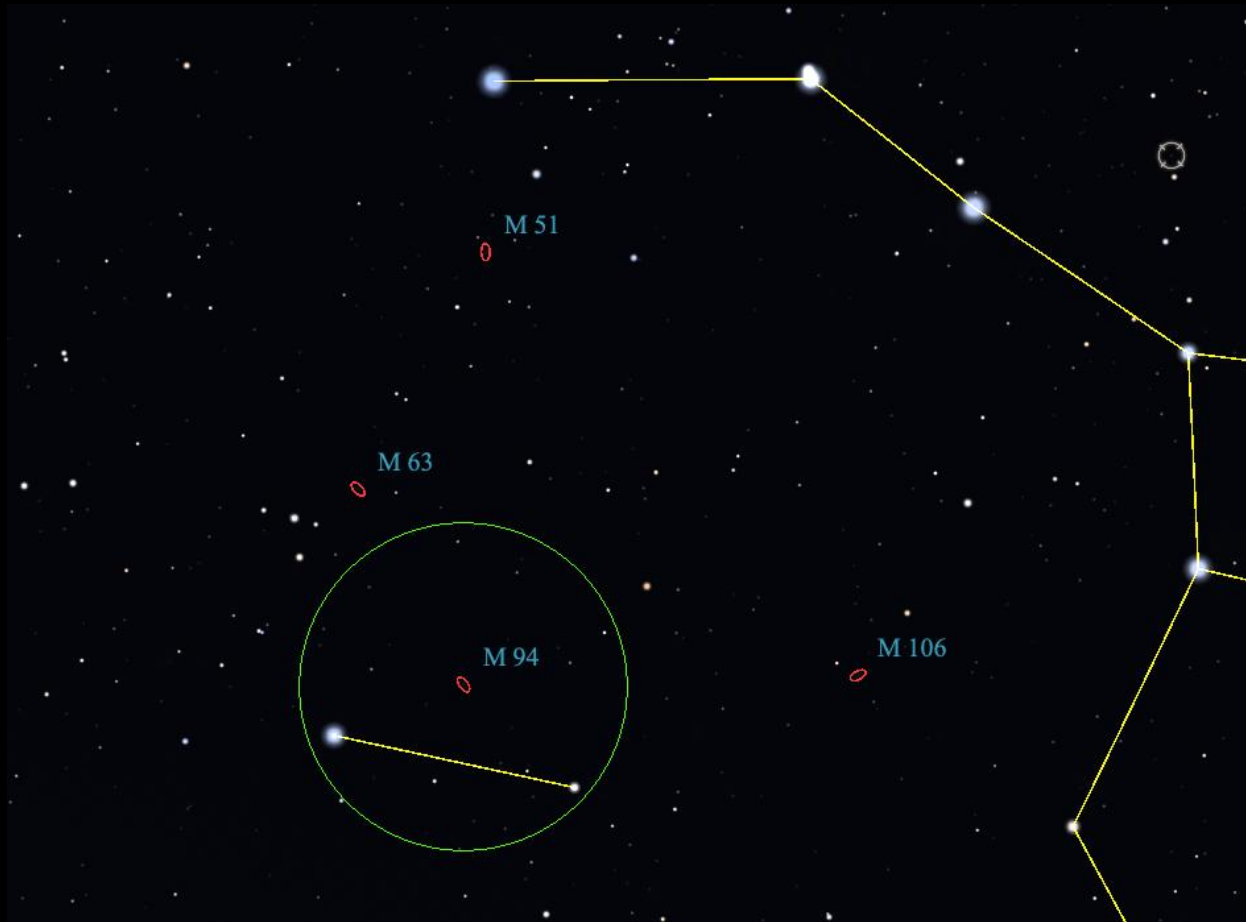
<https://binocularsky.com>

# NGC 253 – Sculptor Galaxy



<https://binocularsky.com>

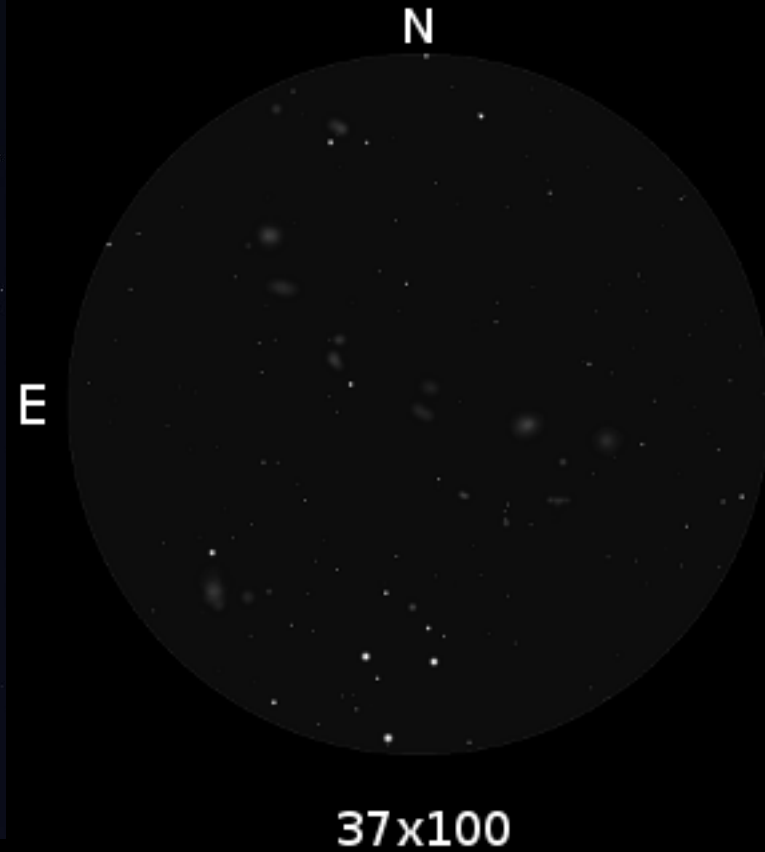
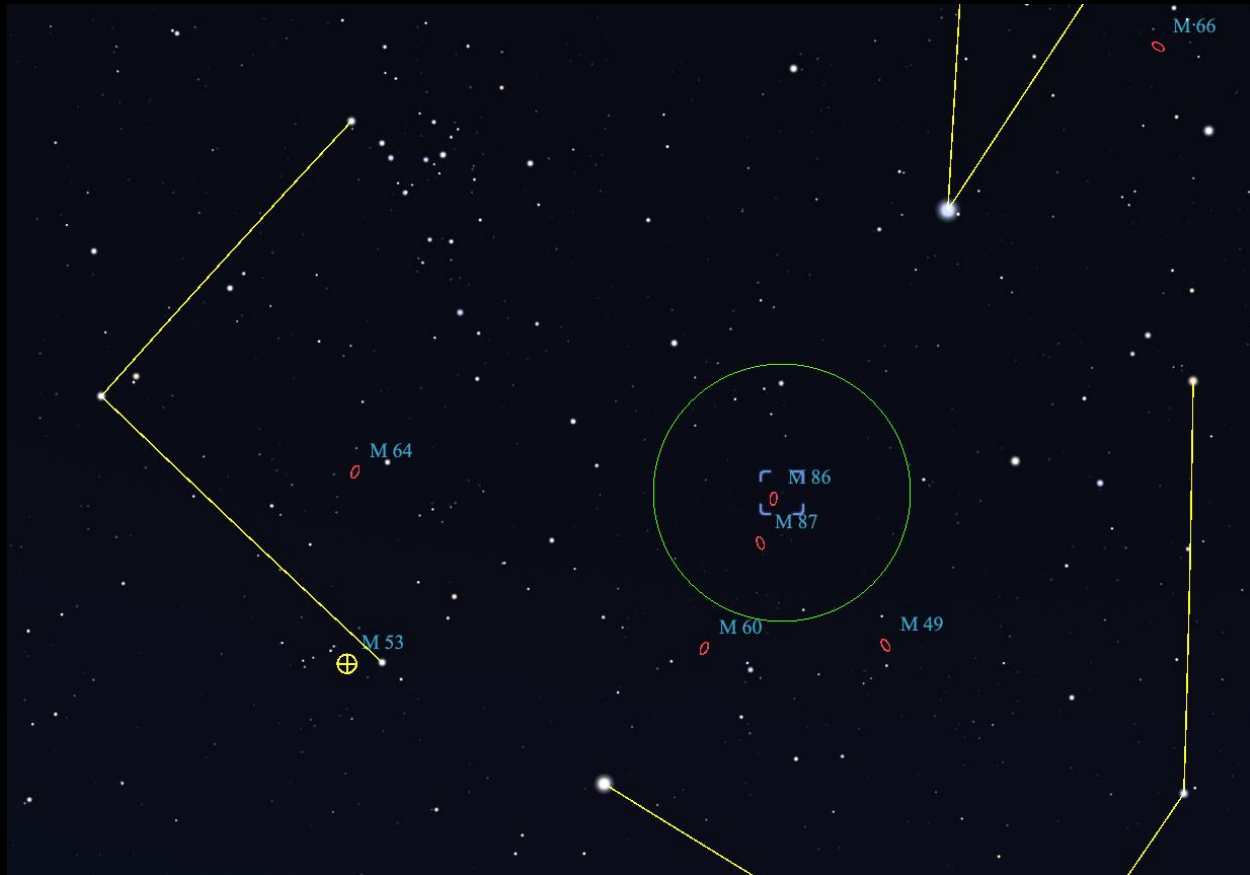
# M94 – Canes Venatici



<https://binocularsky.com>



# Markarian's Chain



<https://binocularsky.com>