

AHSP Binocular Observing Award



Compiled by Phil Harrington

www.philharrington.net

- To qualify for the BOA pin, you must see 15 of the following 20 binocular targets. Check off each as you spot them.

Seen	#	Object	Const.	Type*	RA	Dec	Mag	Size	Nickname
	1.	M13	Her	GC	16 41.7	+36 28	5.9	16'	Great Hercules Globular
	2.	M57	Lyr	PN	18 53.6	+33 02	9.7	86"x62"	Ring Nebula
	3.	Collinder 399	Vul	AS	19 25.4	+20 11	3.6	60'	Coathanger/Brocchi's Cluster
	4.	Albireo	Cyg	Dbl	19 30.7	+27 57	3.1 5.1	35"	Color Contrasting Double
	5.	M27	Vul	PN	19 59.6	+22 43	8.1	8'x6'	Dumbbell Nebula
	6.	NGC 6992	Cyg	SNR	20 56.4	+31 43	-	60'x8	Veil Nebula (east)
	7.	NGC 7000	Cyg	BN	20 58.8	+44 20	-	120'x100'	North America Nebula
	8.	M15	Peg	GC	21 30.0	+12 10	7.5	12'	Great Pegasus Cluster
	9.	M39	Cyg	OC	21 32.2	+48 26	4.6	32'	
	10.	Barnard 168	Cyg	DN	21 53.2	+47 12	-	100'x10'	West of Cocoon Nebula
	11.	IC 5146	Cyg	BN/OC	21 53.5	+47 16	-	12'x12'	Cocoon Nebula
	12.	M110	And	Gx	00 40.4	+41 41	10	17'x10'	
	13.	M32	And	Gx	00 42.8	+40 52	10	8'x6'	
	14.	M31	And	Gx	00 42.8	+41 16	4.5	178'	Andromeda Galaxy
	15.	NGC 457	Cas	OC	01 19.1	+58 20	6.4	13'	Owl Cluster/ET Cluster
	16.	M33	Tri	Gx	01 33.9	+30 40	7.0	73'x45'	Pinwheel Galaxy
	17.	NGC 663	Cas	OC	01 46.0	+61 15	7.1	16'	
	18.	NGC 752	And	OC	01 57.8	+37 41	5.7	50'	
	19.	Stock 2	Cas	OC	02 15.0	+59 16	4.4	60'	Muscleman Cluster
	20.	NGC 869/884	Per	OCx2	02 19.0	+57 09	5.3	60'	Double Cluster

*Type:

AS:	Asterism	Gx:	Galaxy	PN:	Planetary nebula
BN:	Bright nebula	GC:	Globular cluster	SNR:	Supernova remnant
DN:	Dark nebula	OC:	Open cluster	Dbl:	Double Star

This program is to recognize observations made with Binoculars **during** the 2018 Almost Heaven Star Party (AHSP). To receive this observing reward, observe at least 15 objects from this observing list during one or more evenings at AHSP. Check off which objects you observed on the prior page and provide the following additional information to Alan Goldberg or Dan Ward at AHSP or via email (agoldber3@yahoo.com) or (danlward51@gmail.com) no later than September 30, 2018.

Observer's Details

First Name: _____ Last Name: _____

Email Address: _____

Power and Size of Binoculars Used: (7x50, 8x35, etc.): _____

Date(s) of Observation: _____

Member of the Northern Virginia Astronomy Club: Yes _____ No _____

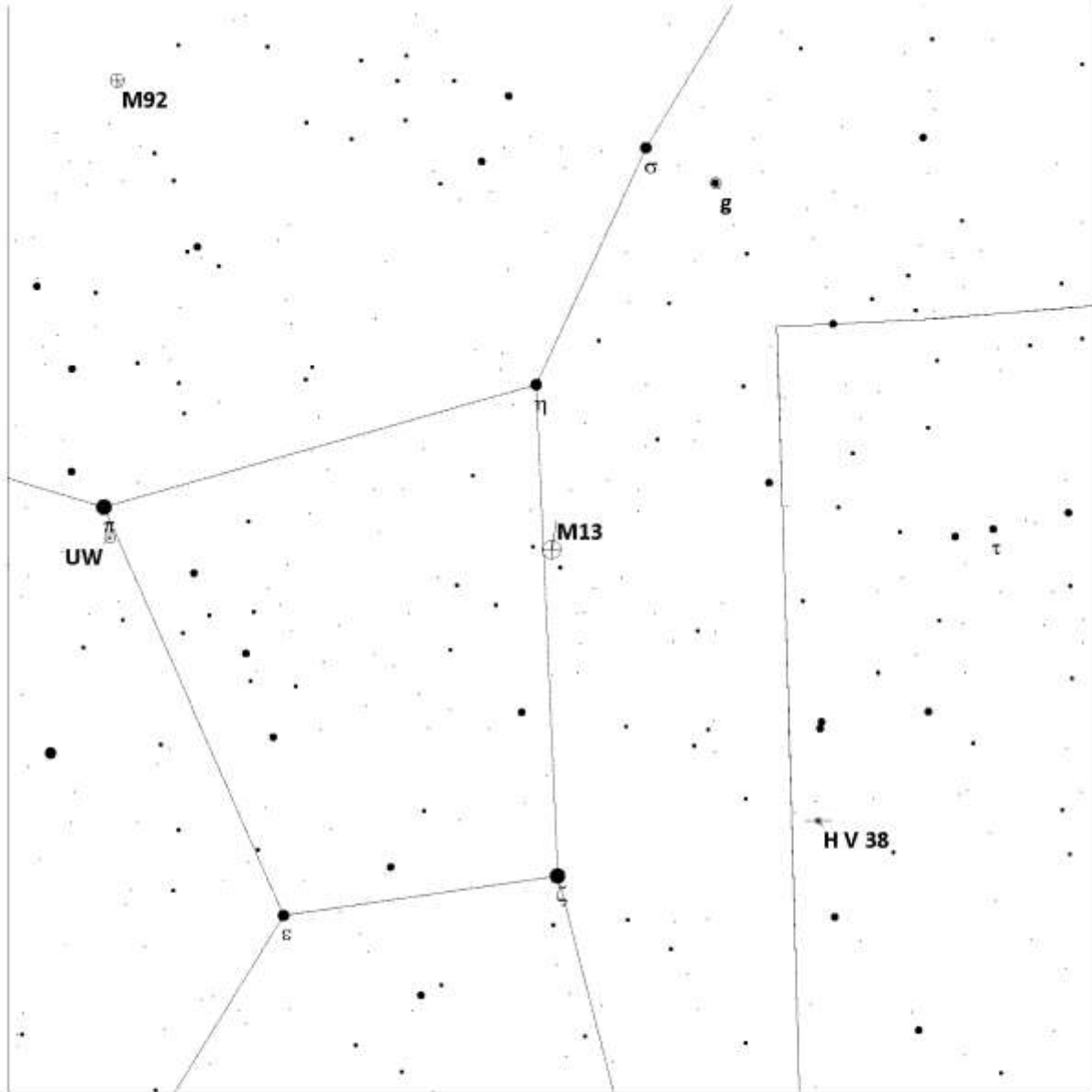
How many Almost Heaven Star Parties have you attended, including this one? _____

What is your Astro Observing skill level: Novice _____ Intermediate _____ Advanced _____

Note: The following charts were created by **Phil Harrington** using the *Touring the Universe Through Binoculars* atlas. The center of view, field of view (FOV), and limiting magnitude of each chart are shown in the chart legend. See more of Phil's books and observing support materials at:

<http://www.philharrington.net/index.htm>

M13 (Great Hercules Globular)



Touring the Universe Through Binoculars Atlas

RA: 16h 41m, Dec: 36d 28m, FOV: 15d, Mag: 8

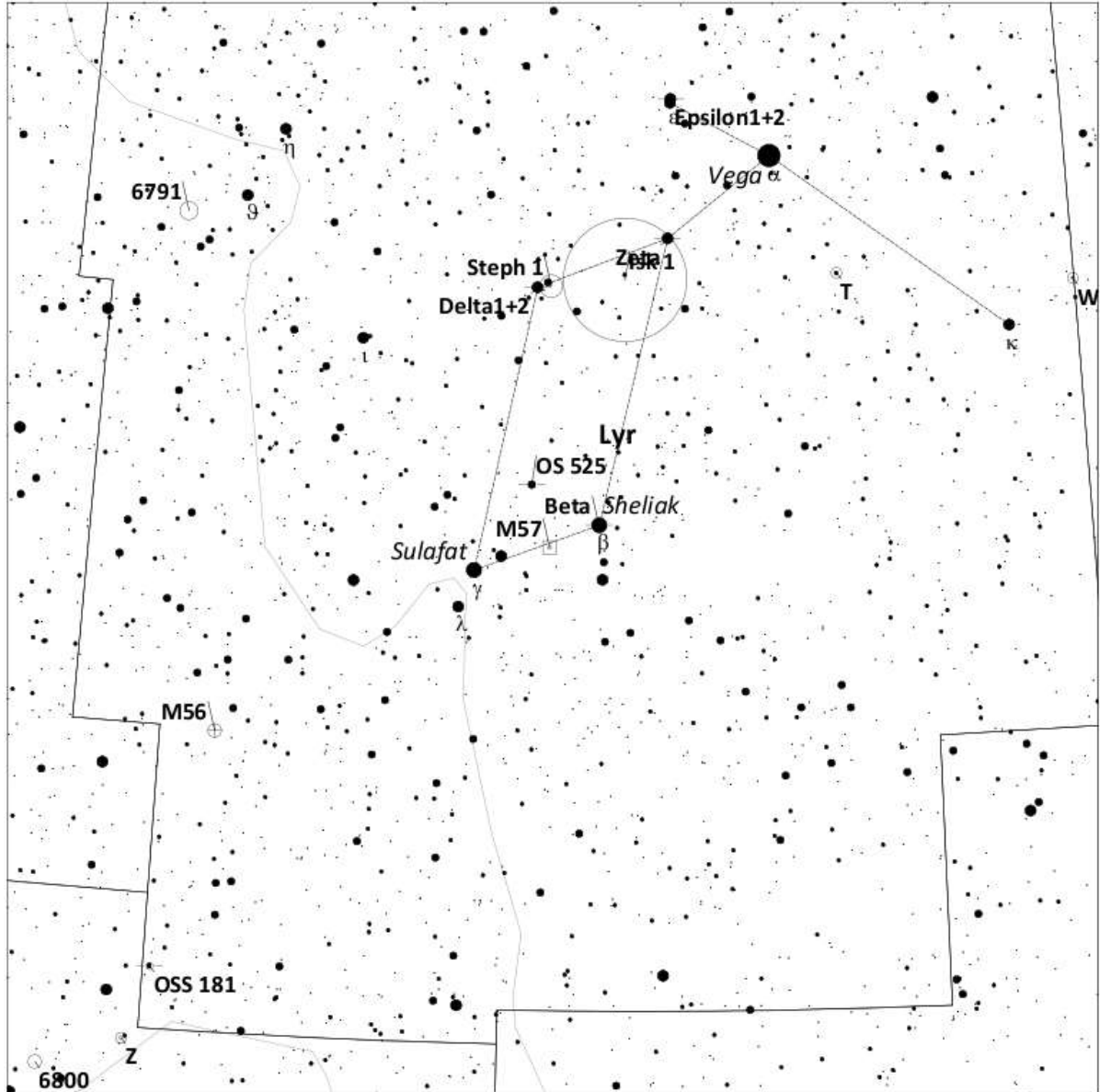
- ≤ 1.1
- 1.1 - 2.3
- 2.3 - 3.4
- 3.4 - 4.6
- 4.6 - 5.7
- 5.7 - 6.9
- > 6.9

- Galaxy
- Open Cluster
- ⊕ Globular Cluster
- Diffuse Nebula
- ◻ Planetary Nebula
- ⊙ Variable Star
- ⊕ Double Star

- ☿ Mercury
- ♀ Venus
- ♂ Mars
- ♃ Jupiter
- ♄ Saturn
- ♅ Uranus
- ♆ Neptune

- ♇ Pluto
- ☼ Sun
- ☾ Moon
- ♁ Asteroid
- ☄ Comet
- Unknown

M57 (Ring Nebula)

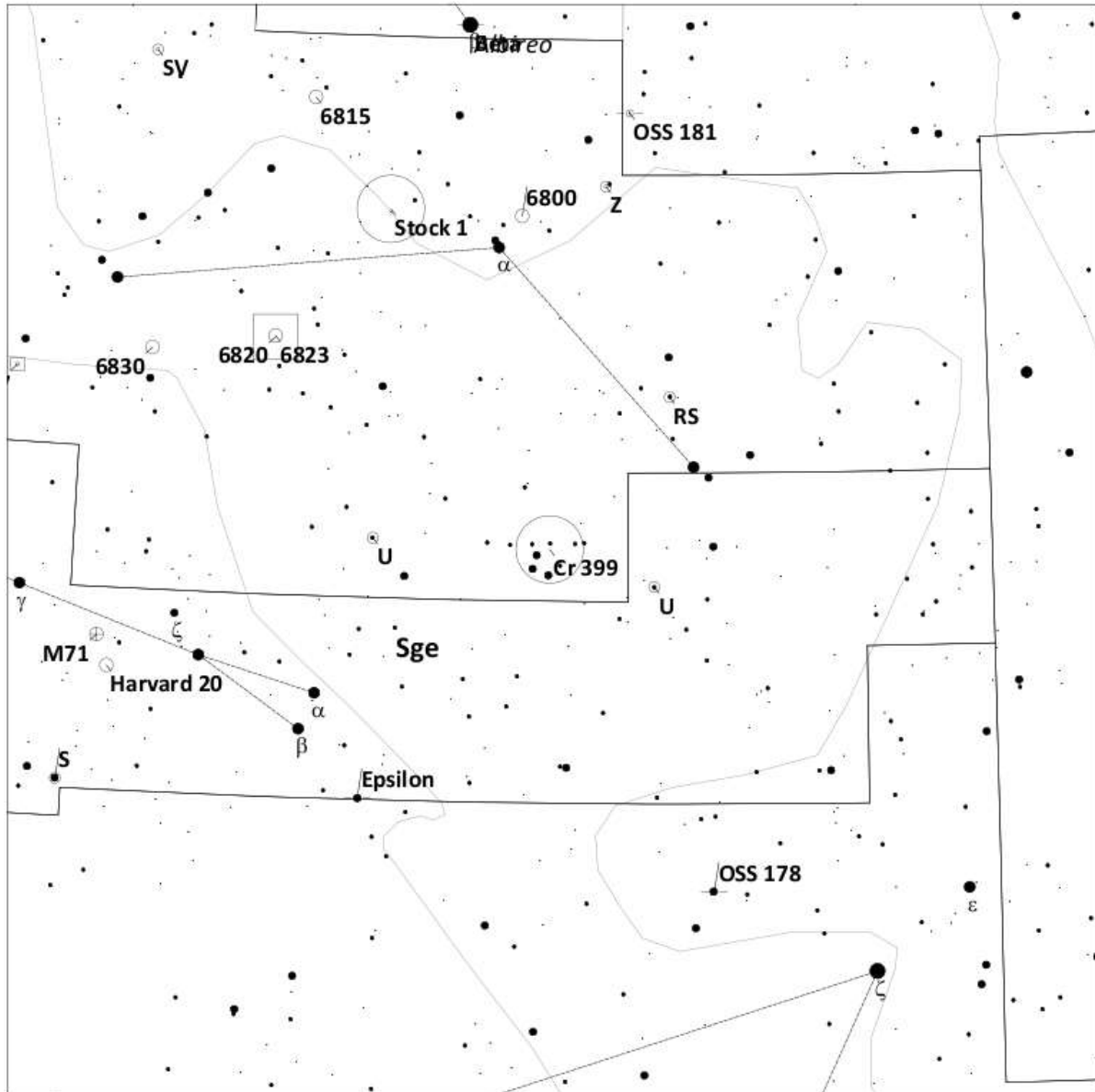


Touring the Universe Through Binoculars Atlas

RA: 18h 53m, Dec: 33d 1m, FOV: 15d, Mag: 9

- | | | | |
|-------------|--------------------|-----------|------------|
| ● ≤ 1.3 | ○ Galaxy | ♿ Mercury | ♇ Pluto |
| ● 1.3 - 2.6 | ○ Open Cluster | ♀ Venus | ☉ Sun |
| ● 2.6 - 3.9 | ⊕ Globular Cluster | ♂ Mars | ☾ Moon |
| ● 3.9 - 5.1 | □ Diffuse Nebula | ♃ Jupiter | ♁ Asteroid |
| ● 5.1 - 6.4 | ◻ Planetary Nebula | ♄ Saturn | ☄ Comet |
| ● 6.4 - 7.7 | ⊙ Variable Star | ♅ Uranus | ⊛ Unknown |
| ○ > 7.7 | ⊖ Double Star | ♆ Neptune | |

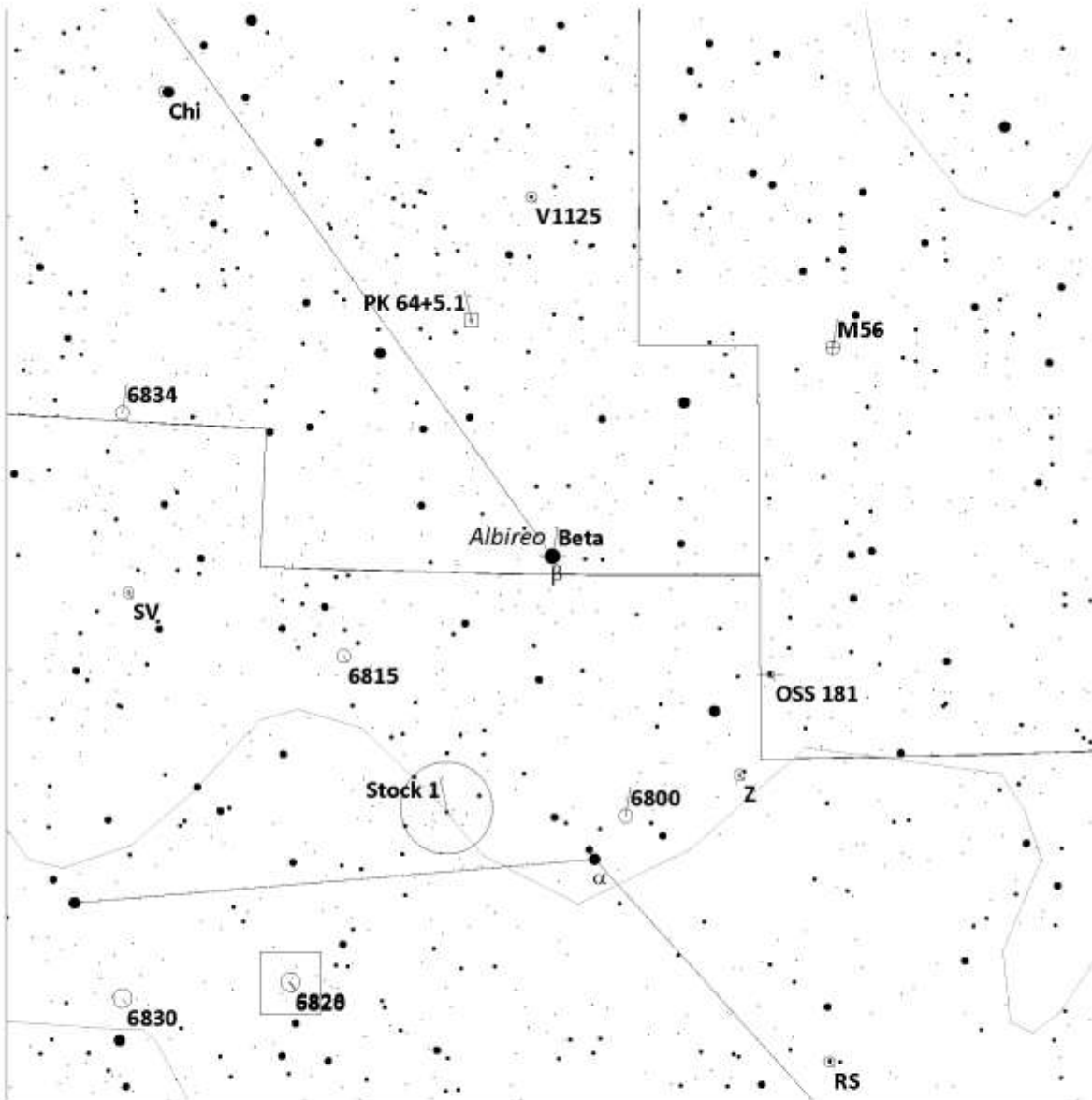
Coathanger (Brocchi's Cluster/Collinder 399)



Touring the Universe Through Binoculars Atlas
RA: 19h 25m, Dec: 20d 10m, FOV: 15d, Mag: 8

- | | | | |
|-------------|--------------------|-----------|------------|
| ● ≤ 1.1 | ○ Galaxy | ♿ Mercury | ♃ Pluto |
| ● 1.1 - 2.3 | ○ Open Cluster | ♀ Venus | ☉ Sun |
| ● 2.3 - 3.4 | ⊕ Globular Cluster | ♂ Mars | ☾ Moon |
| ● 3.4 - 4.6 | □ Diffuse Nebula | ♃ Jupiter | ♁ Asteroid |
| ● 4.6 - 5.7 | ◻ Planetary Nebula | ♄ Saturn | ☄ Comet |
| ● 5.7 - 6.9 | ⊙ Variable Star | ♅ Uranus | ⊛ Unknown |
| ○ > 6.9 | ⊖ Double Star | ♆ Neptune | |

Albireo (Beta Cygnus) – Color Contrasting Double



Touring the Universe Through Binoculars Atlas
RA: 19h 30m, Dec: 27d 57m, FOV: 11d, Mag: 8.5

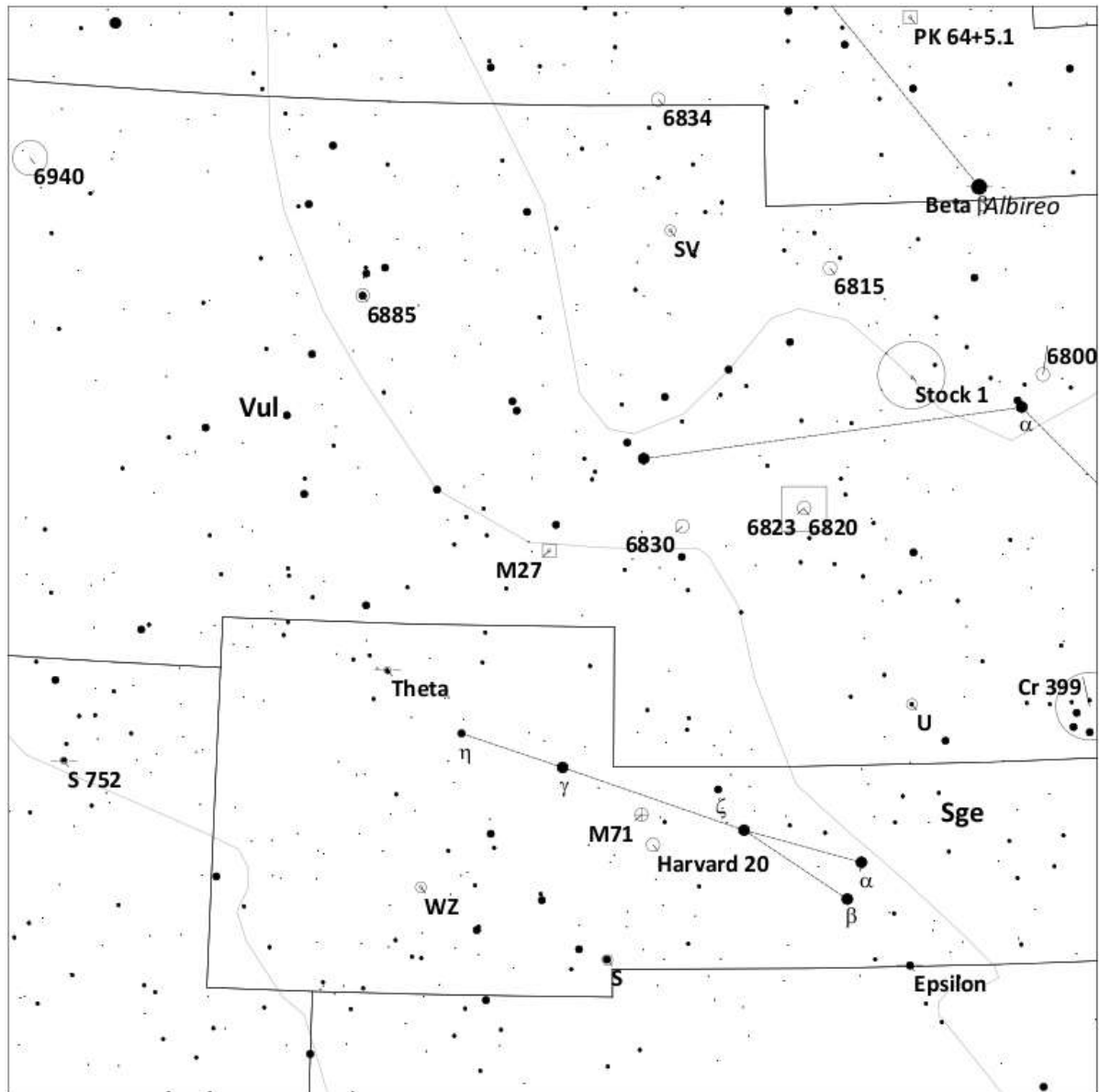
- ≤ 1.3
- 1.3 - 2.6
- 2.6 - 3.9
- 3.9 - 5.1
- 5.1 - 6.4
- 6.4 - 7.7
- > 7.7

- Galaxy
- Open Cluster
- ⊕ Globular Cluster
- Diffuse Nebula
- Planetary Nebula
- ⊙ Variable Star
- ⊖ Double Star

- ☿ Mercury
- ♀ Venus
- ♂ Mars
- ♃ Jupiter
- ♄ Saturn
- ♅ Uranus
- ♆ Neptune

- ♇ Pluto
- ☼ Sun
- ☾ Moon
- ♁ Asteroid
- ☄ Comet
- Unknown

M27 (Dumbbell Nebula)



Touring the Universe Through Binoculars Atlas
RA: 19h 59m, Dec: 22d 43m, FOV: 15d, Mag: 8

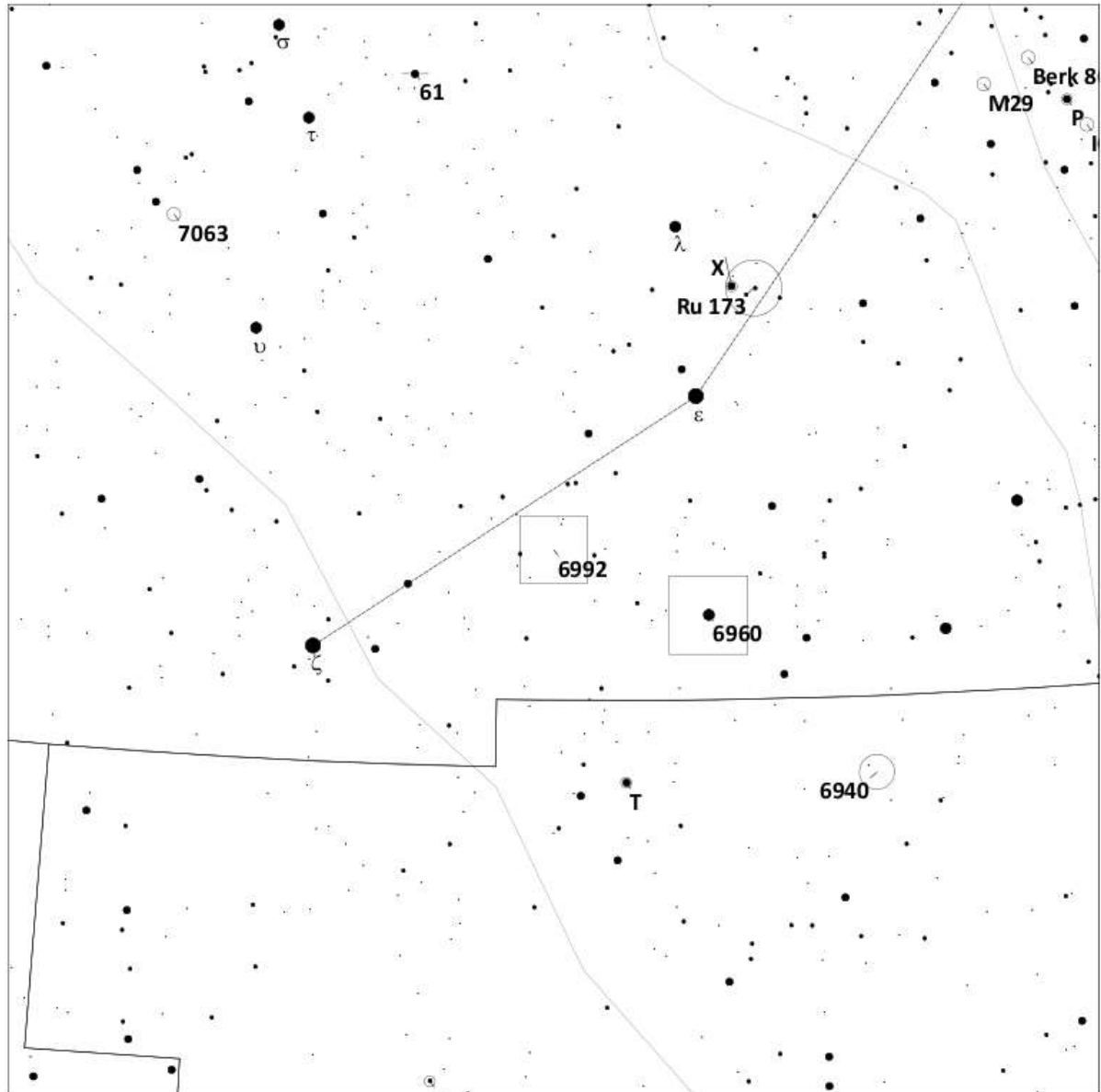
- ≤ 1.1
- 1.1 - 2.3
- 2.3 - 3.4
- 3.4 - 4.6
- 4.6 - 5.7
- 5.7 - 6.9
- > 6.9

- Galaxy
- Open Cluster
- ⊕ Globular Cluster
- Diffuse Nebula
- ◻ Planetary Nebula
- ⊙ Variable Star
- ⊖ Double Star

- ♿ Mercury
- ♀ Venus
- ♂ Mars
- ♃ Jupiter
- ♄ Saturn
- ♅ Uranus
- ♆ Neptune

- ♇ Pluto
- ☉ Sun
- ☾ Moon
- ♁ Asteroid
- ☄ Comet
- ⊛ Unknown

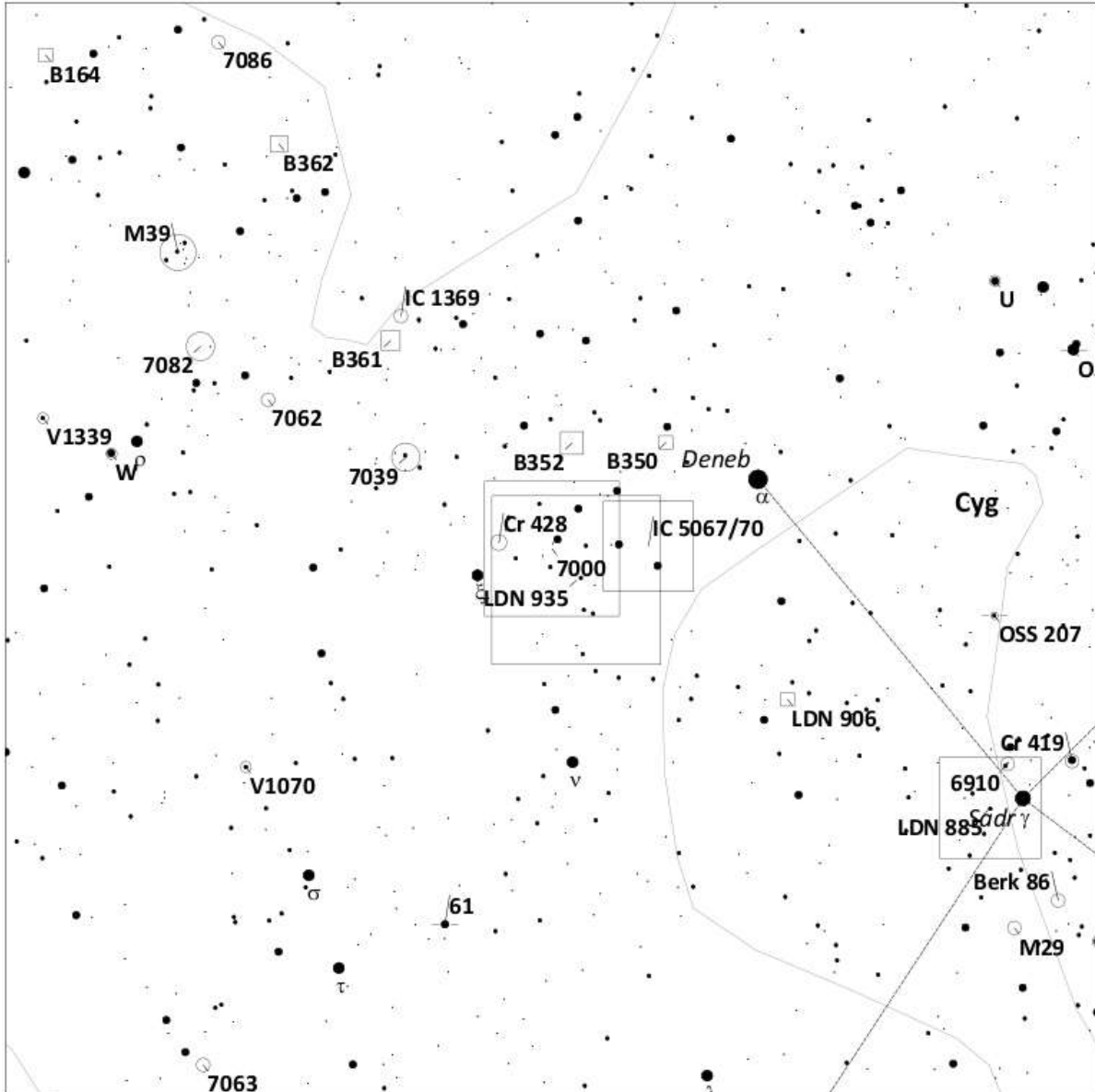
NGC 6992 (Veil Nebula, eastern section)



Touring the Universe Through Binoculars Atlas
RA: 20h 56m, Dec: 31d 42m, FOV: 15d, Mag: 8

- | | | | |
|-------------|--------------------|-----------|------------|
| ● ≤ 1.1 | ○ Galaxy | ☿ Mercury | ♇ Pluto |
| ● 1.1 - 2.3 | ○ Open Cluster | ♀ Venus | ☼ Sun |
| ● 2.3 - 3.4 | ⊕ Globular Cluster | ♂ Mars | ☾ Moon |
| ● 3.4 - 4.6 | □ Diffuse Nebula | ♃ Jupiter | ♁ Asteroid |
| ● 4.6 - 5.7 | ◻ Planetary Nebula | ♄ Saturn | ☄ Comet |
| ● 5.7 - 6.9 | ⊙ Variable Star | ♅ Uranus | ⊛ Unknown |
| ○ > 6.9 | ⊖ Double Star | ♆ Neptune | |

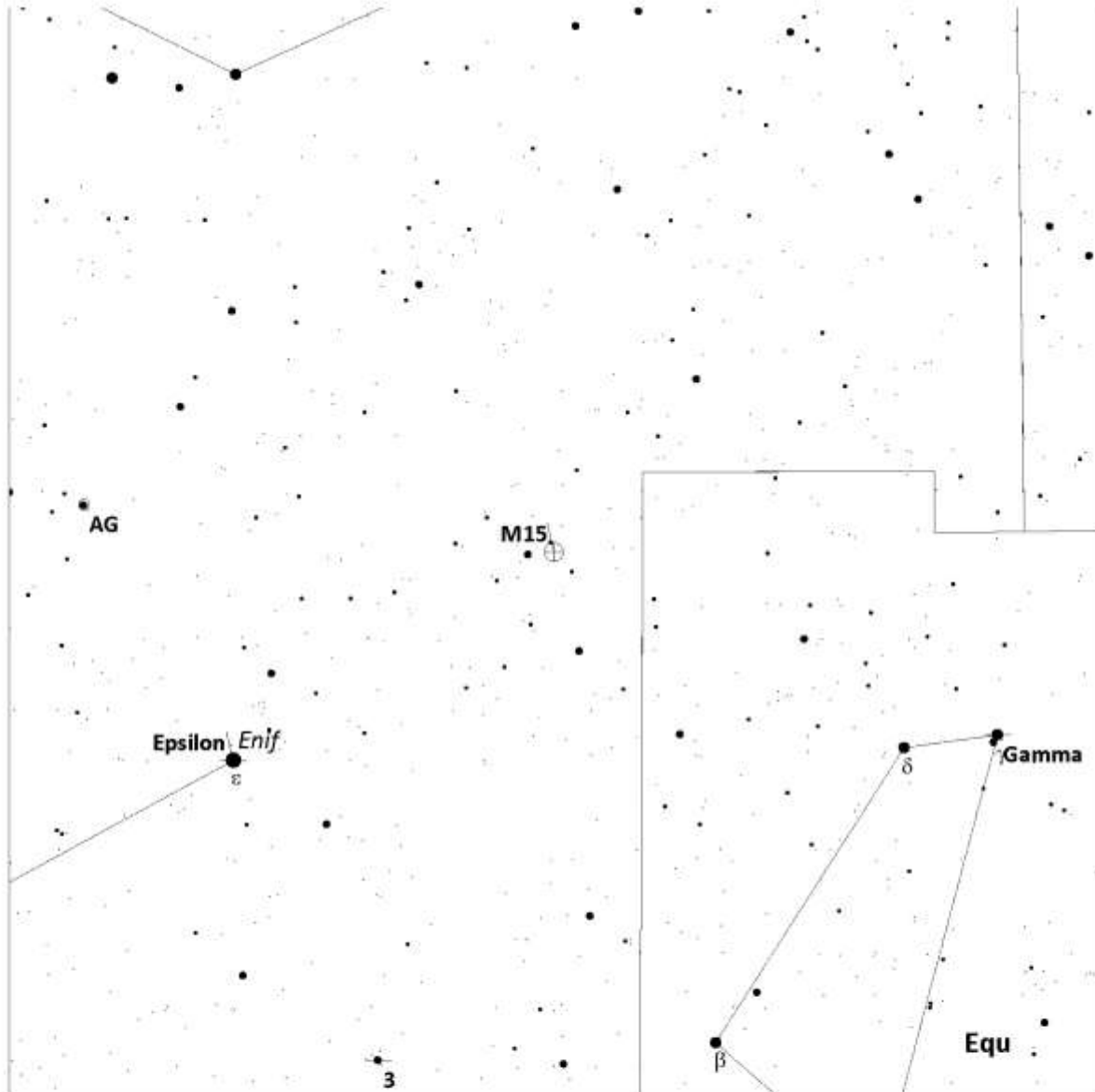
NGC 7000 (North America Nebula)



Touring the Universe Through Binoculars Atlas
RA: 20h 58m, Dec: 44d 20m, FOV: 15d, Mag: 8

● ≤ 1.1	○ Galaxy	♿ Mercury	♃ Pluto
● 1.1 - 2.3	○ Open Cluster	♀ Venus	☼ Sun
● 2.3 - 3.4	⊕ Globular Cluster	♂ Mars	☾ Moon
● 3.4 - 4.6	□ Diffuse Nebula	♃ Jupiter	☾ Asteroid
● 4.6 - 5.7	◻ Planetary Nebula	♄ Saturn	☾ Comet
● 5.7 - 6.9	⊙ Variable Star	♅ Uranus	☾ Unknown
○ > 6.9	♁ Double Star	♆ Neptune	

M15



Touring the Universe Through Binoculars Atlas
RA: 21h 30m, Dec: 12d 10m, FOV: 11d, Mag: 8.5

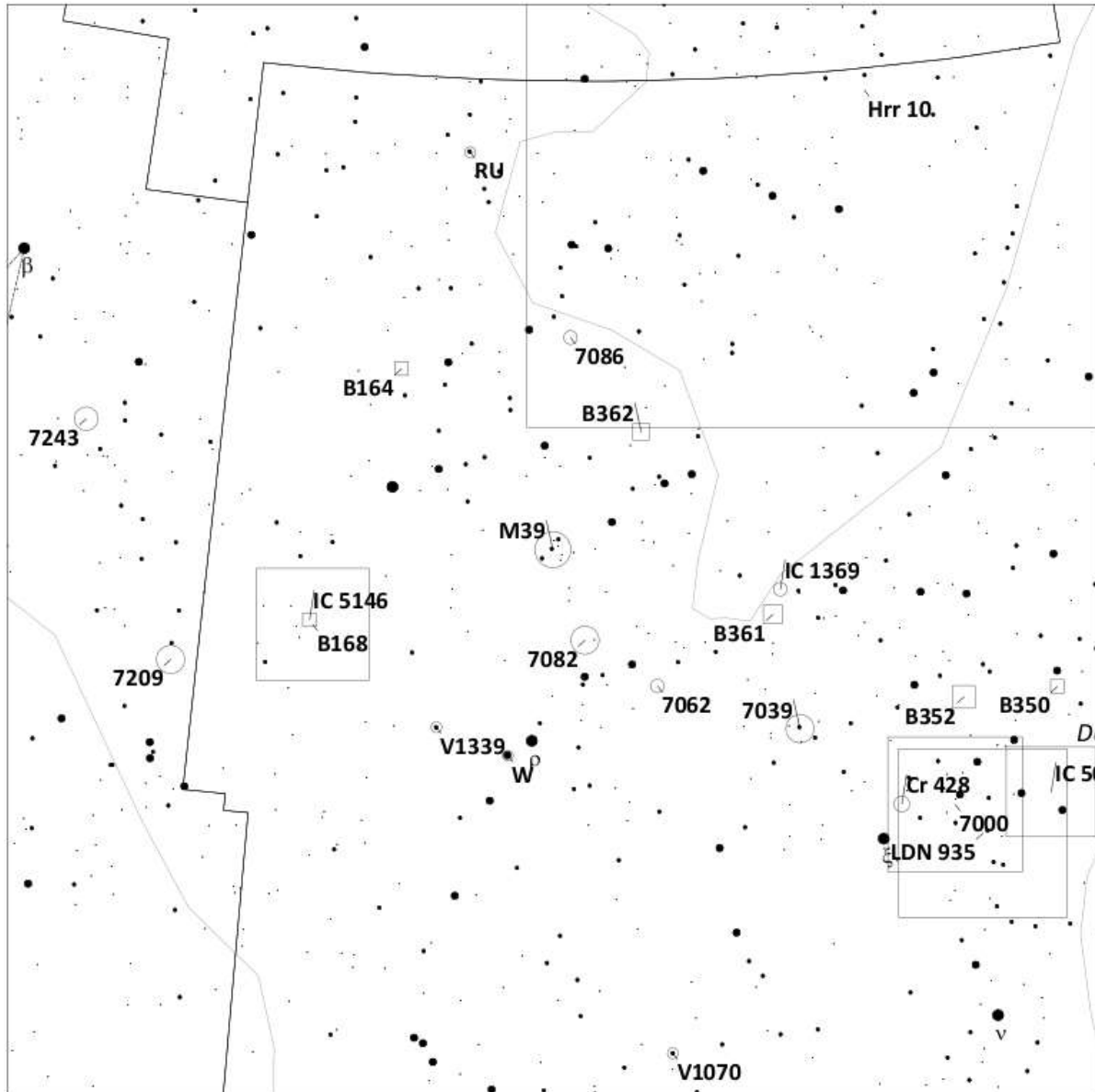
- ≤ 1.3
- 1.3 - 2.6
- 2.6 - 3.9
- 3.9 - 5.1
- 5.1 - 6.4
- 6.4 - 7.7
- > 7.7

- Galaxy
- Open Cluster
- ⊕ Globular Cluster
- Diffuse Nebula
- Planetary Nebula
- ⊙ Variable Star
- ⊙ Double Star

- ♿ Mercury
- ♀ Venus
- ♂ Mars
- ♃ Jupiter
- ♄ Saturn
- ♅ Uranus
- ♆ Neptune

- ♇ Pluto
- ☉ Sun
- ☾ Moon
- ♁ Asteroid
- ☄ Comet
- ⊙ Unknown

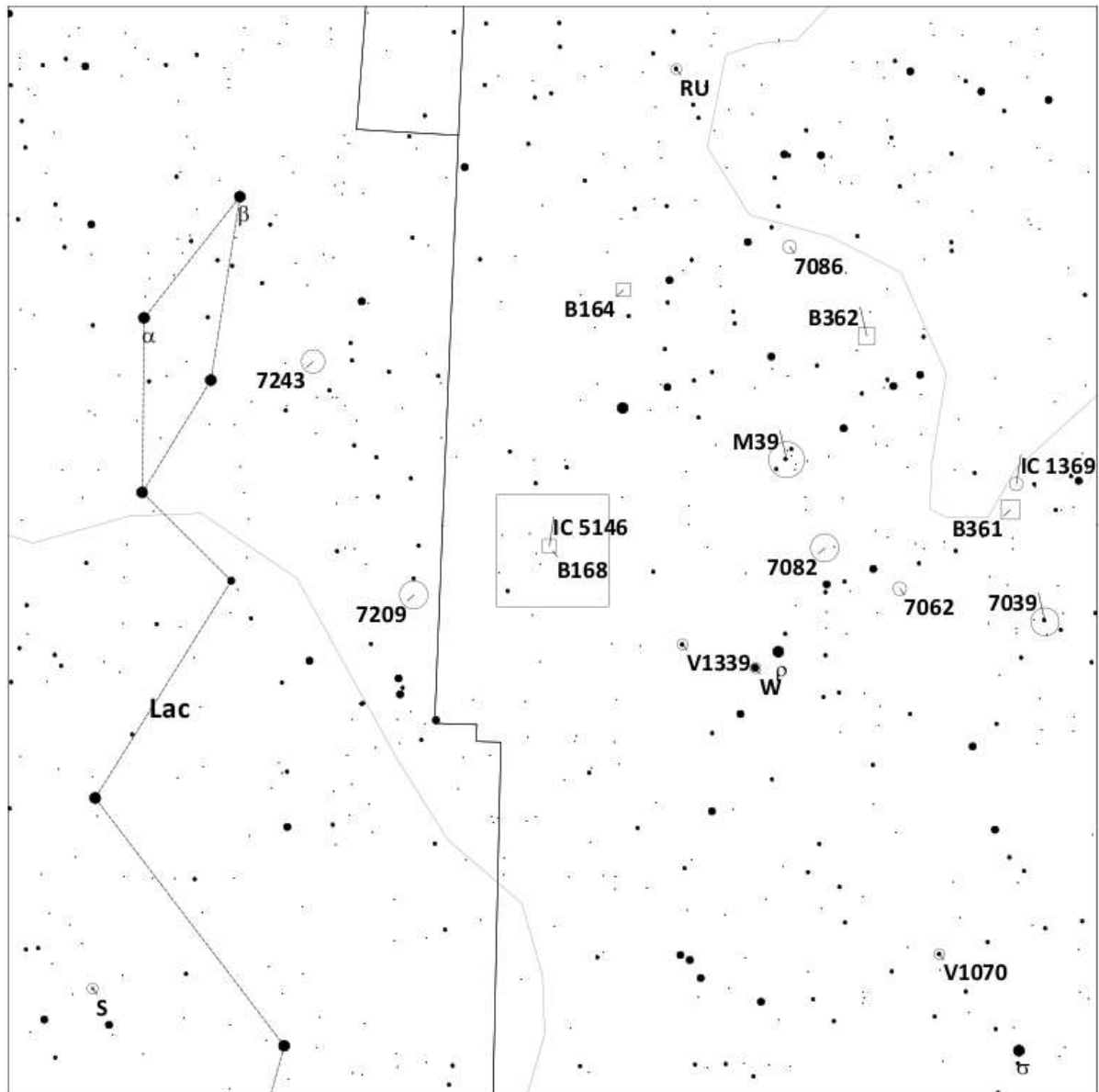
M39



Touring the Universe Through Binoculars Atlas
RA: 21h 32m, Dec: 48d 25m, FOV: 15d, Mag: 8

- | | | | |
|-------------|--------------------|-----------|------------|
| ● ≤ 1.1 | ○ Galaxy | ♿ Mercury | ♇ Pluto |
| ● 1.1 - 2.3 | ○ Open Cluster | ♀ Venus | ☉ Sun |
| ● 2.3 - 3.4 | ⊕ Globular Cluster | ♂ Mars | ☾ Moon |
| ● 3.4 - 4.6 | □ Diffuse Nebula | ♃ Jupiter | ♁ Asteroid |
| ● 4.6 - 5.7 | ◻ Planetary Nebula | ♄ Saturn | ☄ Comet |
| ● 5.7 - 6.9 | ⊙ Variable Star | ♅ Uranus | ⊛ Unknown |
| ○ > 6.9 | ⊖ Double Star | ♆ Neptune | |

Barnard 168 and IC 5146 (Cocoon Nebula)



Touring the Universe Through Binoculars Atlas
RA: 21h 53m, Dec: 47d 12m, FOV: 15d, Mag: 8

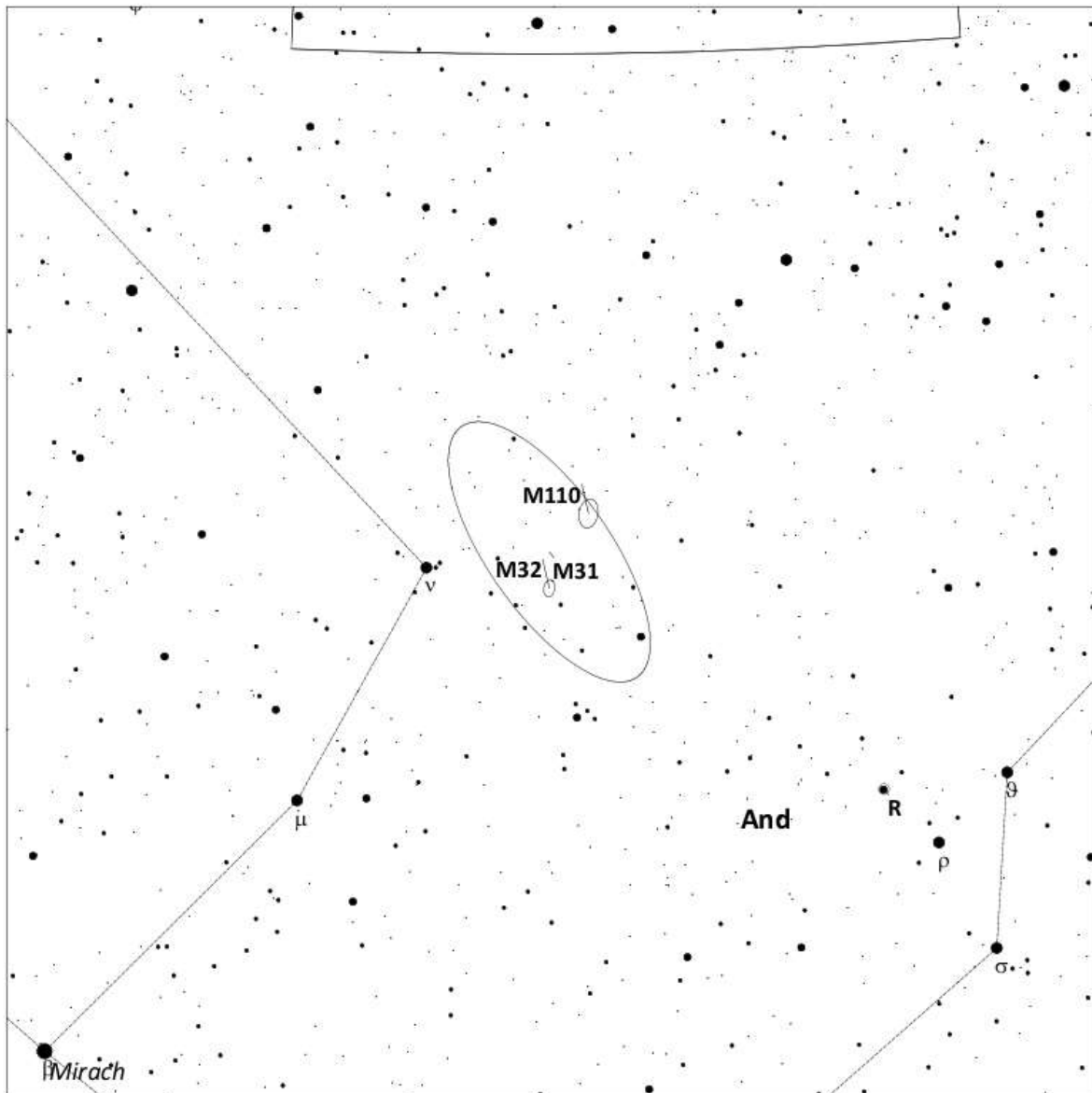
- ≤ 1.1
- 1.1 - 2.3
- 2.3 - 3.4
- 3.4 - 4.6
- 4.6 - 5.7
- 5.7 - 6.9
- > 6.9

- Galaxy
- Open Cluster
- ⊕ Globular Cluster
- Diffuse Nebula
- Planetary Nebula
- ⊙ Variable Star
- ⊙ Double Star

- ♿ Mercury
- ♀ Venus
- ♂ Mars
- ♃ Jupiter
- ♄ Saturn
- ♅ Uranus
- ♆ Neptune

- ♇ Pluto
- ☉ Sun
- ☾ Moon
- ♁ Asteroid
- ☄ Comet
- ⊙ Unknown

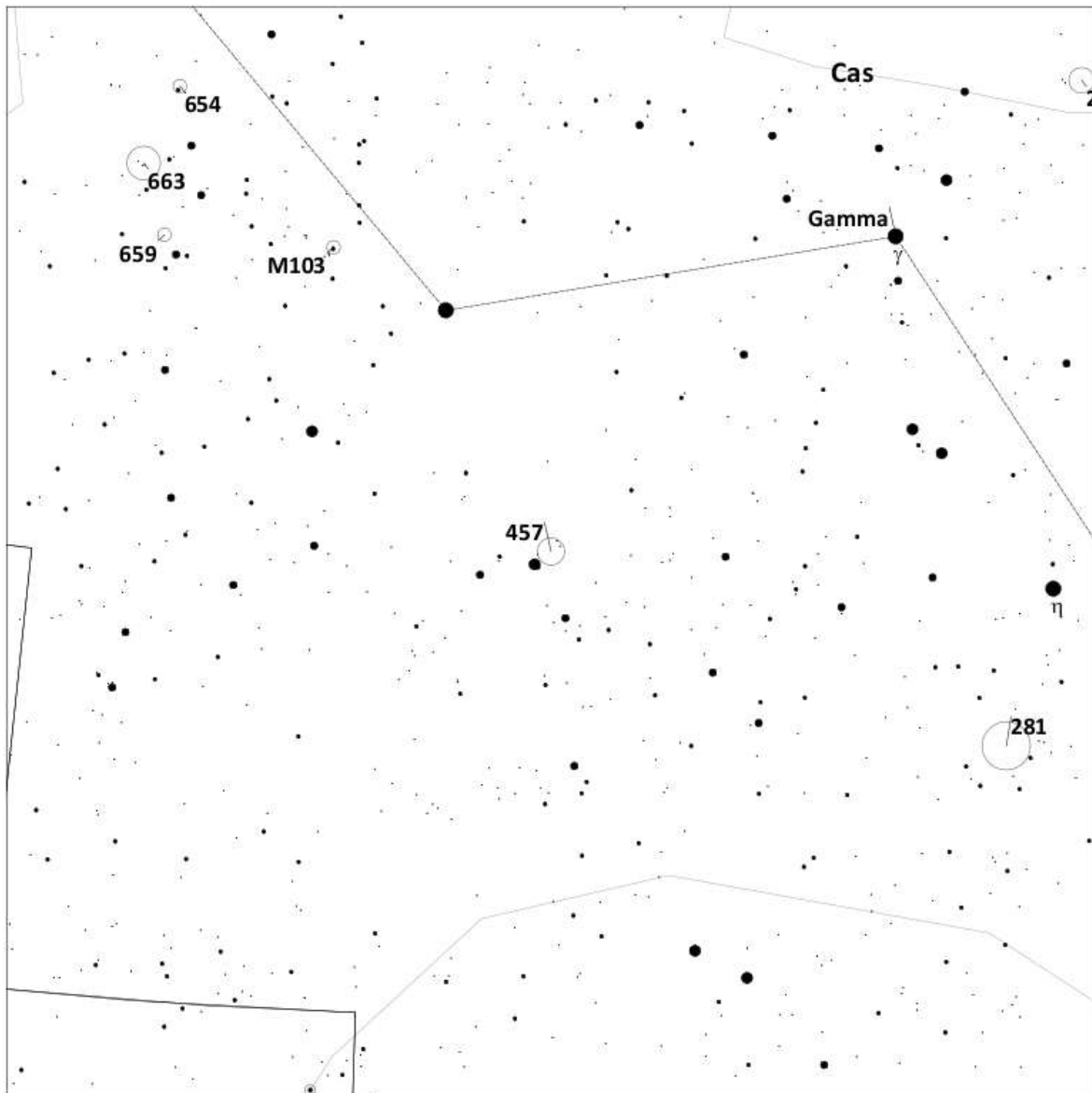
M31, M32, M110



Touring the Universe Through Binoculars Atlas
RA: 0h 42m, Dec: 41d 16m, FOV: 11d, Mag: 8.5

- | | | | |
|-------------|--------------------|-----------|------------|
| ● ≤ 1.3 | ○ Galaxy | ♿ Mercury | ♇ Pluto |
| ● 1.3 - 2.6 | ○ Open Cluster | ♀ Venus | ☉ Sun |
| ● 2.6 - 3.9 | ⊕ Globular Cluster | ♂ Mars | ☾ Moon |
| ● 3.9 - 5.1 | □ Diffuse Nebula | ♃ Jupiter | ♁ Asteroid |
| ● 5.1 - 6.4 | □ Planetary Nebula | ♄ Saturn | ☄ Comet |
| ● 6.4 - 7.7 | ⊙ Variable Star | ♅ Uranus | ⊛ Unknown |
| ○ > 7.7 | ⊕ Double Star | ♆ Neptune | |

NGC 457

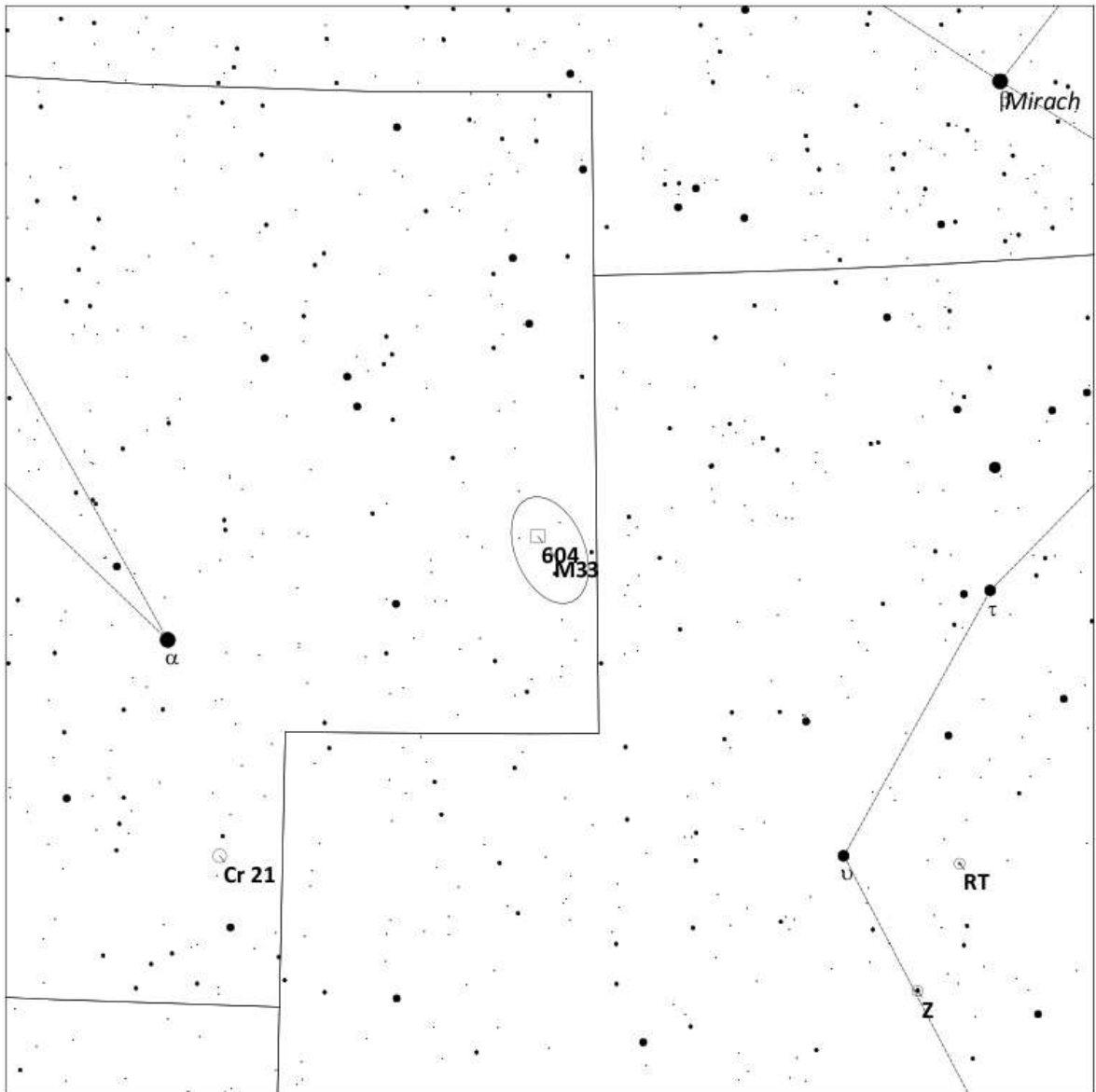


Touring the Universe Through Binoculars Atlas

RA: 1h 19m, Dec: 58d 20m, FOV: 8d, Mag: 9

- | | | | |
|-------------|--------------------|-----------|------------|
| ● ≤ 1.3 | ○ Galaxy | ♿ Mercury | ♇ Pluto |
| ● 1.3 - 2.6 | ○ Open Cluster | ♀ Venus | ☉ Sun |
| ● 2.6 - 3.9 | ⊕ Globular Cluster | ♂ Mars | ☾ Moon |
| ● 3.9 - 5.1 | □ Diffuse Nebula | ♃ Jupiter | ♁ Asteroid |
| ● 5.1 - 6.4 | ◻ Planetary Nebula | ♄ Saturn | ☄ Comet |
| ● 6.4 - 7.7 | ⊙ Variable Star | ♅ Uranus | ⊛ Unknown |
| ○ > 7.7 | ⊖ Double Star | ♆ Neptune | |

M33



Touring the Universe Through Binoculars Atlas
RA: 1h 33m, Dec: 30d 38m, FOV: 11d, Mag: 8.5

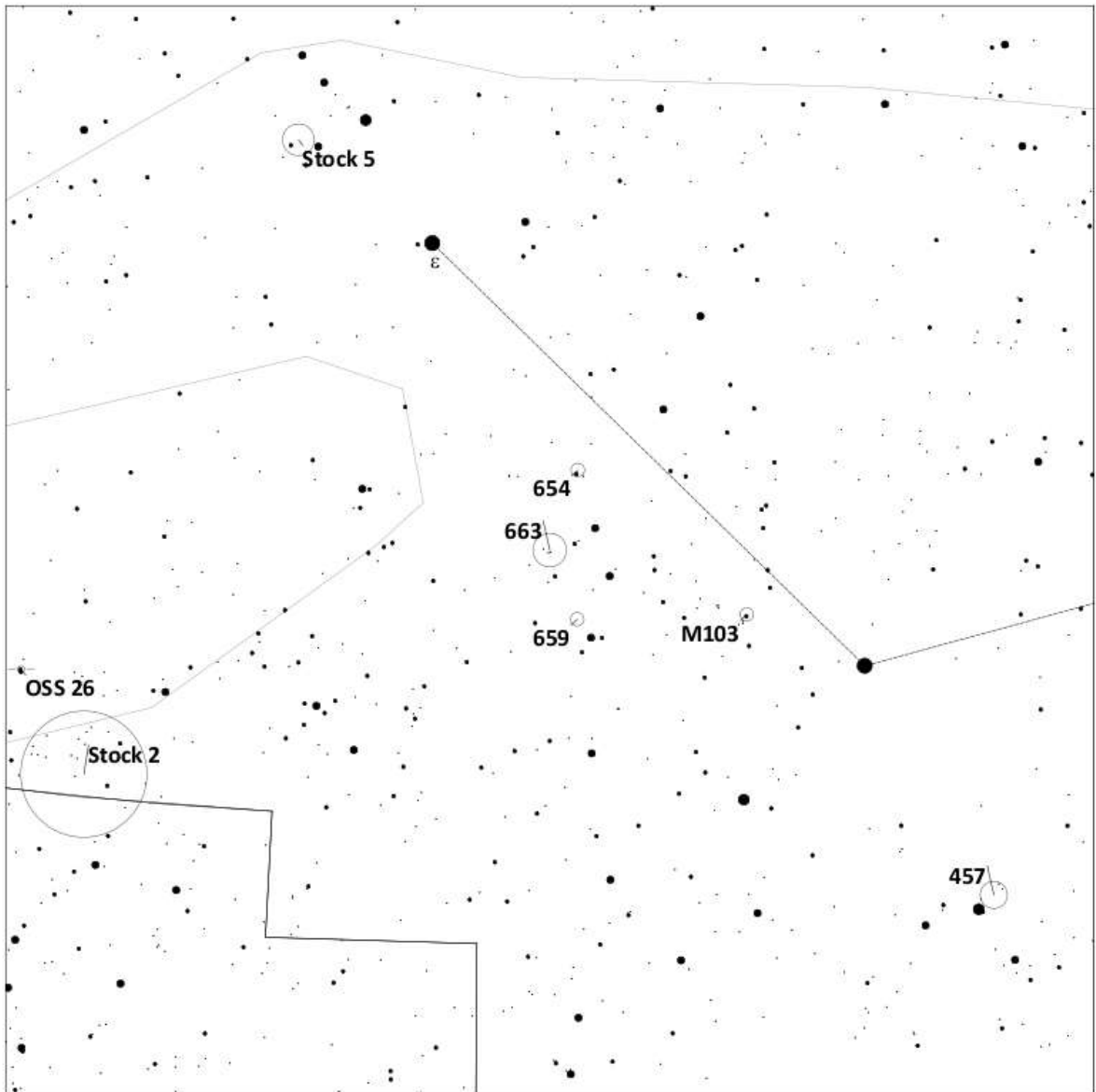
- ≤ 1.3
- 1.3 - 2.6
- 2.6 - 3.9
- 3.9 - 5.1
- 5.1 - 6.4
- 6.4 - 7.7
- > 7.7

- Galaxy
- Open Cluster
- ⊕ Globular Cluster
- Diffuse Nebula
- ◻ Planetary Nebula
- ⊙ Variable Star
- Double Star

- ♿ Mercury
- ♀ Venus
- ♂ Mars
- ♃ Jupiter
- ♄ Saturn
- ♅ Uranus
- ♆ Neptune

- ♇ Pluto
- ☉ Sun
- ☾ Moon
- ♁ Asteroid
- ☄ Comet
- ⊙ Unknown

NGC 663



Touring the Universe Through Binoculars Atlas

RA: 1h 45m, Dec: 61d 15m, FOV: 8d, Mag: 9

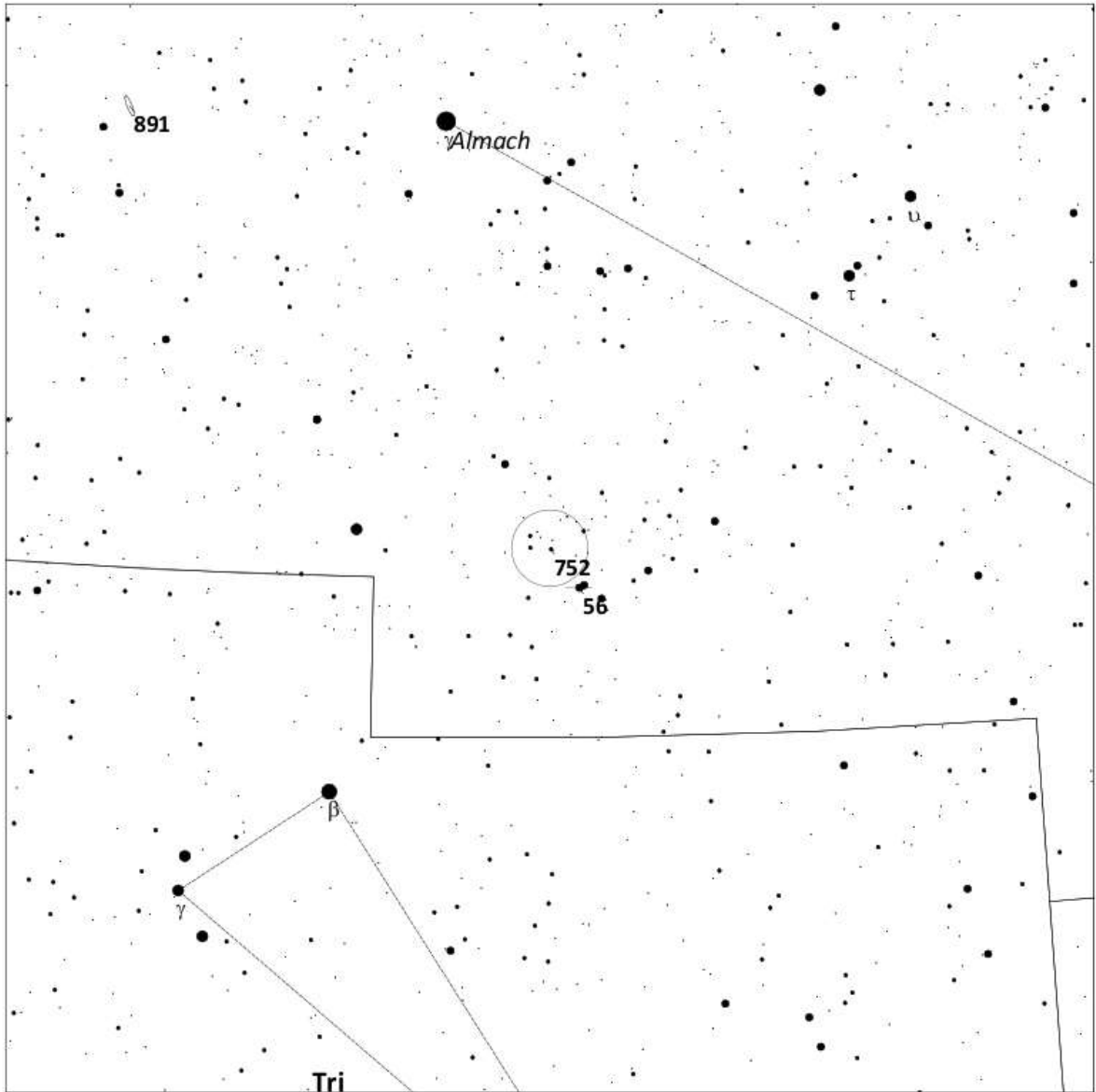
- ≤ 1.3
- 1.3 - 2.6
- 2.6 - 3.9
- 3.9 - 5.1
- 5.1 - 6.4
- 6.4 - 7.7
- > 7.7

- Galaxy
- Open Cluster
- ⊕ Globular Cluster
- Diffuse Nebula
- Planetary Nebula
- ⊙ Variable Star
- Double Star

- ♿ Mercury
- ♀ Venus
- ♂ Mars
- ♃ Jupiter
- ♄ Saturn
- ♅ Uranus
- ♆ Neptune

- ♇ Pluto
- ☉ Sun
- ☾ Moon
- ♁ Asteroid
- ☄ Comet
- ⊛ Unknown

NGC 752



Touring the Universe Through Binoculars Atlas

RA: 1h 57m, Dec: 37d 40m, FOV: 11d, Mag: 8.5

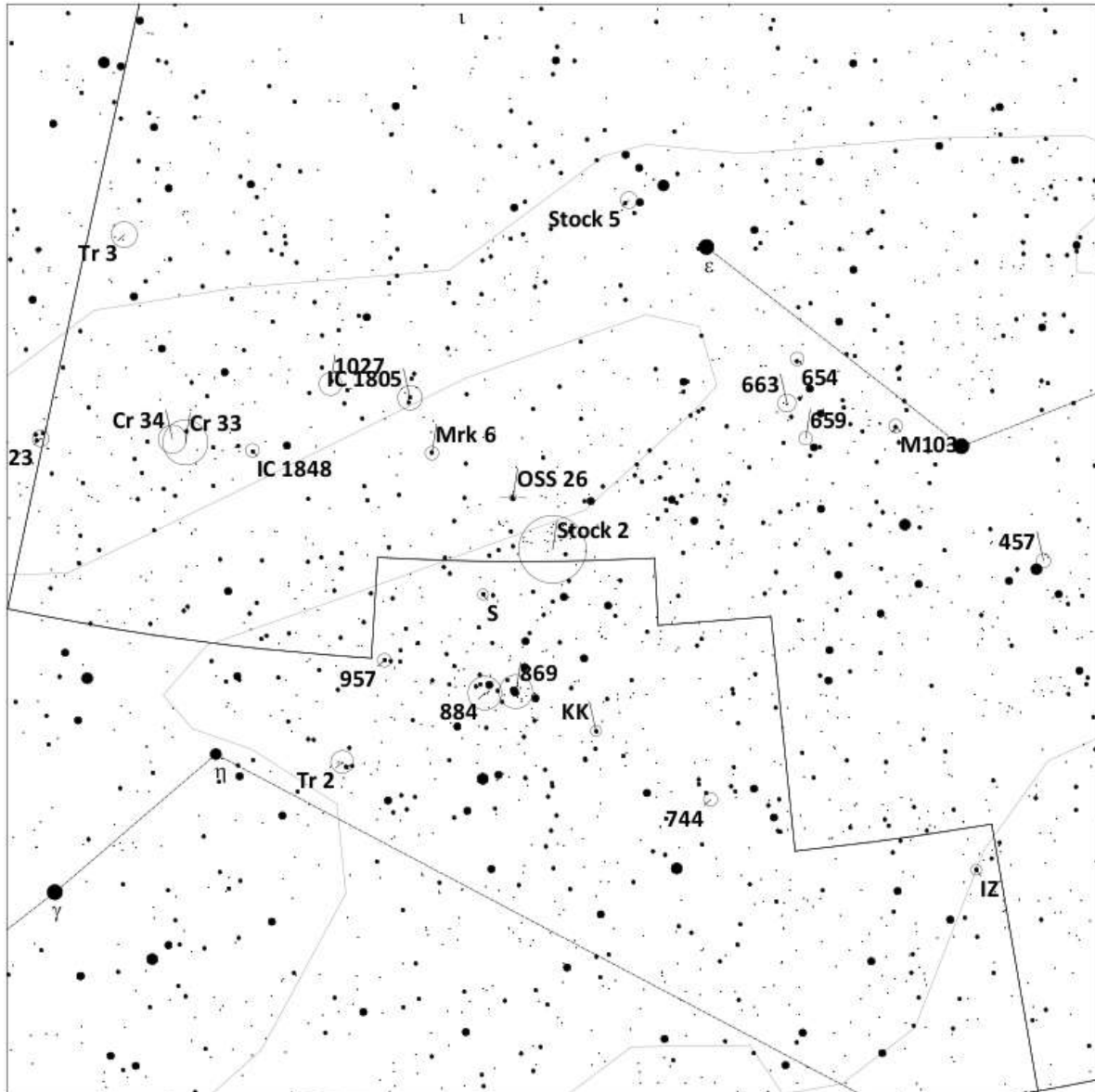
- ≤ 1.3
- 1.3 - 2.6
- 2.6 - 3.9
- 3.9 - 5.1
- 5.1 - 6.4
- 6.4 - 7.7
- > 7.7

- Galaxy
- Open Cluster
- ⊕ Globular Cluster
- Diffuse Nebula
- Planetary Nebula
- ⊙ Variable Star
- Double Star

- ♿ Mercury
- ♀ Venus
- ♂ Mars
- ♃ Jupiter
- ♄ Saturn
- ♅ Uranus
- ♆ Neptune

- ♇ Pluto
- ☉ Sun
- ☾ Moon
- ♁ Asteroid
- ☄ Comet
- ⊛ Unknown

Stock 2 (Muscleman Cluster) and NGC 869/884 (Double Cluster)



Touring the Universe Through Binoculars Atlas

RA: 2h 15m, Dec: 59d 16m, FOV: 15d, Mag: 9

- | | | | |
|-------------|--------------------|-----------|------------|
| ● ≤ 1.3 | ○ Galaxy | ♿ Mercury | ♃ Pluto |
| ● 1.3 - 2.6 | ○ Open Cluster | ♀ Venus | ☼ Sun |
| ● 2.6 - 3.9 | ⊕ Globular Cluster | ♂ Mars | ☾ Moon |
| ● 3.9 - 5.1 | □ Diffuse Nebula | ♃ Jupiter | ♁ Asteroid |
| ● 5.1 - 6.4 | □ Planetary Nebula | ♄ Saturn | ☄ Comet |
| ● 6.4 - 7.7 | ⊙ Variable Star | ♅ Uranus | ⊛ Unknown |
| ○ > 7.7 | ⊖ Double Star | ♆ Neptune | |