



# Binocular Observing Olympics

Stellafane 2018

Compiled by Phil Harrington

[www.philharrington.net](http://www.philharrington.net)

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

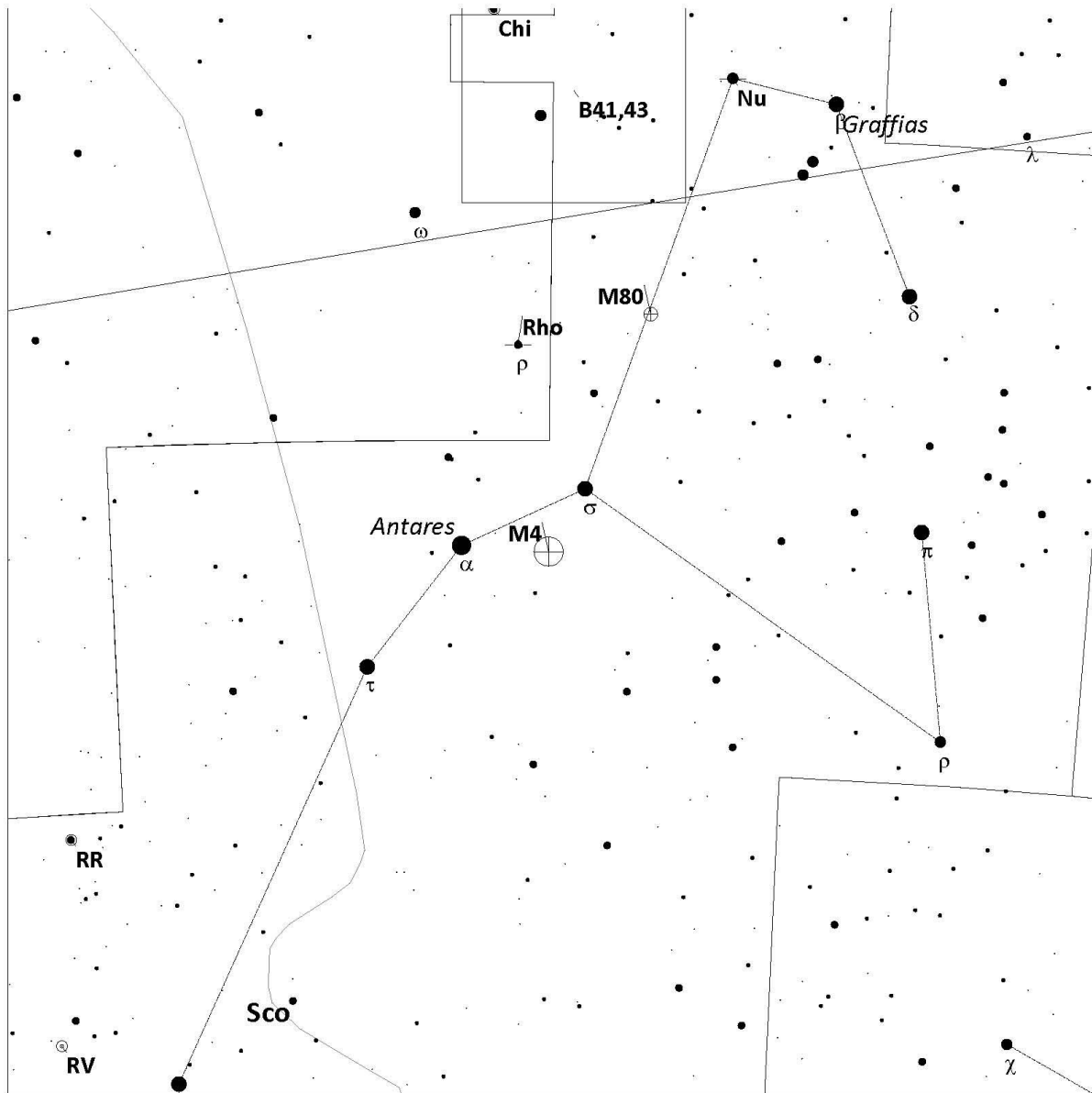
Seen	#	Object	Const.	Type*	RA	Dec	Mag	Size	Nickname
	1.	M4	Sco	GC	16 23.6	-26 32	6.0	26'	Cat's Eye Globular
	2.	M13	Her	GC	16 41.7	+36 28	5.9	16'	Great Hercules Globular
	3.	M6	Sco	OC	17 40.1	-32 13	4.2	15'	Butterfly Cluster
	4.	IC 4665	Oph	OC	17 46.3	+05 43	4.2	41'	Summer Beehive
	5.	M7	Sco	OC	17 53.9	-34 49	3.3	80'	Ptolemy's Cluster
	6.	M20	Sgr	BN/OC	18 02.6	-23 02	8.5	29'x27'	Trifid Nebula
	7.	M8	Sgr	BN/OC	18 03.8	-24 23	5.8	90'x40'	Lagoon Nebula
	8.	M17	Sgr	BN	18 20.8	-16 11	7	46'x37'	Swan or Omega Nebula
	9.	M22	Sgr	GC	18 36.4	-23 54	5.1	24'	Great Sagittarius Cluster
	10.	M11	Sct	OC	18 51.1	-06 16	5.8	14'	Wild Duck Cluster
	11.	M57	Lyr	PN	18 53.6	+33 02	9.7	70" x 150"	Ring Nebula
	12.	Collinder 399	Vul	AS	19 25.4	+20 11	3.6	60'	Coathanger/Brocchi's Cluster
	13.	PK 64+5.1	Cyg	PN	19 34.8	+30 31	9.6p	8"	Campbell's Hydrogen Star
	14.	M27	Vul	PN	19 59.6	+22 43	8.1	8'x6'	Dumbbell Nebula
	15.	NGC 6992	Cyg	SNR	20 56.4	+31 43	-	60'x8	Veil Nebula (east)
	16.	NGC 7000	Cyg	BN	20 58.8	+44 20	-	120'x100'	North America Nebula
	17.	M39	Cyg	OC	21 32.2	+48 26	4.6	32'	
	18.	Barnard 168	Cyg	DN	21 53.2	+47 12	-	100'x10'	West of Cocoon Nebula
	19.	IC 5146	Cyg	BN/OC	21 53.5	+47 16	-	12'x12'	Cocoon Nebula
	20.	Stock 2	Cas	OC	02 15.0	+59 16	4.4	60'	Muscleman Cluster

\*Type:

AS: Asterism	GC: Globular cluster	SNR: Supernova remnant
BN: Bright nebula	OC: Open star cluster	
DN: Dark nebula	PN: Planetary nebula	

Note: The center of view, field of view (FOV), and limiting magnitude of each chart on the following pages are shown in the chart legend.

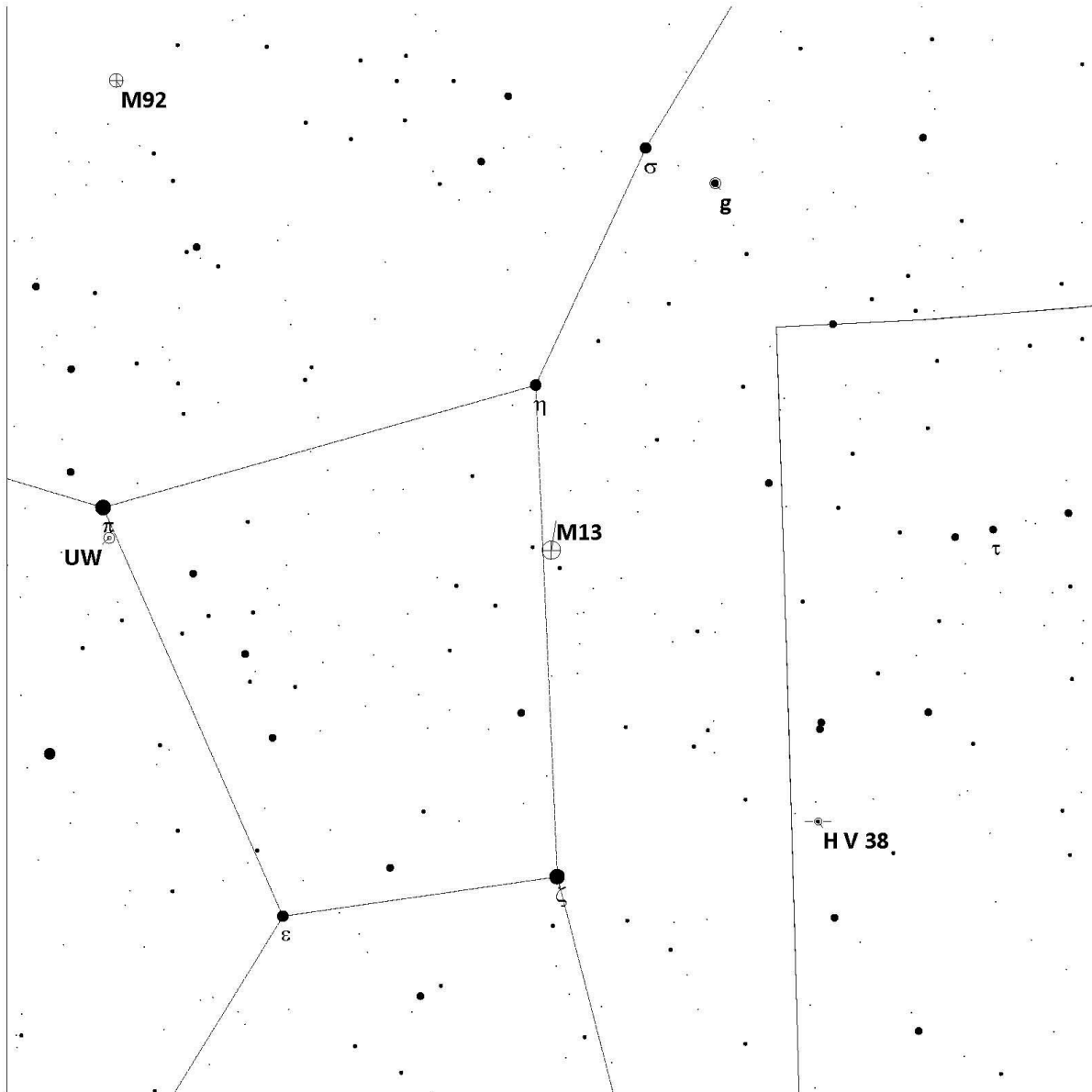
# M4 (Cat's Eye Globular)



**Touring the Universe Through Binoculars Atlas**  
**RA: 16h 23m, Dec: -26d 31m, 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 |            |

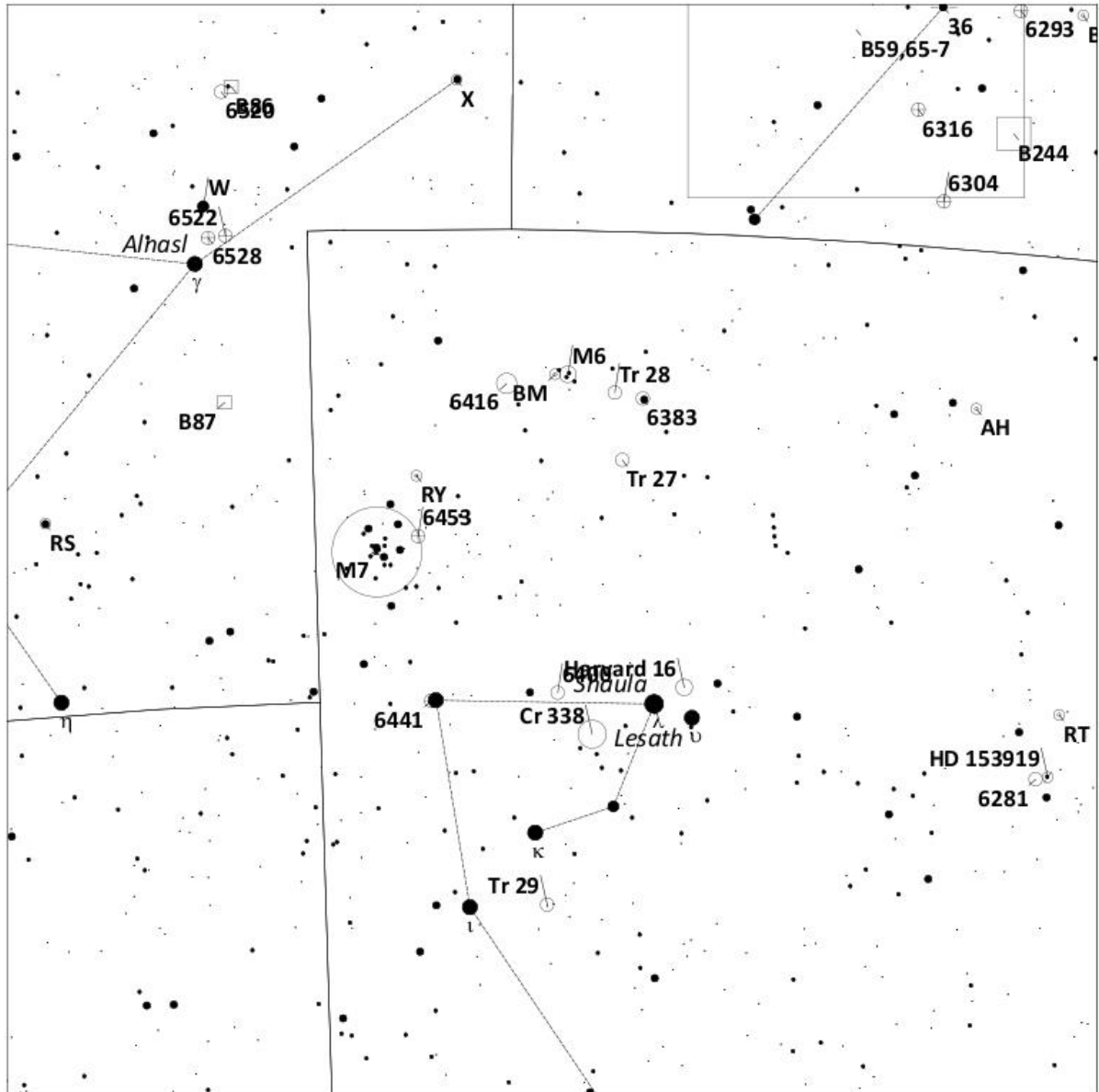
# M13 (Great Hercules Globular)



**Touring the Universe Through Binoculars Atlas**  
**RA: 16h 41m, Dec: 36d 28m, 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 |            |

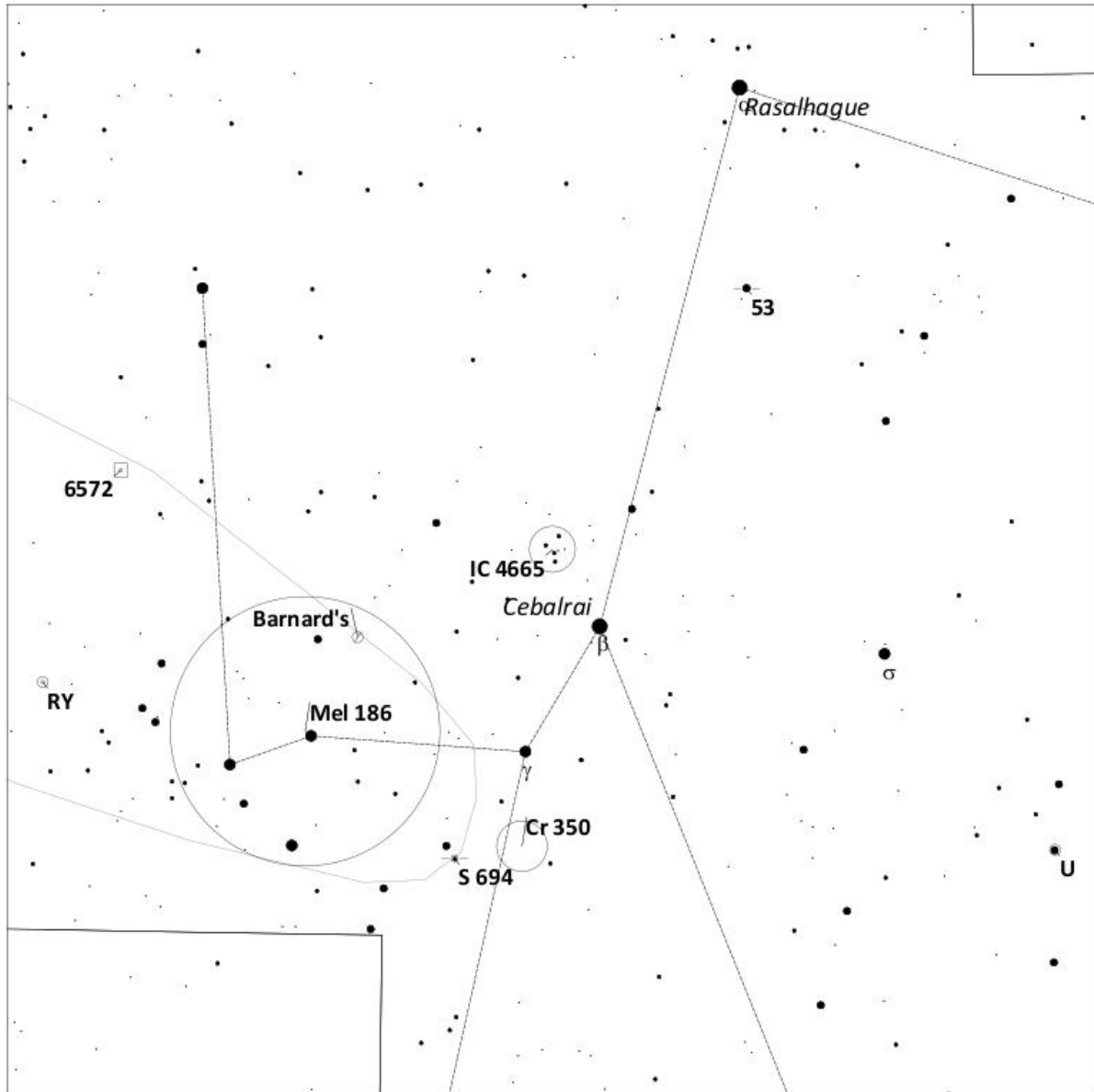
## M6 (Butterfly Cluster) and M7 (Ptolemy's Cluster)



**Touring the Universe Through Binoculars Atlas**  
**RA: 17h 41m, Dec: -34d 49m, 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 |            |

# IC 4665 (Summer Beehive)



**Touring the Universe Through Binoculars Atlas**  
**RA: 17h 46m, Dec: 5d 43m, FOV: 15d, Mag: 8**

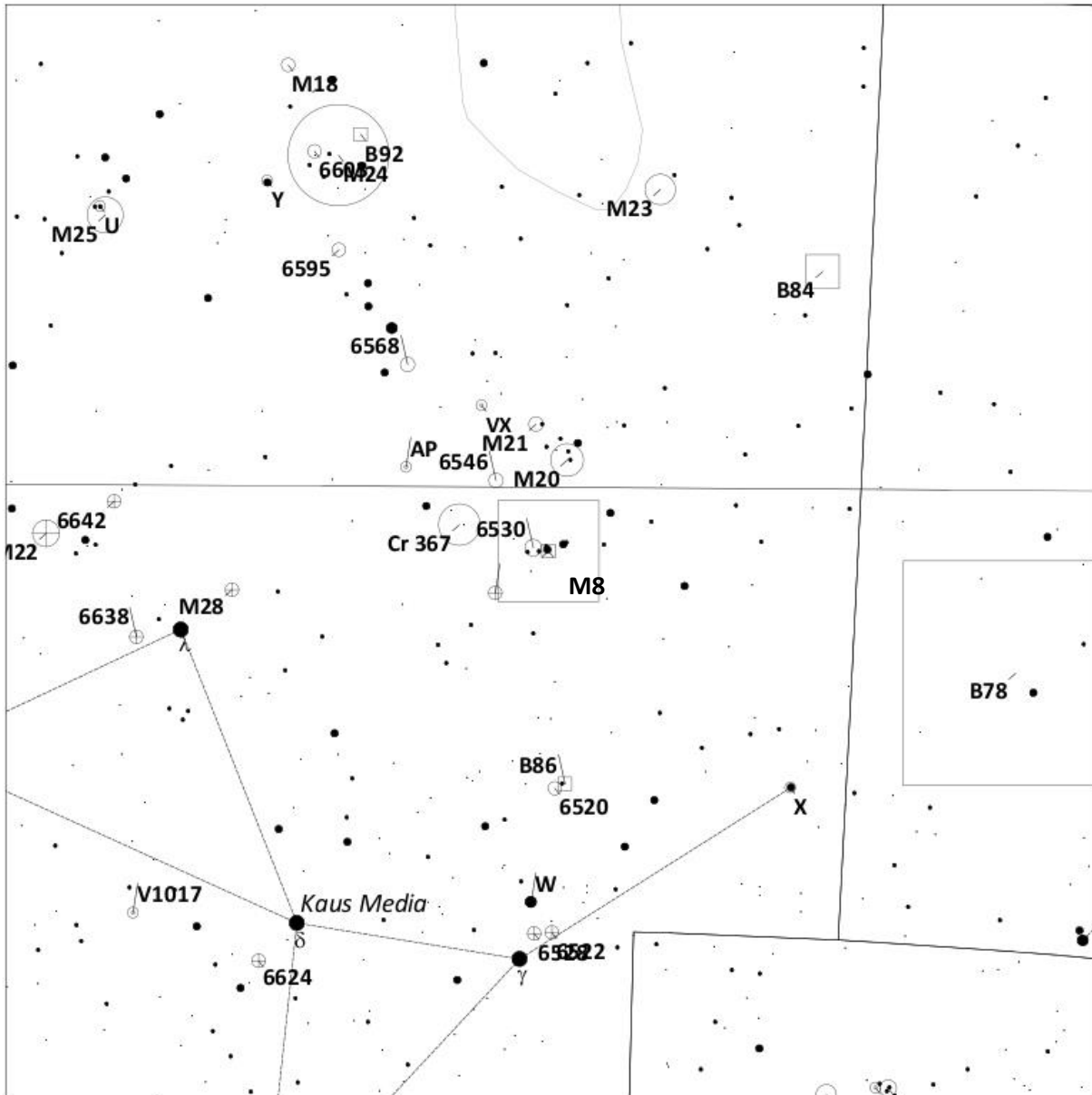
- ≤ 1.1
- 1.1 - 2.3
- 2.3 - 3.4
- 3.4 - 4.6
- 4.6 - 5.7
- 5.7 - 6.9
- > 6.9

- 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

## M8 (Lagoon Nebula) and M20 (Trifid Nebula)



### Touring the Universe Through Binoculars Atlas

RA: 18h 3m, Dec: -24d 22m, FOV: 15d, Mag: 8

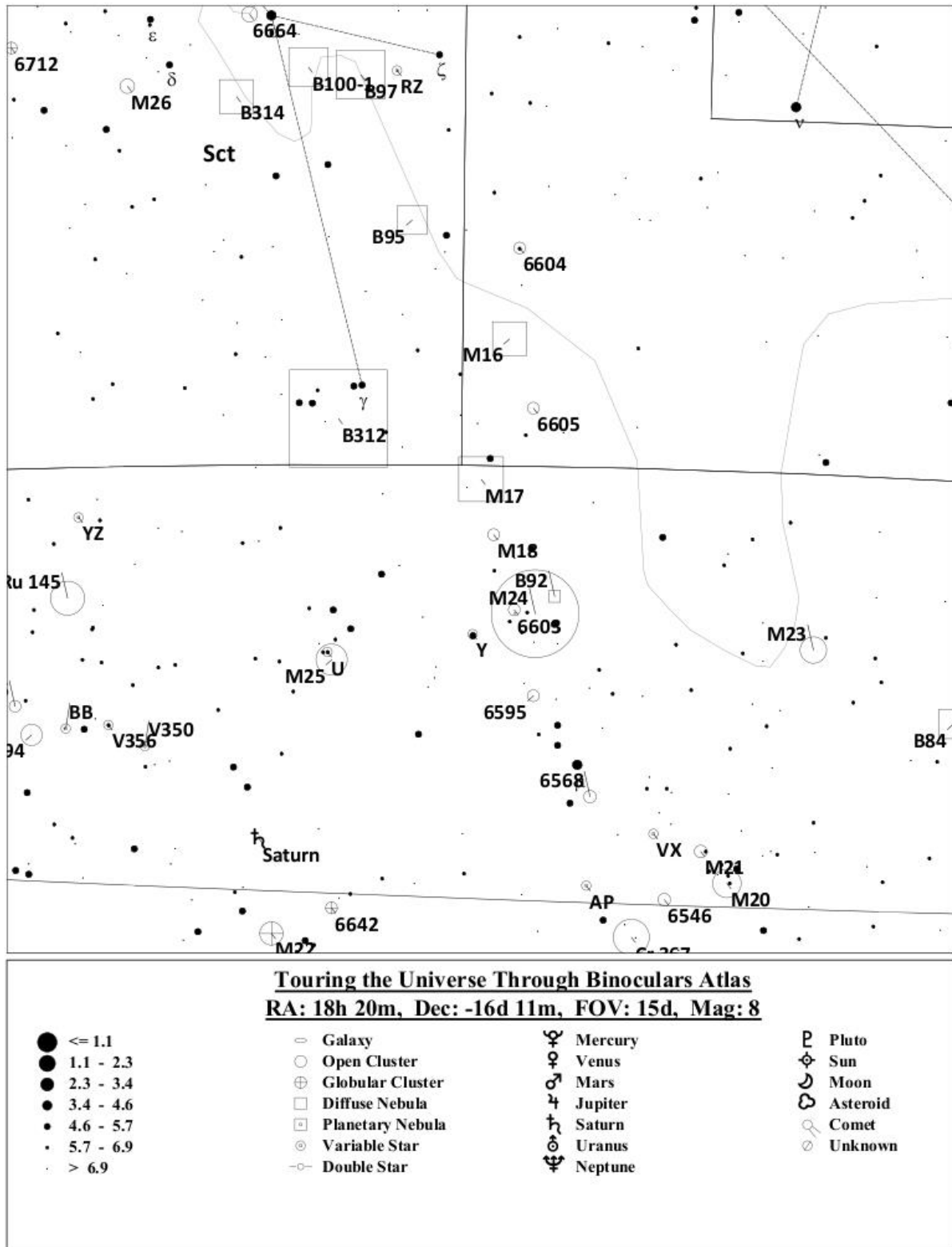
- ≤ 1.1
- 1.1 - 2.3
- 2.3 - 3.4
- 3.4 - 4.6
- 4.6 - 5.7
- 5.7 - 6.9
- > 6.9

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

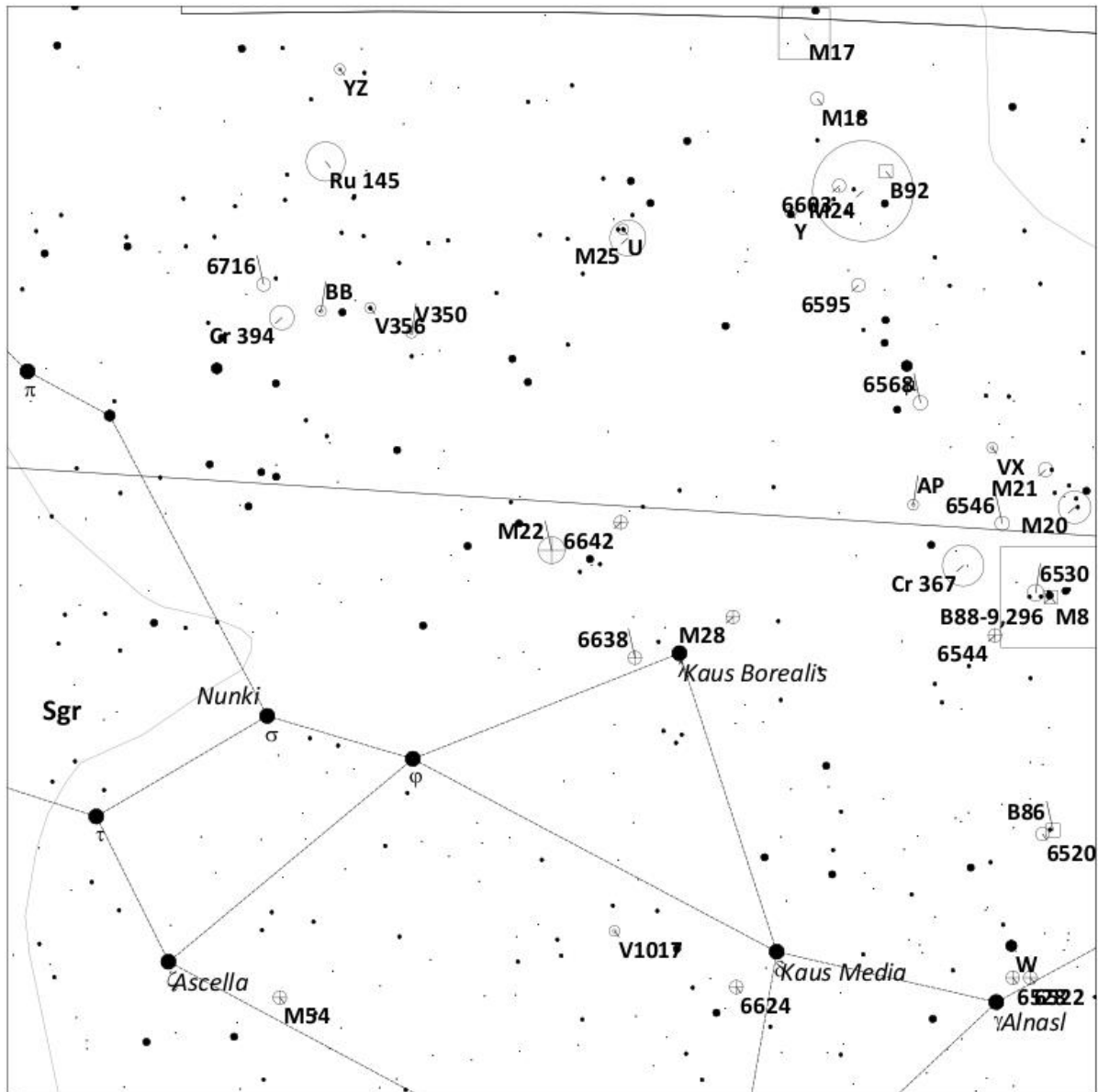
- ♿ Mercury
- ♀ Venus
- ♂ Mars
- ♃ Jupiter
- ♄ Saturn
- ♅ Uranus
- ♆ Neptune

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

# M17 (Swan/Omega Nebula)



# M22 (Great Sagittarius Globular)

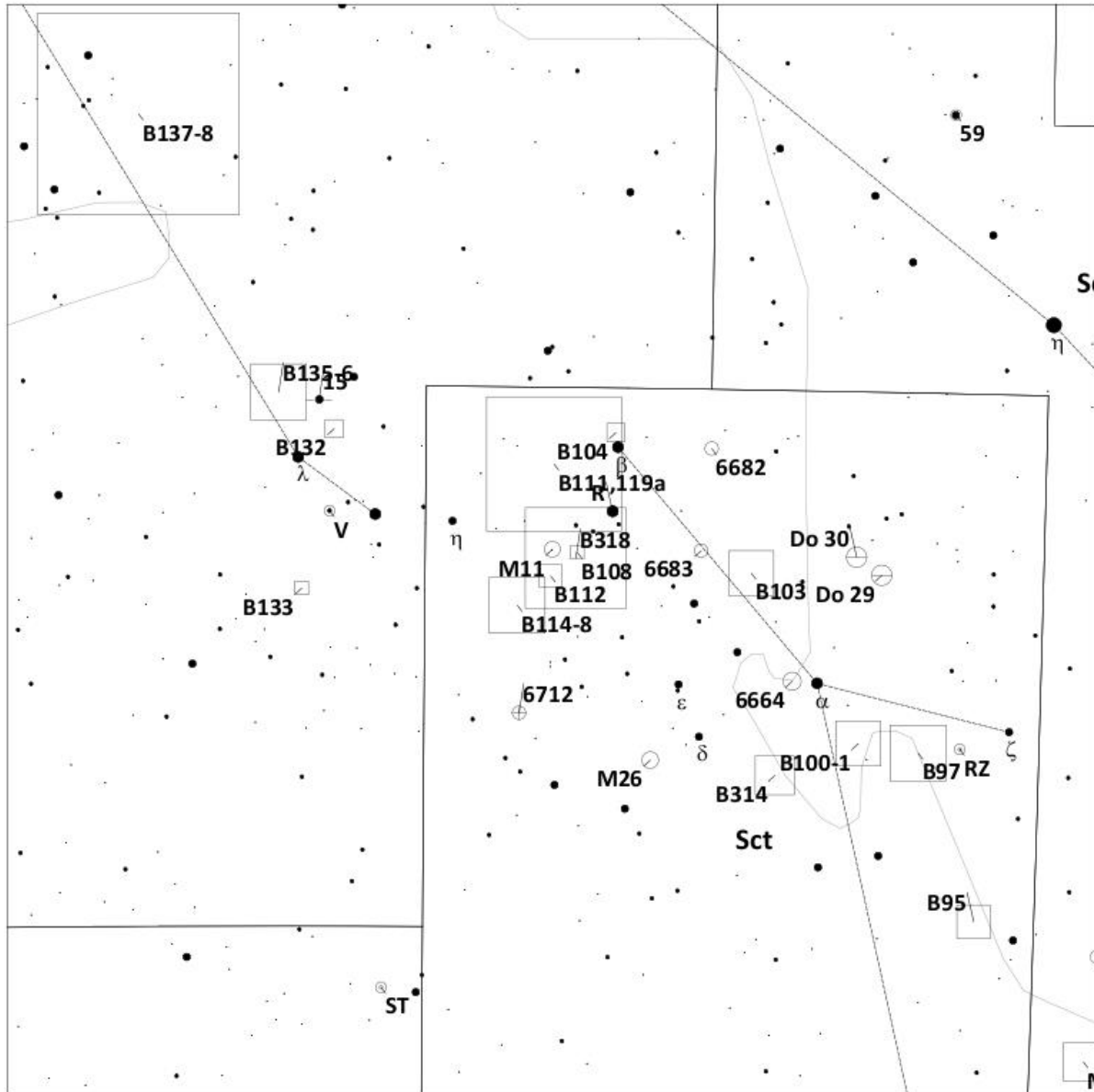


**Touring the Universe Through Binoculars Atlas**  
**RA: 18h 36m, Dec: -23d 53m, FOV: 15d, Mag: 8**

- |             |                    |           |            |
|-------------|--------------------|-----------|------------|
| ● ≤ 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 |            |



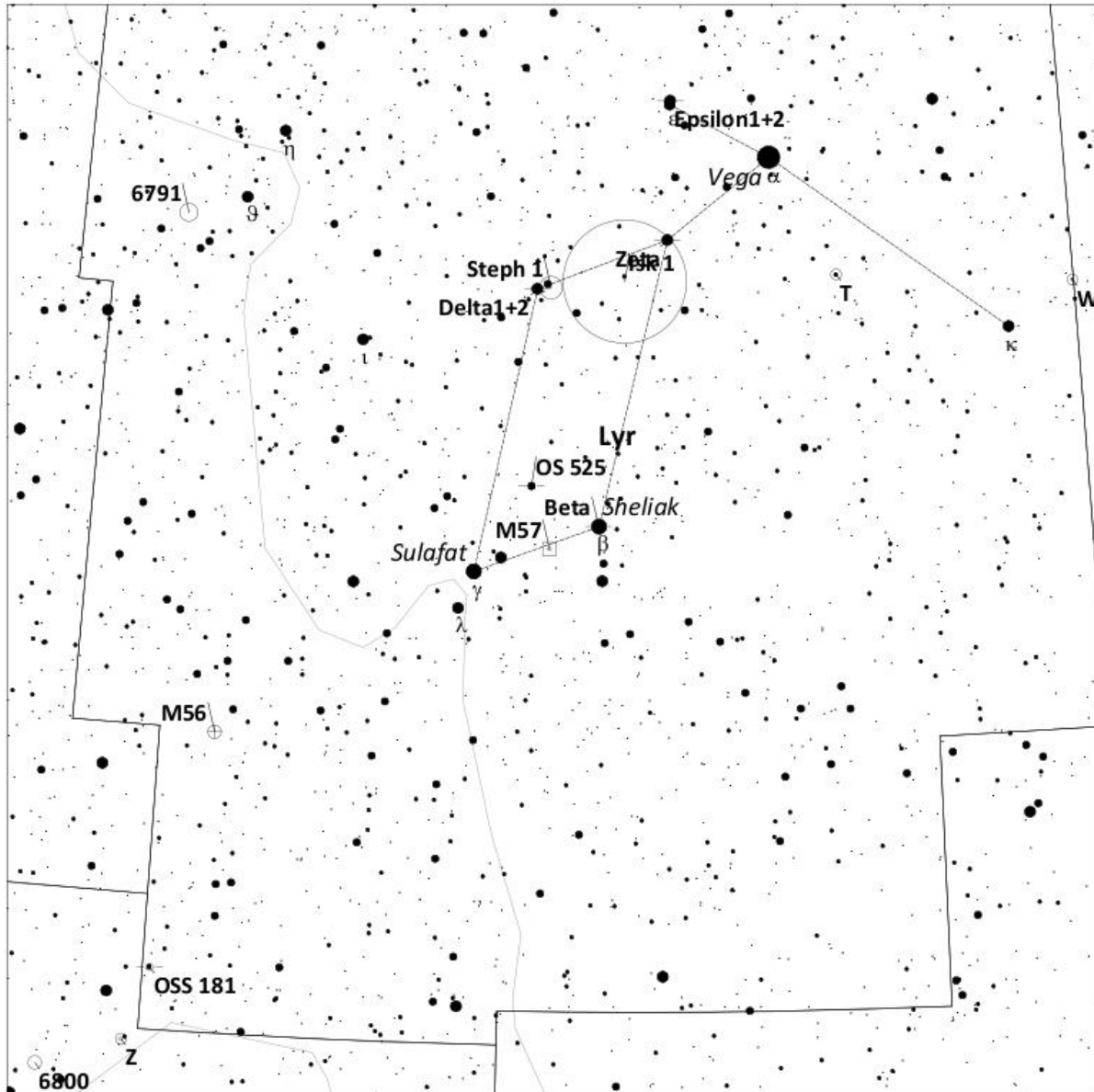
# M11 (Wild Duck Cluster)



**Touring the Universe Through Binoculars Atlas**  
**RA: 18h 51m, Dec: -6d 15m, 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 |            |

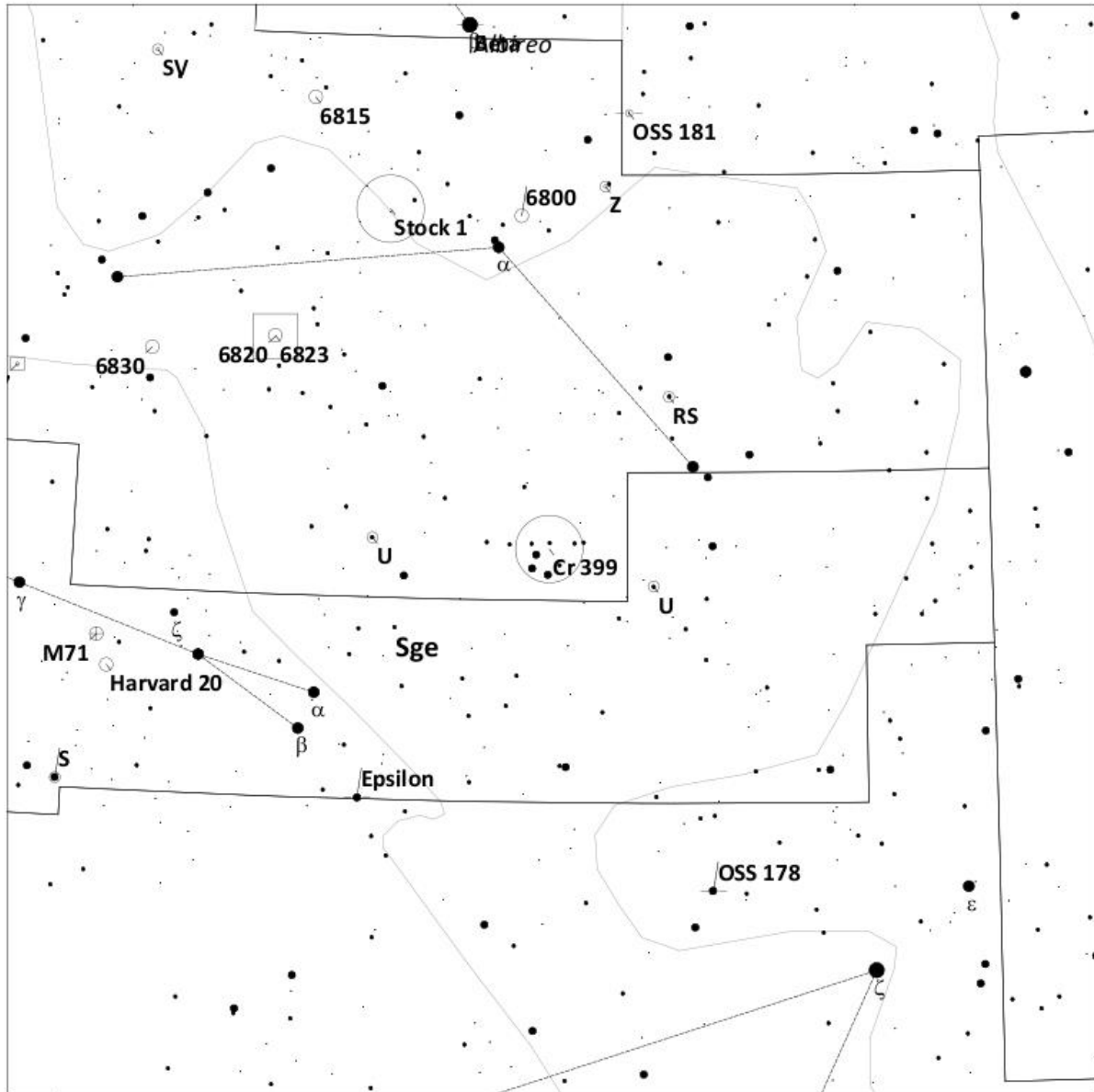
# M57 (Ring Nebula)



**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 |            |

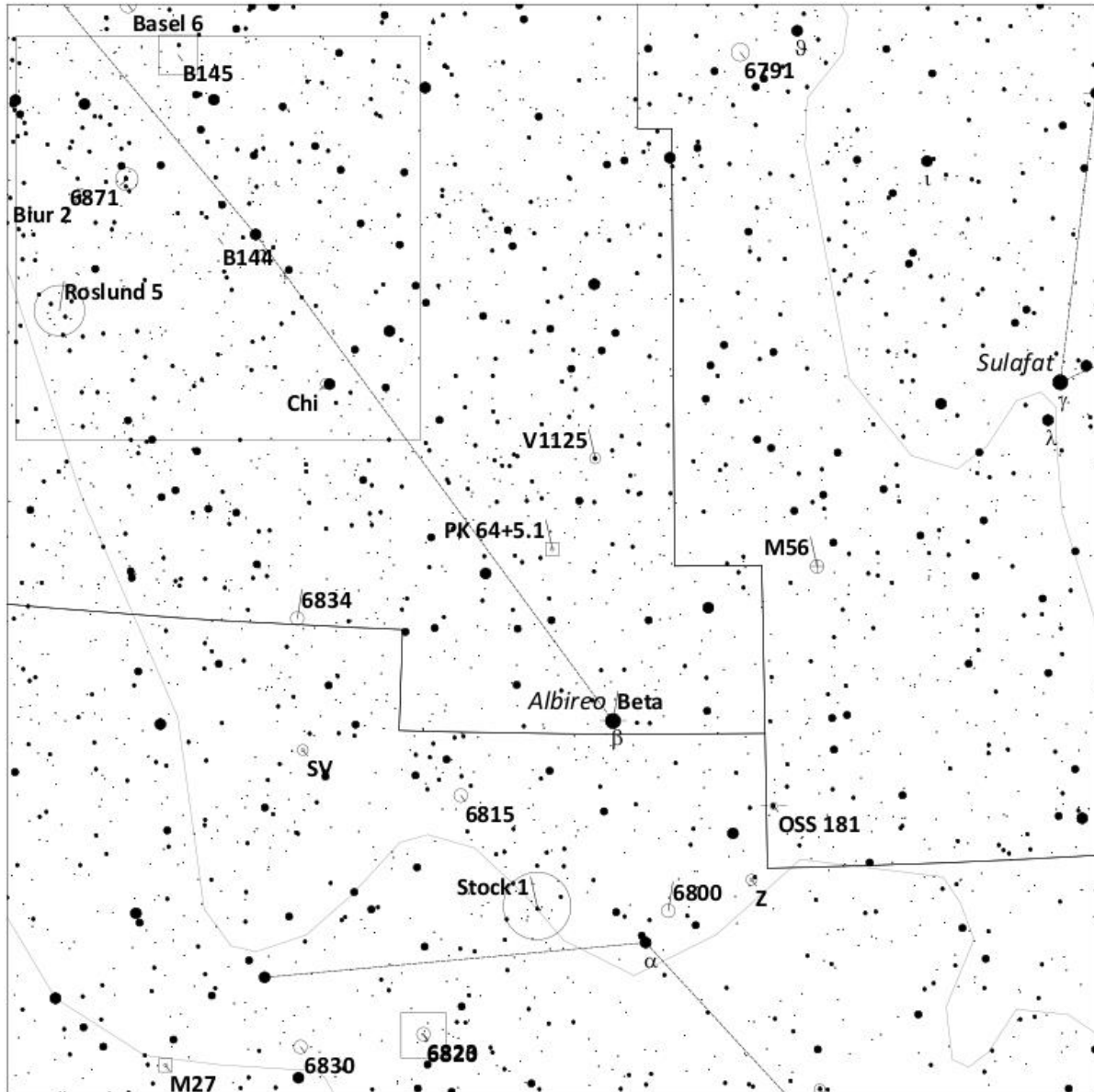
# Coathanger (Brocchi's Cluster/Collinder 399)



## 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 |            |

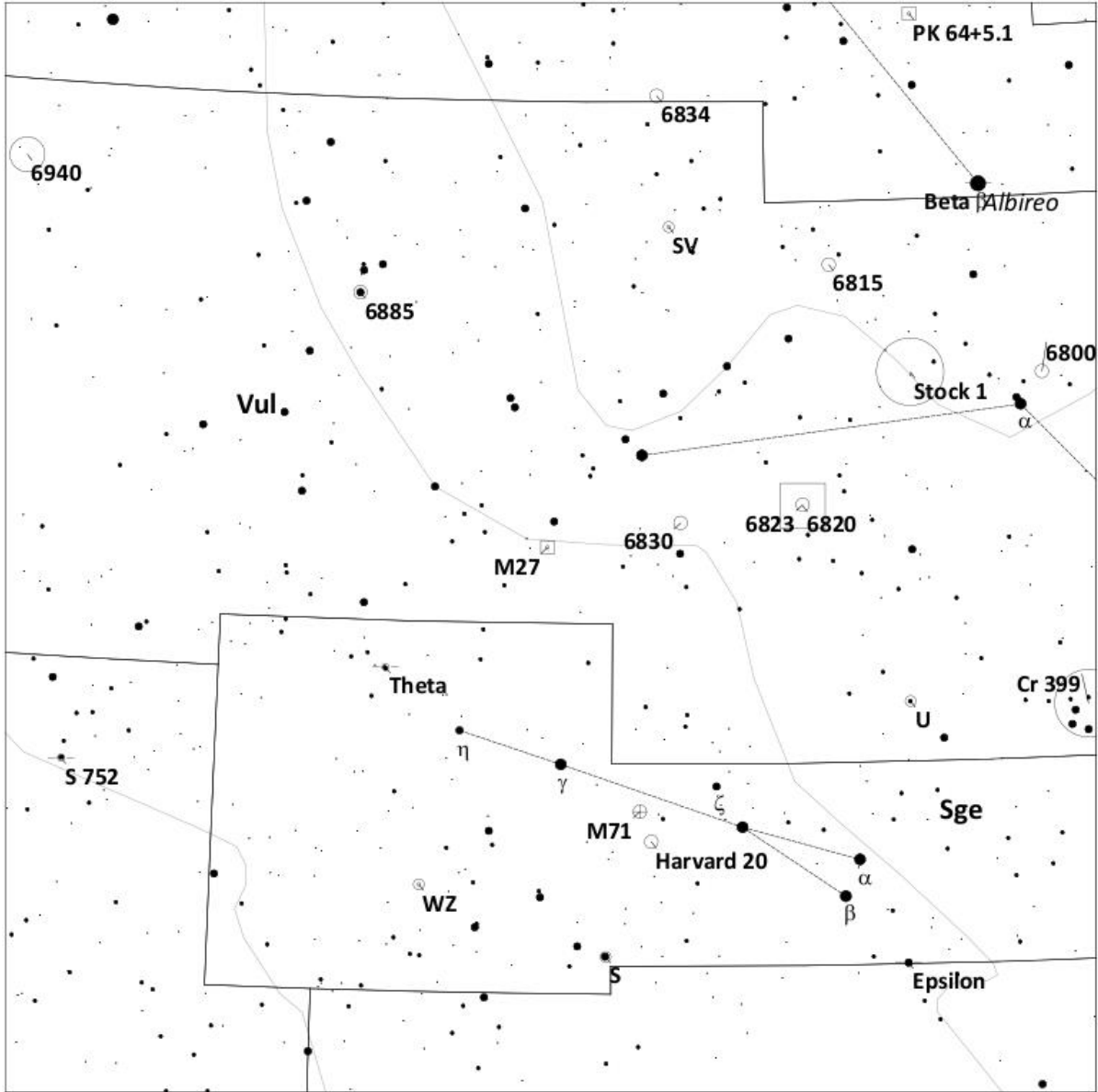
# PK 64+5.1 (Campbell's Hydrogen Star)



**Touring the Universe Through Binoculars Atlas**  
**RA: 19h 34m, Dec: 30d 31m, 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 |            |

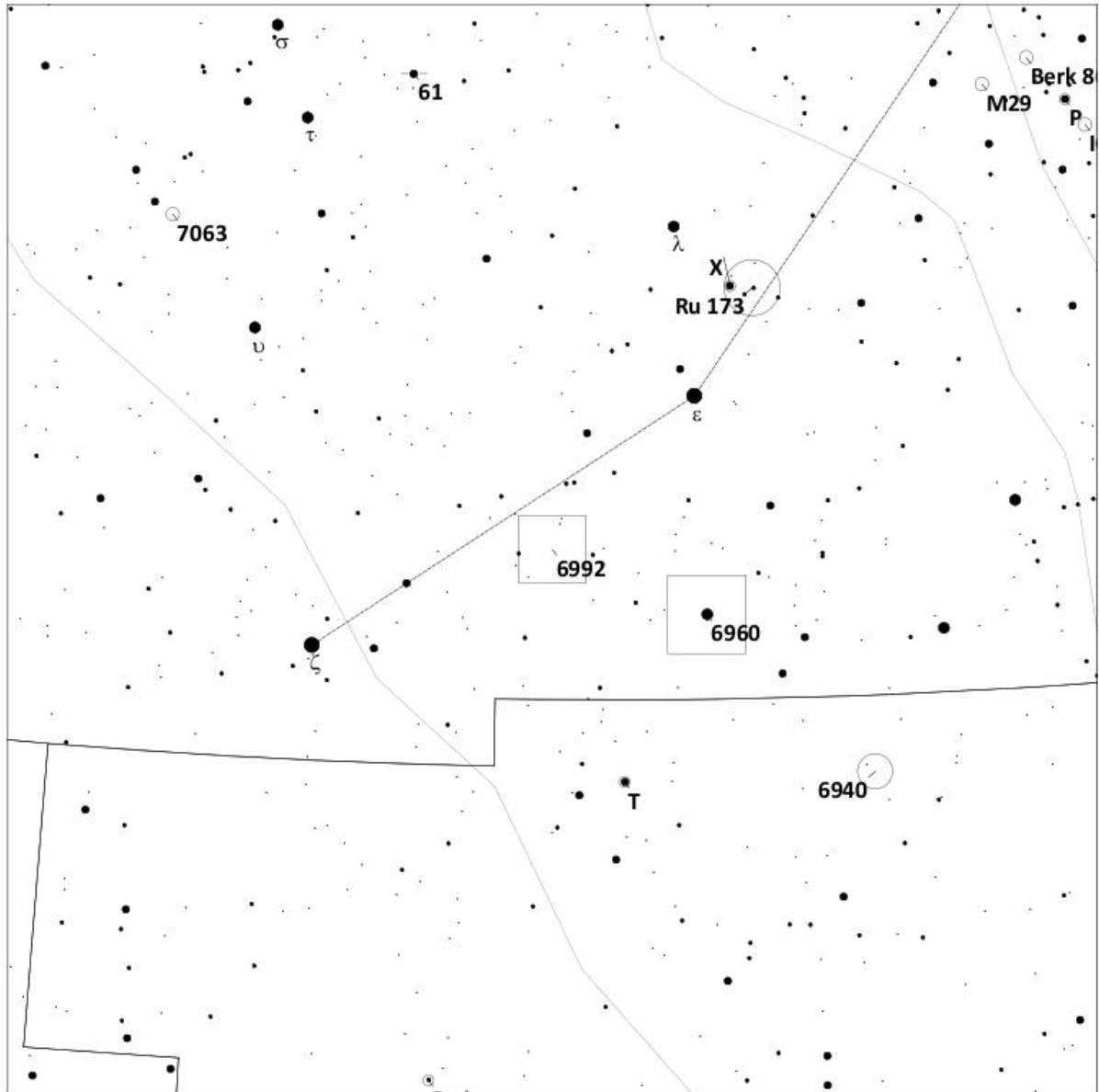
# M27 (Dumbbell Nebula)



**Touring the Universe Through Binoculars Atlas**  
**RA: 19h 59m, Dec: 22d 43m, 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 |            |

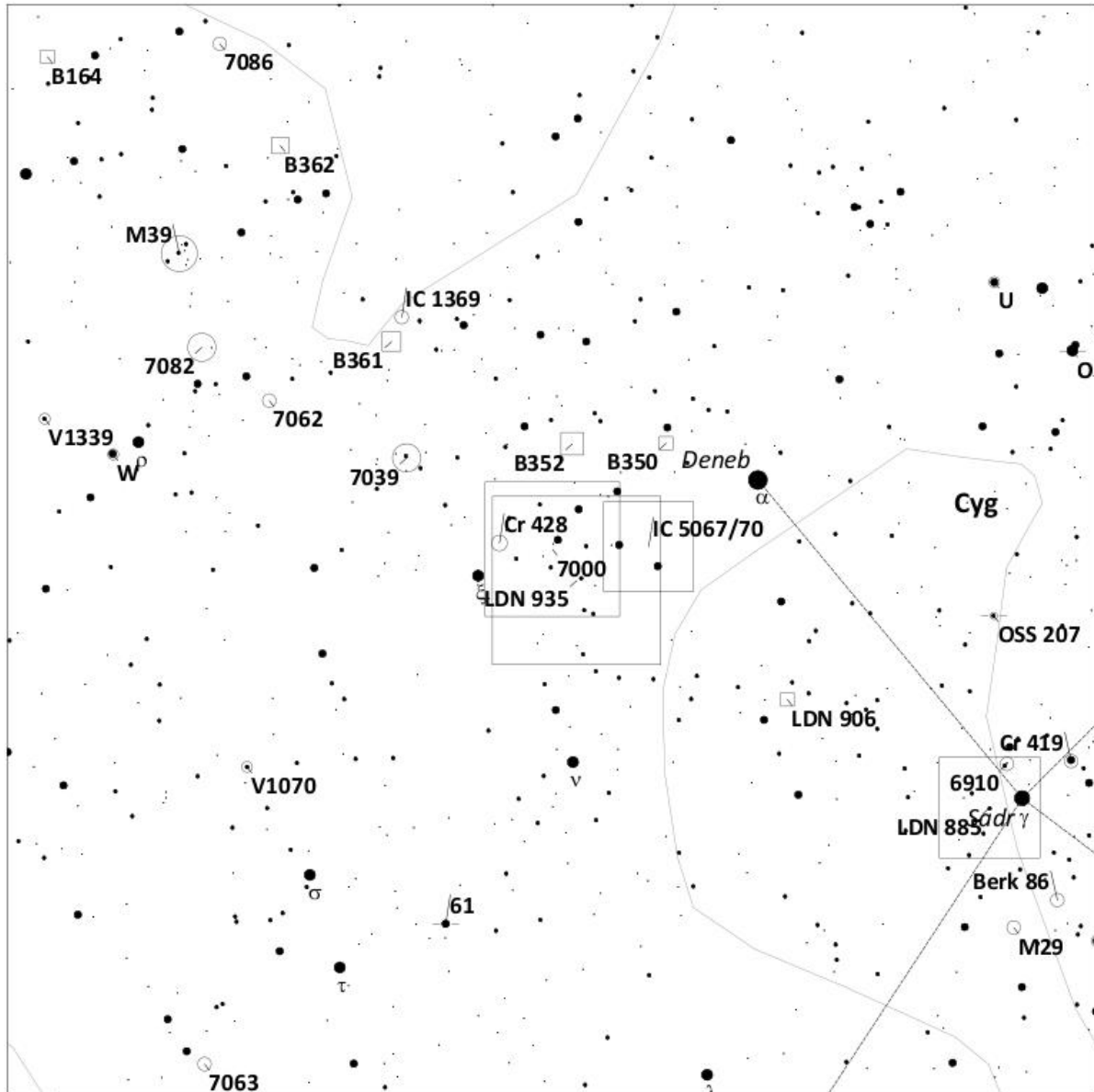
# NGC 6992 (Veil Nebula, eastern section)



**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 |            |

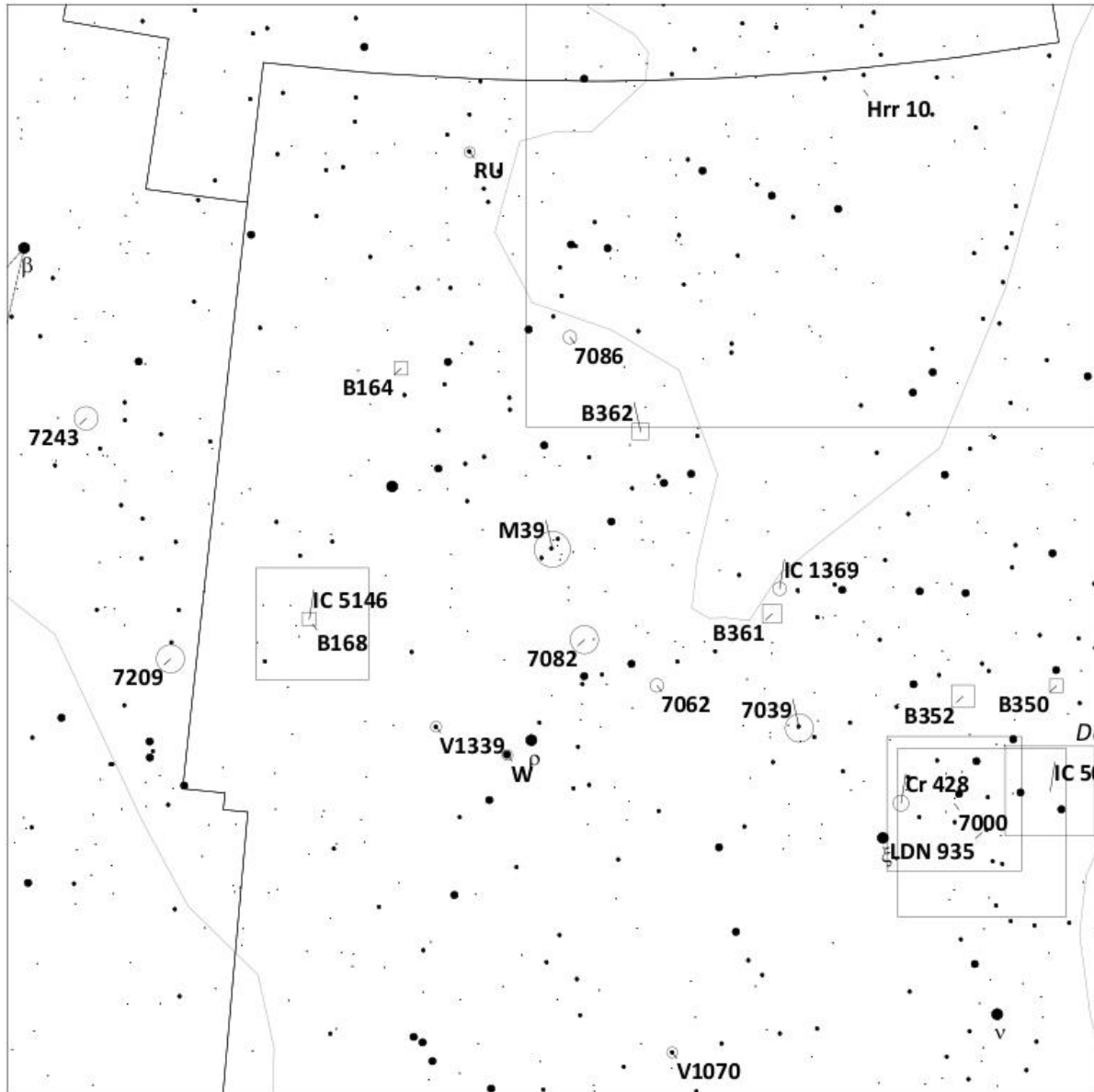
# NGC 7000 (North America Nebula)



**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 |            |

# M39

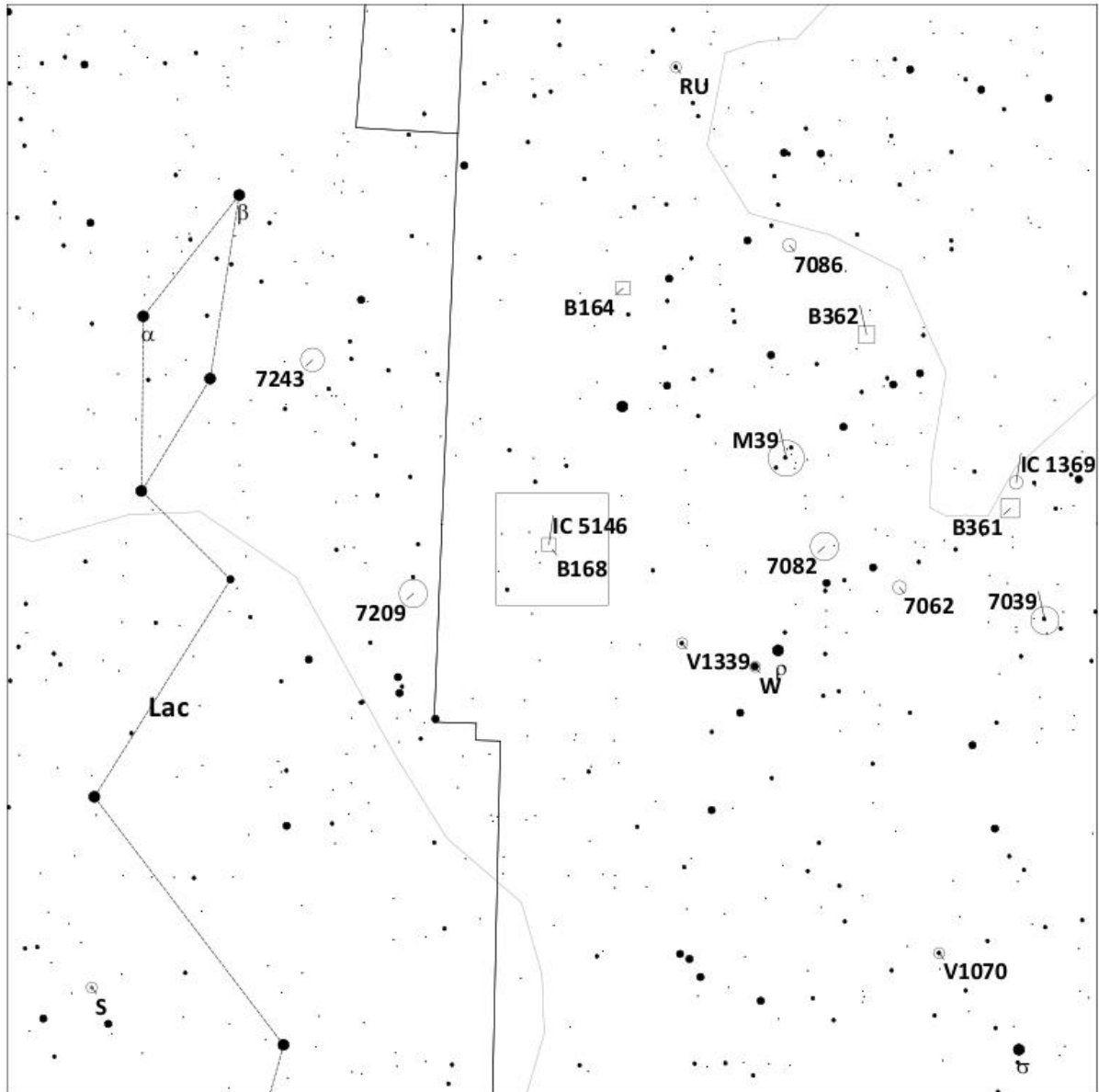


**Touring the Universe Through Binoculars Atlas**  
**RA: 21h 32m, Dec: 48d 25m, FOV: 15d, Mag: 8**

- |             |                    |           |            |
|-------------|--------------------|-----------|------------|
| ● ≤ 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 |            |



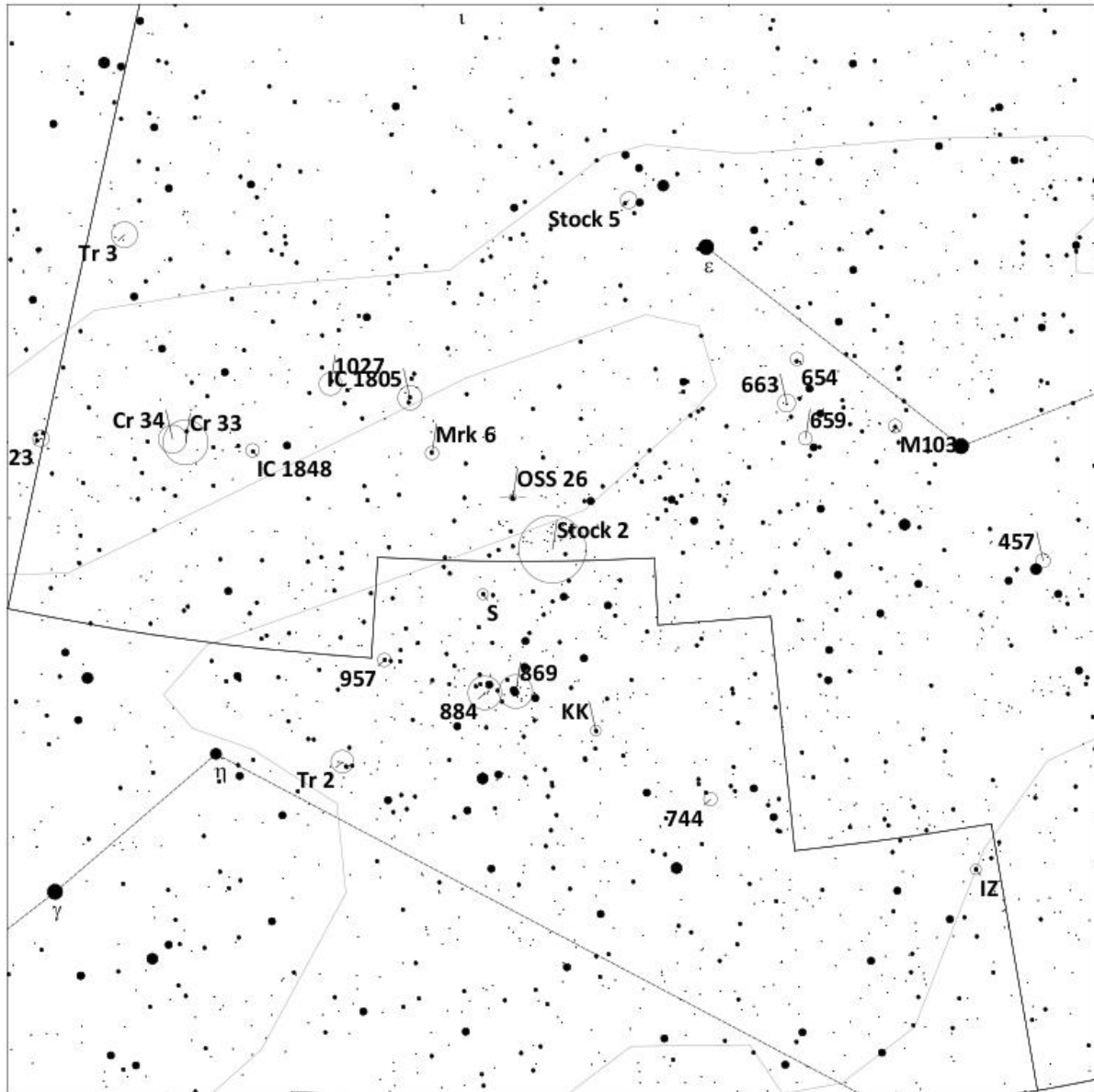
## Barnard 168 and IC 5146 (Cocoon Nebula)



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

- |             |                    |           |            |
|-------------|--------------------|-----------|------------|
| ● ≤ 1.1     | ○ 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 |            |

## Stock 2 (Muscleman 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 |            |