

# AHSP Binocular Observing Award



Compiled by Phil Harrington

[www.philharrington.net](http://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<br>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       |

# AHSP Binocular Observing Award



This program is to recognize observations made with Binoculars **during** the 2019 Almost Heaven Star Party (AHSP). Participants are asked to observe at least 15 objects from this observing list during one or more evenings at AHSP.

1. Check off which objects you observed on the on-line form at:  
<https://www.ahsp.org/ahsp-observing-challenge-submission-form/> , or
2. Use page 1 & 2 of this document to provide your information to Alan Goldberg or Dan Ward at AHSP, or
3. Send it via email no later than September 7, 2019 to:  
([agoldber3@yahoo.com](mailto:agoldber3@yahoo.com)) or ([danward51@gmail.com](mailto:danward51@gmail.com))

## 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 \_\_\_\_\_

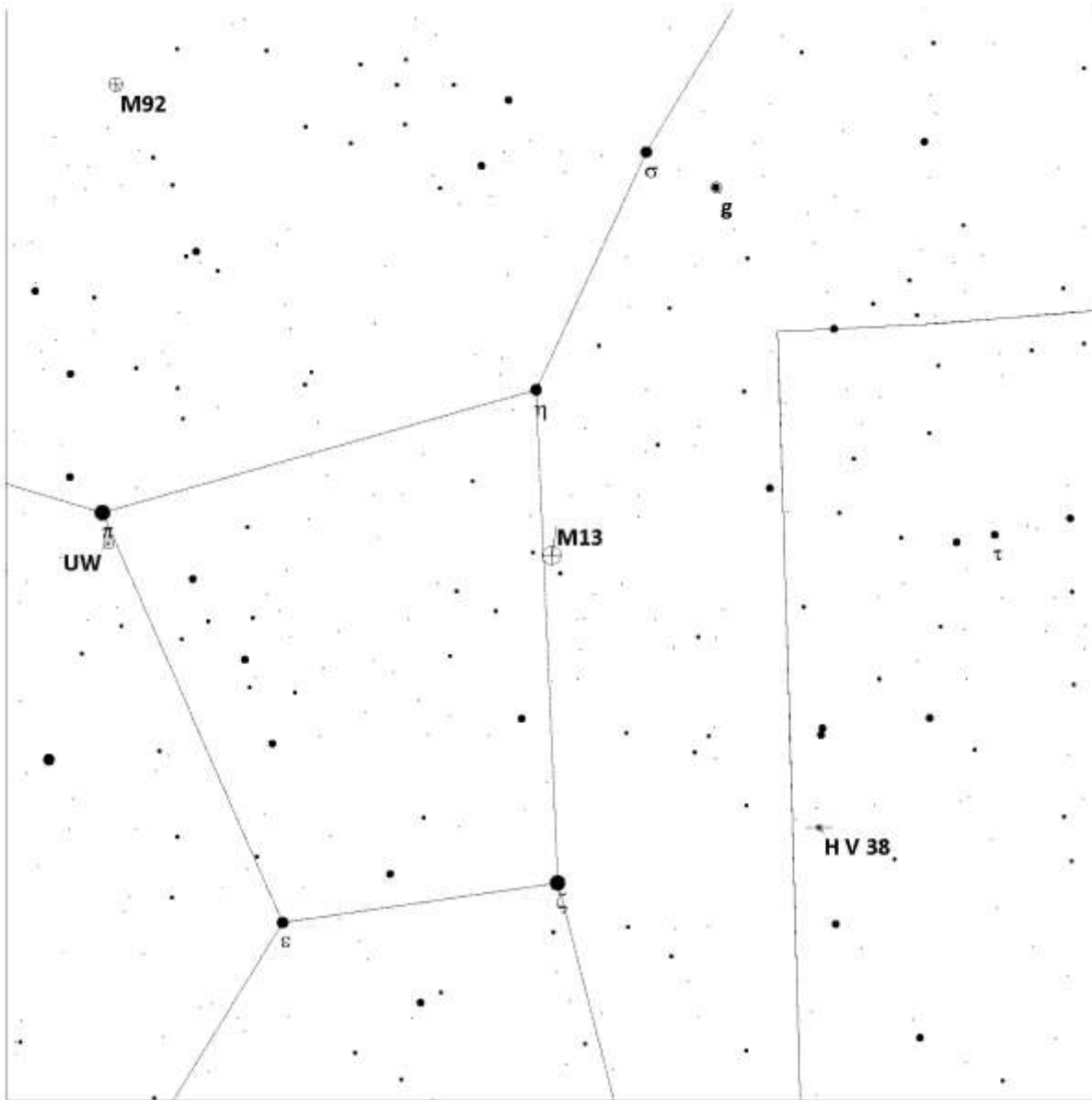
How many Almost Heaven Star Parties have you attended, including this one? \_\_\_\_\_

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>

This document, including the finder charts, can be found at:  
[https://www.ahsp.org/wp-content/uploads/2019/08/AHSP2019\\_Binocular\\_Challenge\\_final.pdf](https://www.ahsp.org/wp-content/uploads/2019/08/AHSP2019_Binocular_Challenge_final.pdf)

# M13 (Great Hercules Globular)



## Touring the Universe Through Binoculars Atlas

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

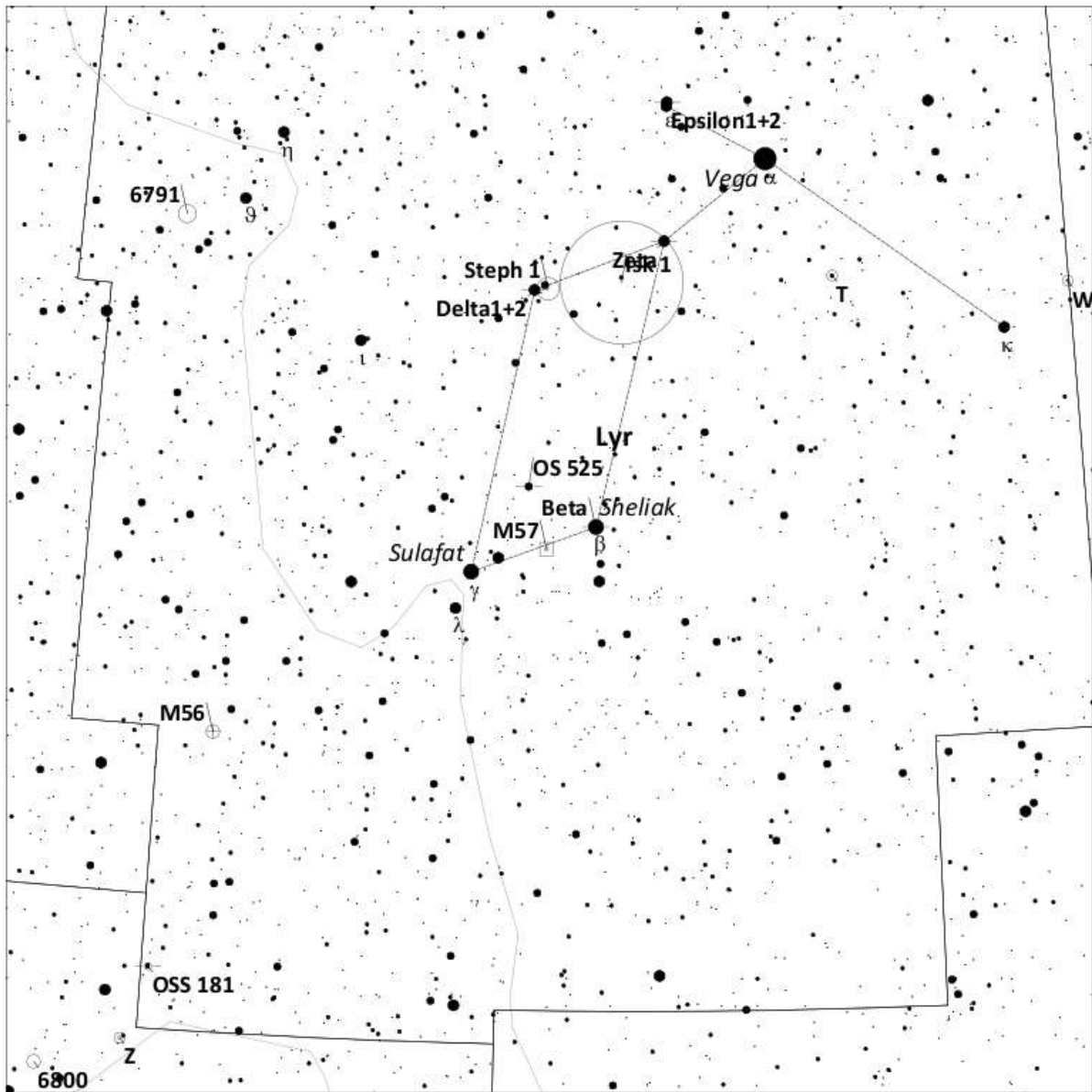
- $\leq 1.1$
- 1.1 - 2.3
- 2.3 - 3.4
- 3.4 - 4.6
- 4.6 - 5.7
- 5.7 - 6.9
- $> 6.9$

- 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

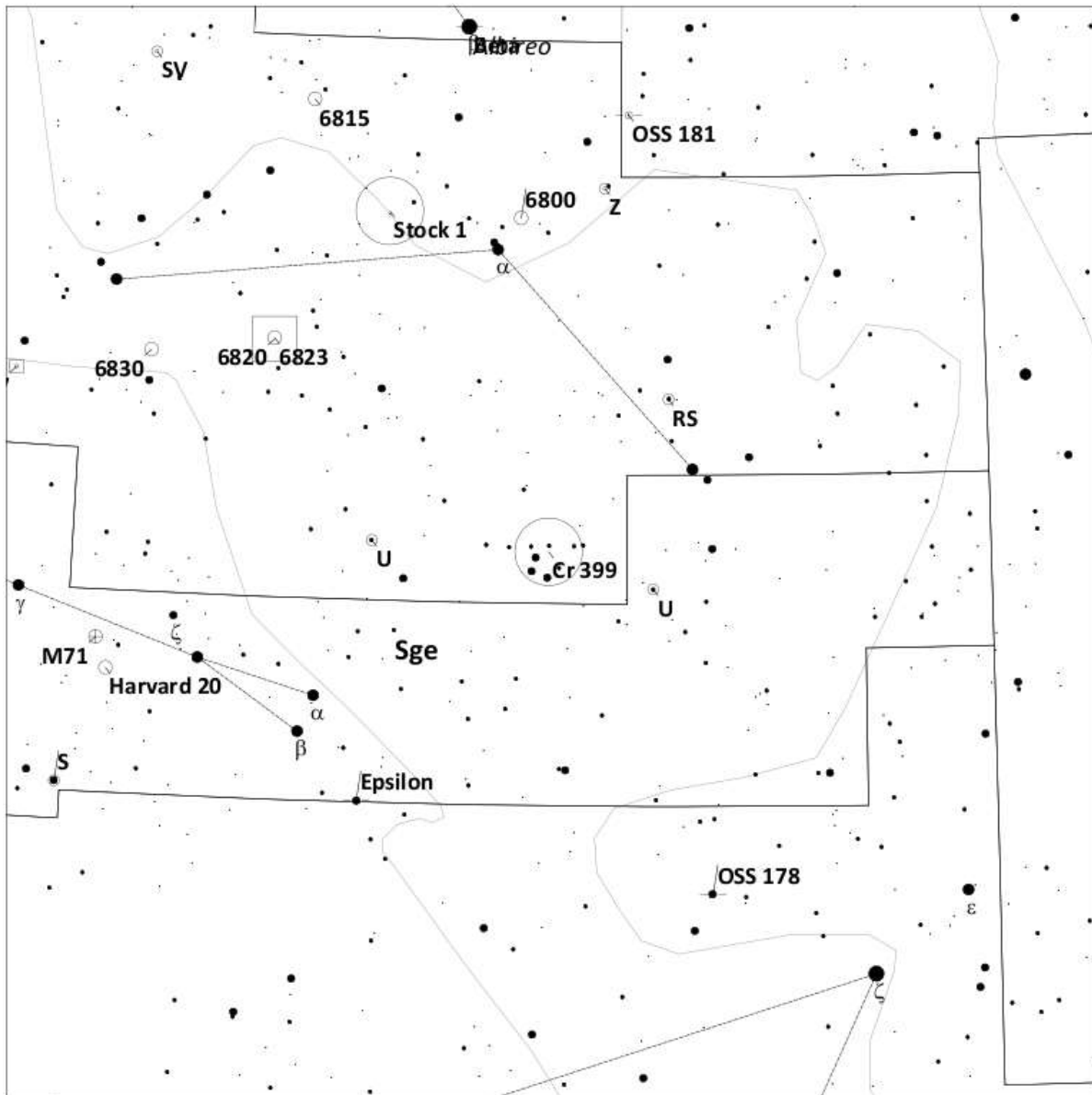
- ≤ 1.3
- 1.3 - 2.6
- 2.6 - 3.9
- 3.9 - 5.1
- 5.1 - 6.4
- 6.4 - 7.7
- > 7.7

- 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

# Coathanger (Brocchi's Cluster/Collinder 399)

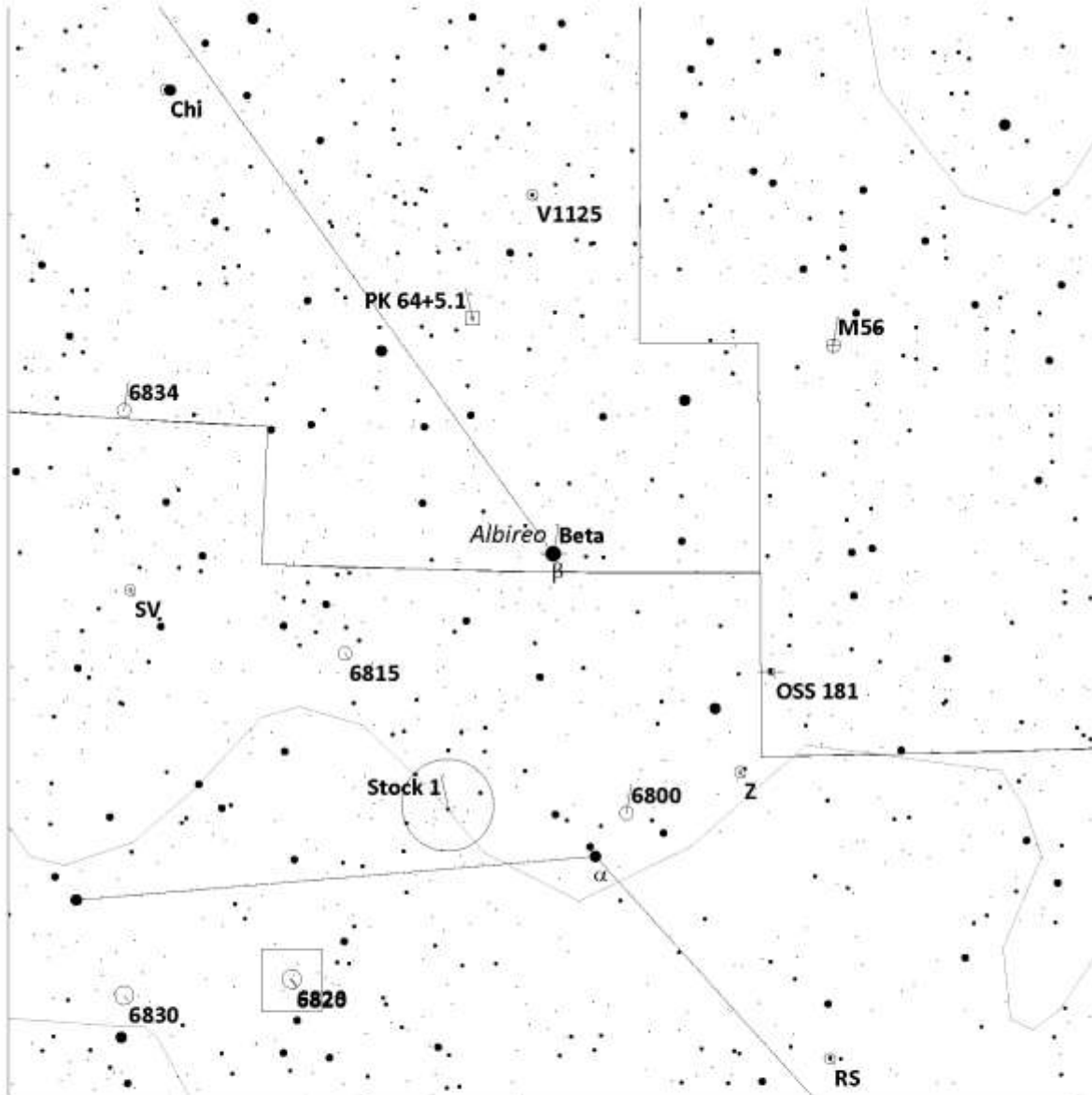


## Touring the Universe Through Binoculars Atlas

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 |            |

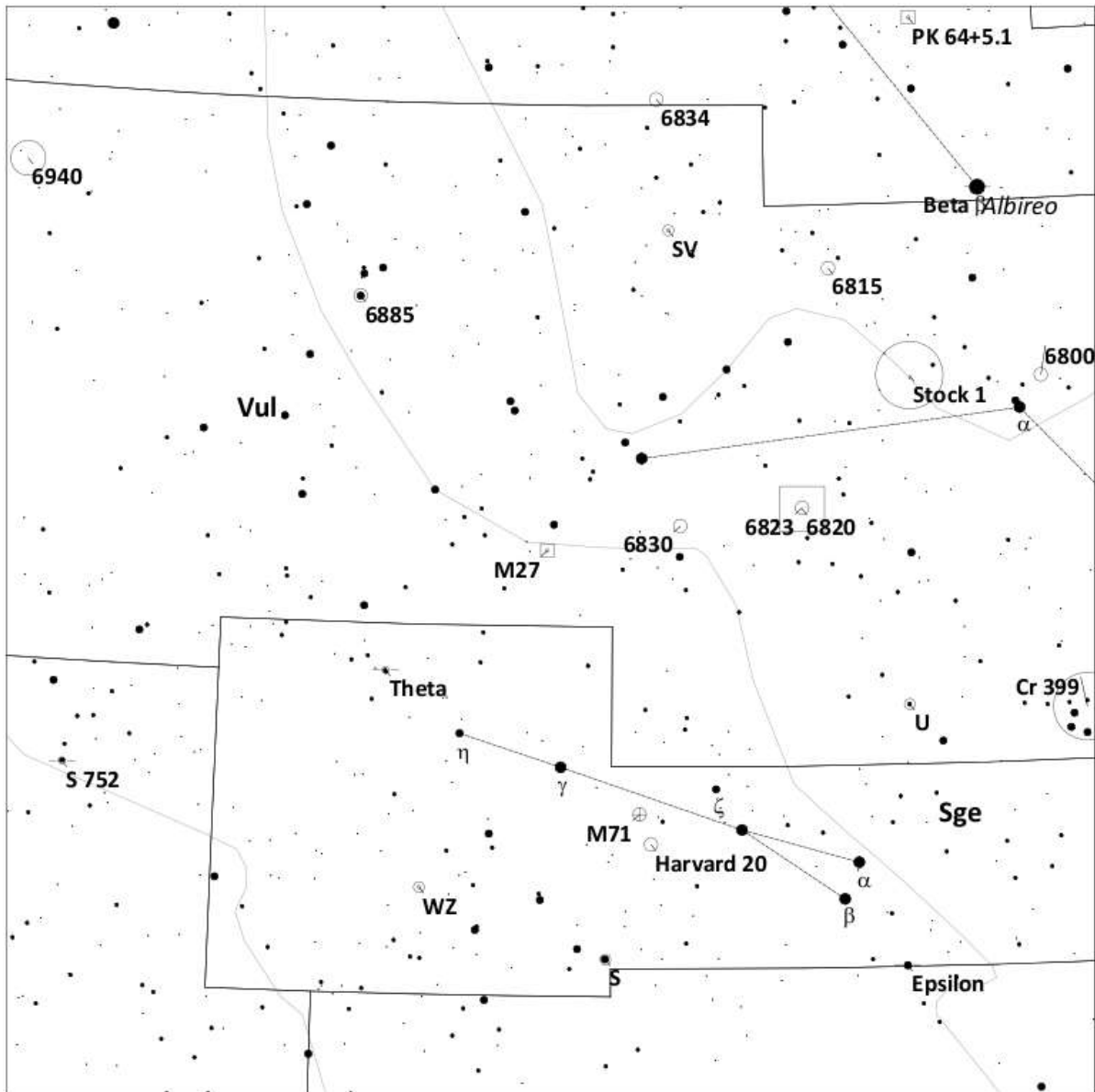
# Albireo (Beta Cygnus) – Color Contrasting Double



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

|             |                    |           |            |
|-------------|--------------------|-----------|------------|
| ● ≤ 1.3     | ☉ 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

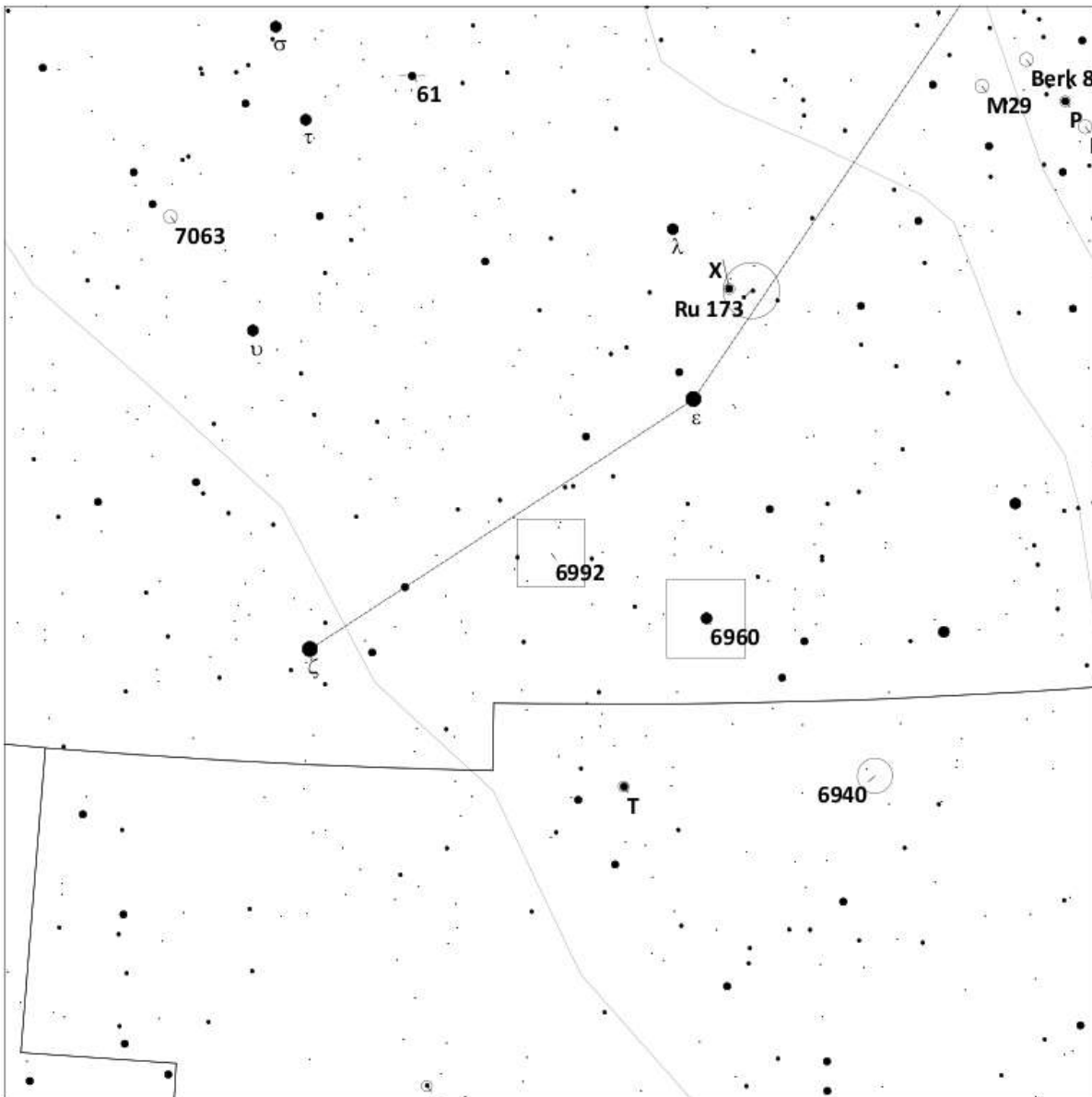
- ≤ 1.1
- 1.1 - 2.3
- 2.3 - 3.4
- 3.4 - 4.6
- 4.6 - 5.7
- 5.7 - 6.9
- > 6.9

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

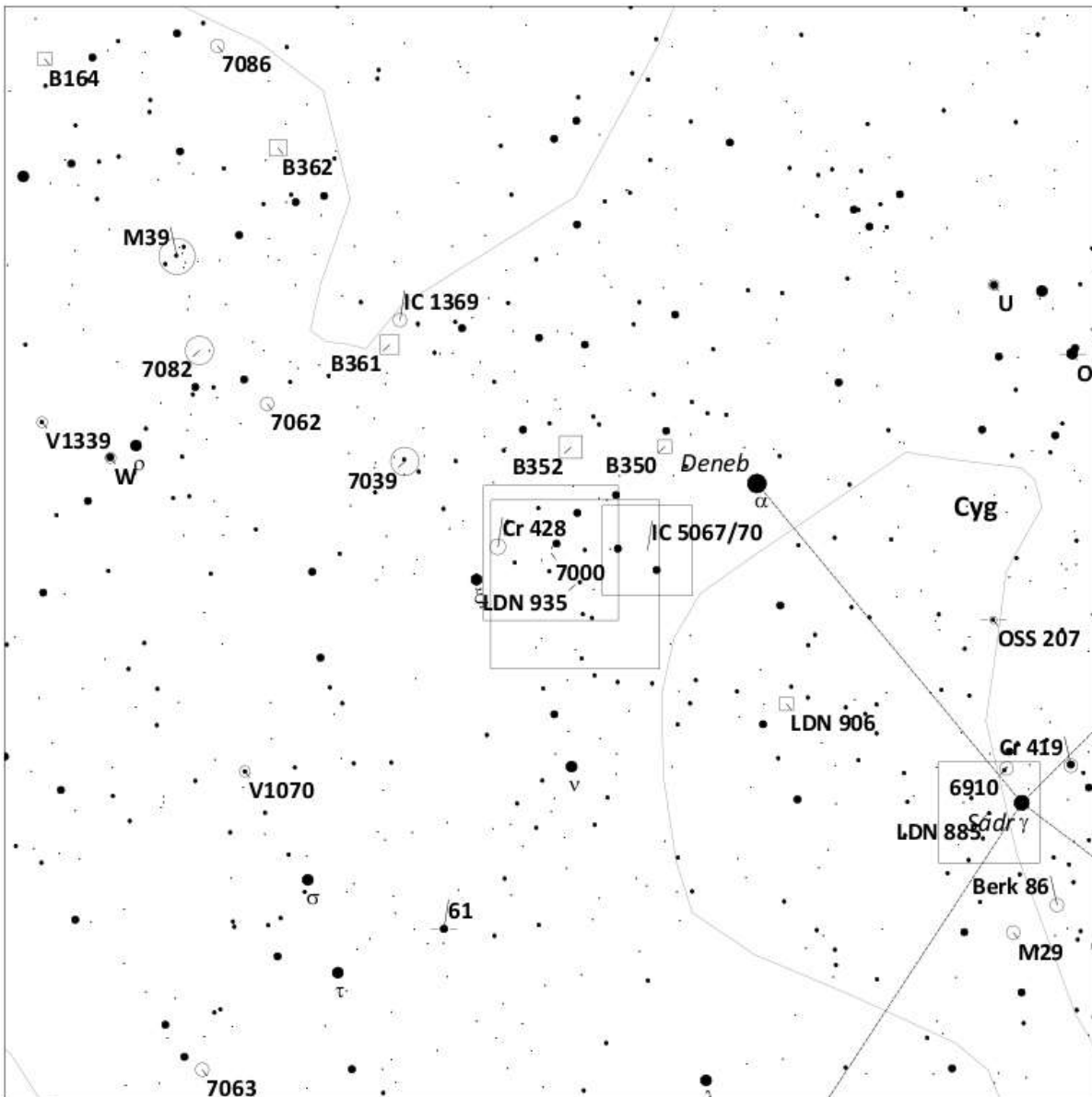
- Galaxy
- Open Cluster
- ⊕ Globular Cluster
- Diffuse Nebula
- Planetary Nebula
- ⊙ Variable Star
- ⊖ Double Star

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

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



# NGC 7000 (North America Nebula)



## Touring the Universe Through Binoculars Atlas

RA: 20h 58m, Dec: 44d 20m, FOV: 15d, Mag: 8

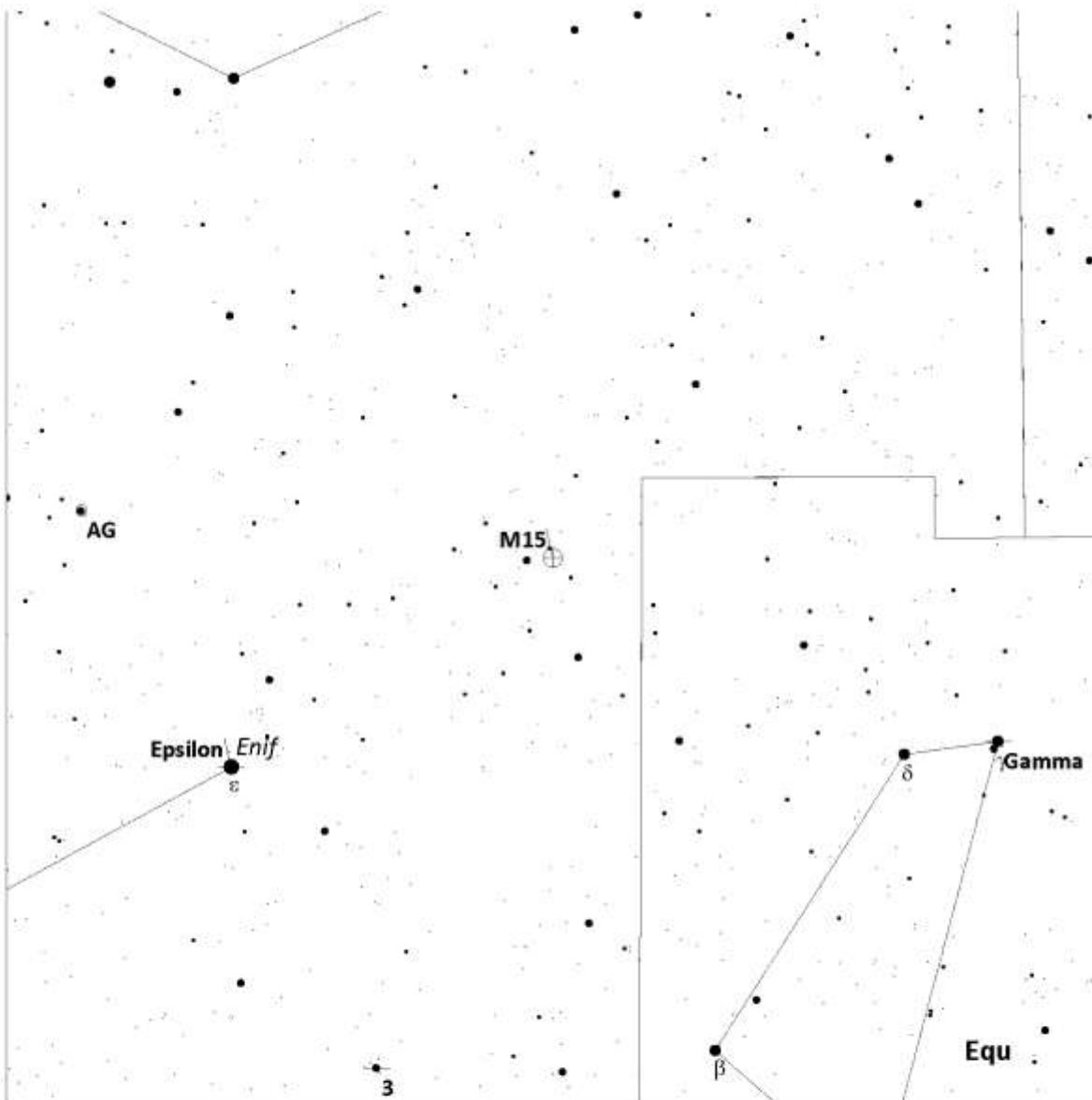
- ≤ 1.1
- 1.1 - 2.3
- 2.3 - 3.4
- 3.4 - 4.6
- 4.6 - 5.7
- 5.7 - 6.9
- > 6.9

- 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

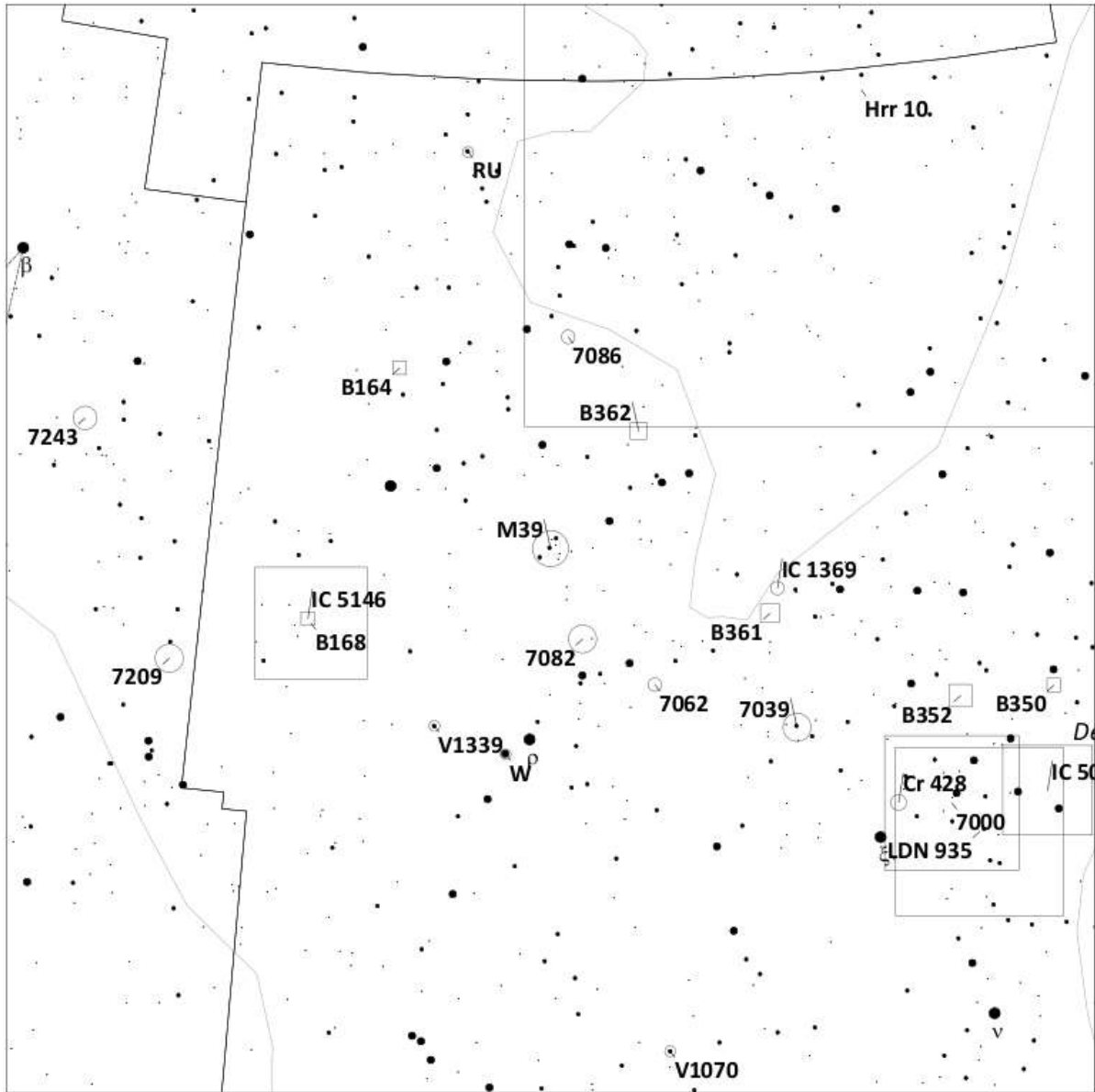
# M15



**Touring the Universe Through Binoculars Atlas**  
**RA: 21h 30m, Dec: 12d 10m, 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 |            |

# M39



## Touring the Universe Through Binoculars Atlas

RA: 21h 32m, Dec: 48d 25m, FOV: 15d, Mag: 8

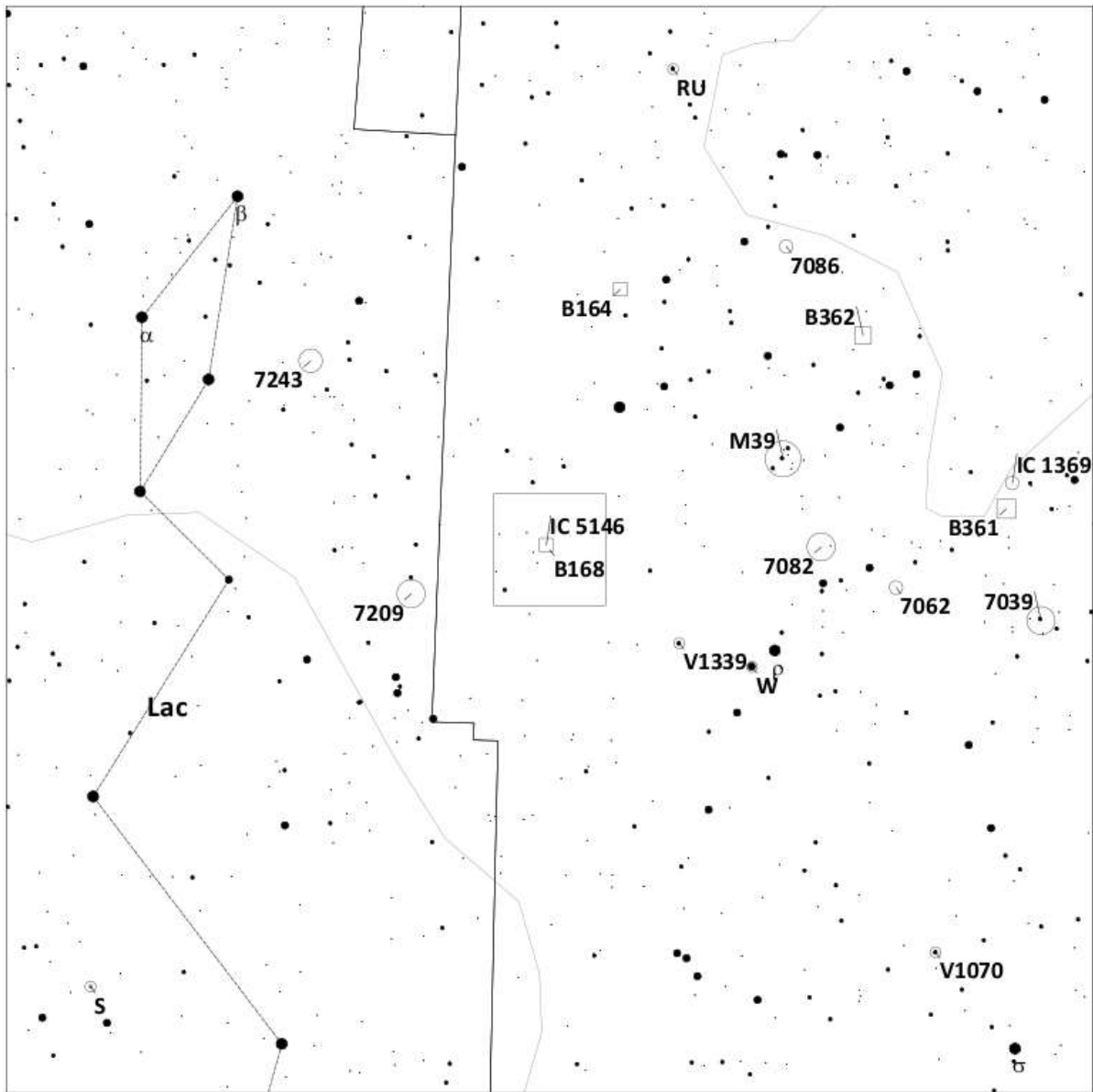
- ≤ 1.1
- 1.1 - 2.3
- 2.3 - 3.4
- 3.4 - 4.6
- 4.6 - 5.7
- 5.7 - 6.9
- > 6.9

- 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

# Barnard 168 and IC 5146 (Cocoon Nebula)

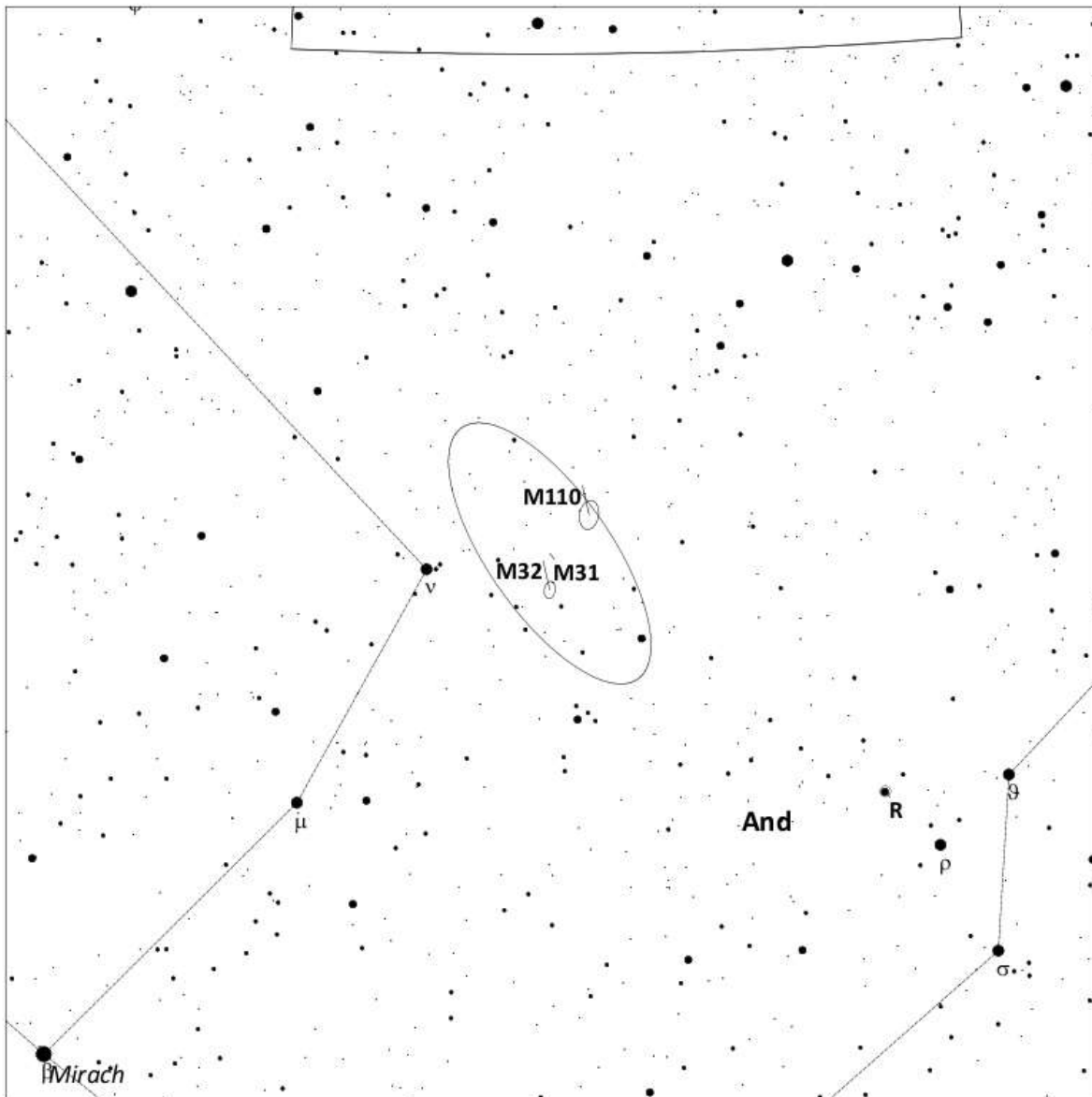


## Touring the Universe Through Binoculars Atlas

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 |            |

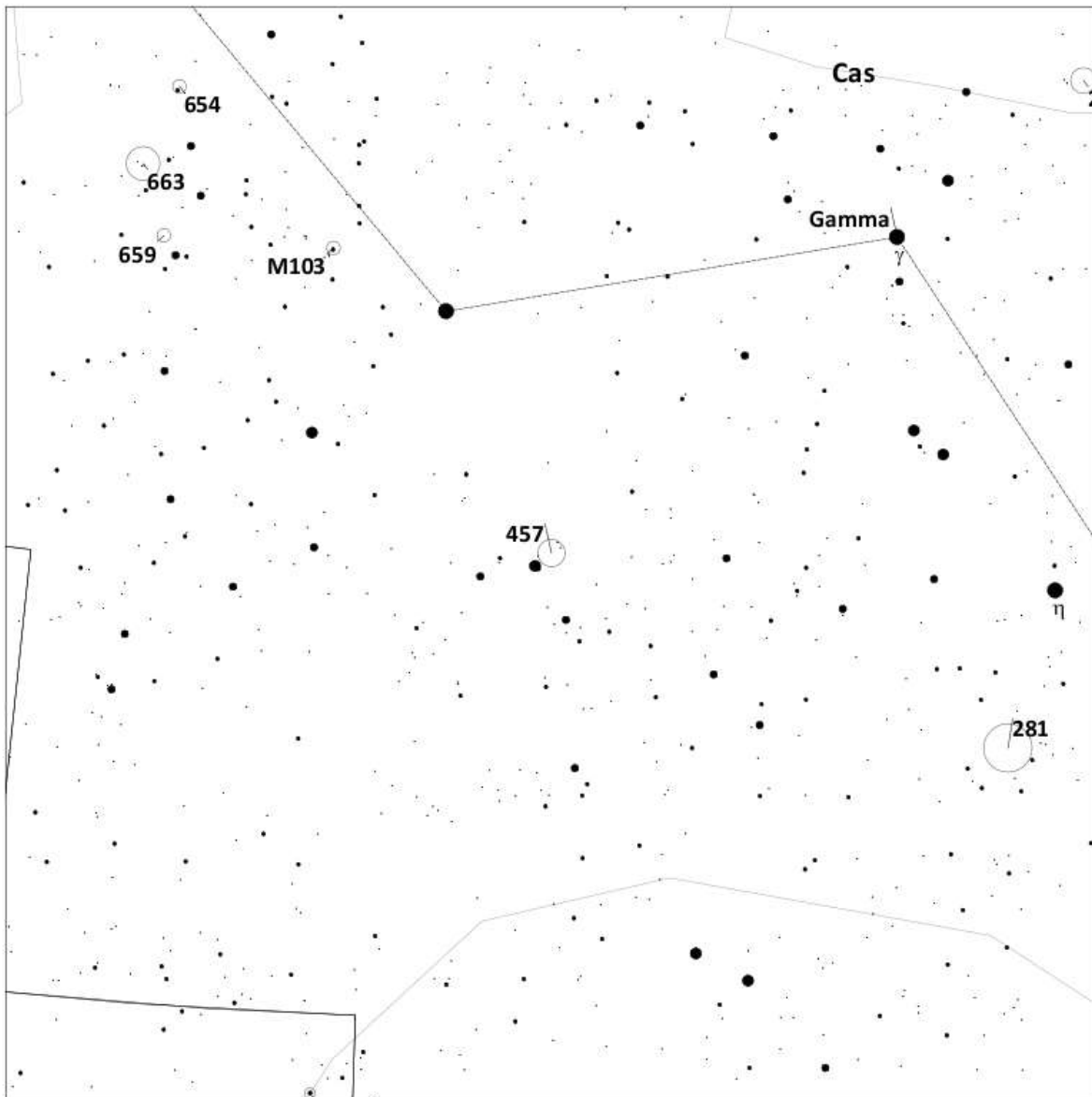
# M31, M32, M110



**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

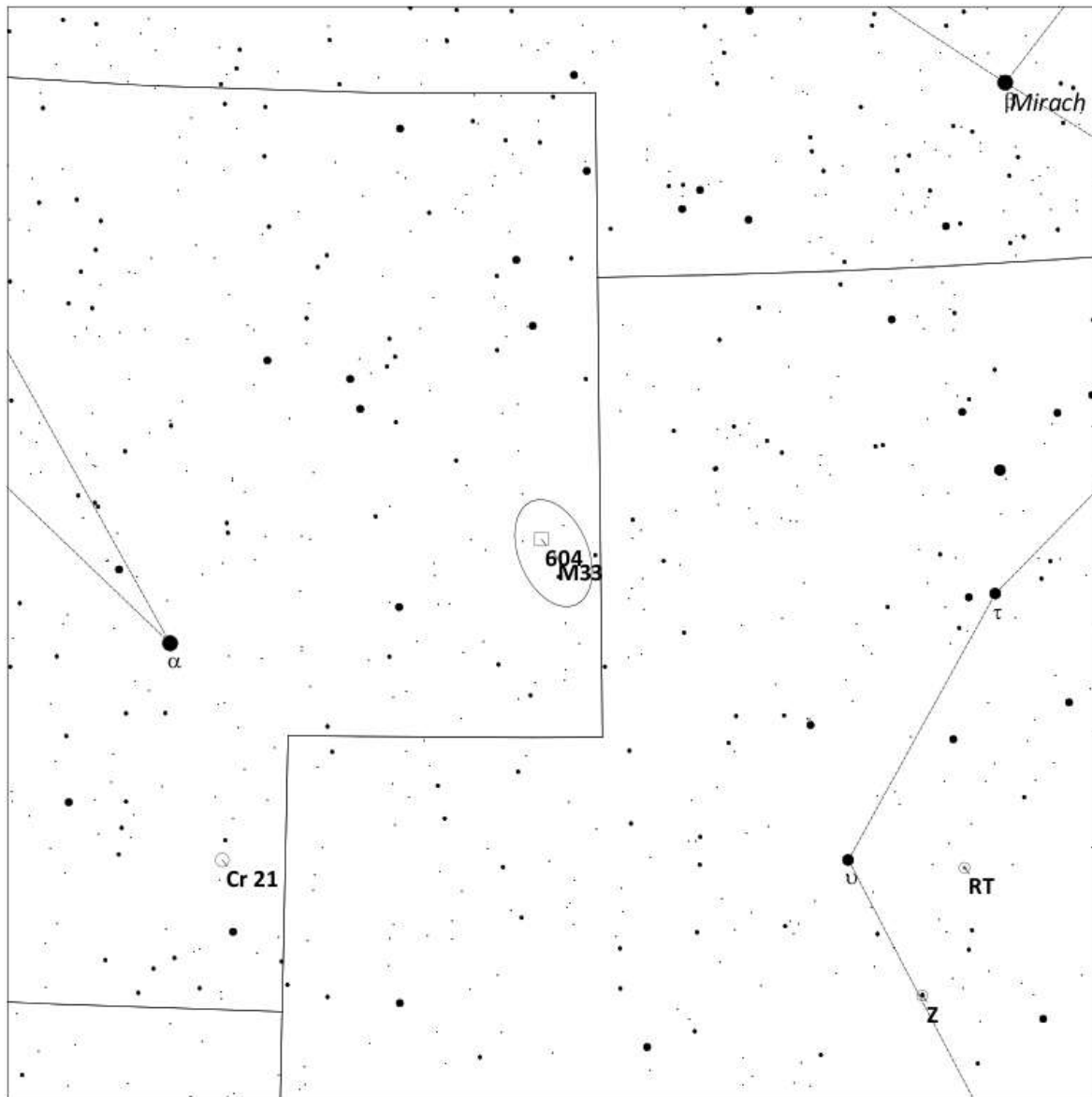


## Touring the Universe Through Binoculars Atlas

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 |            |

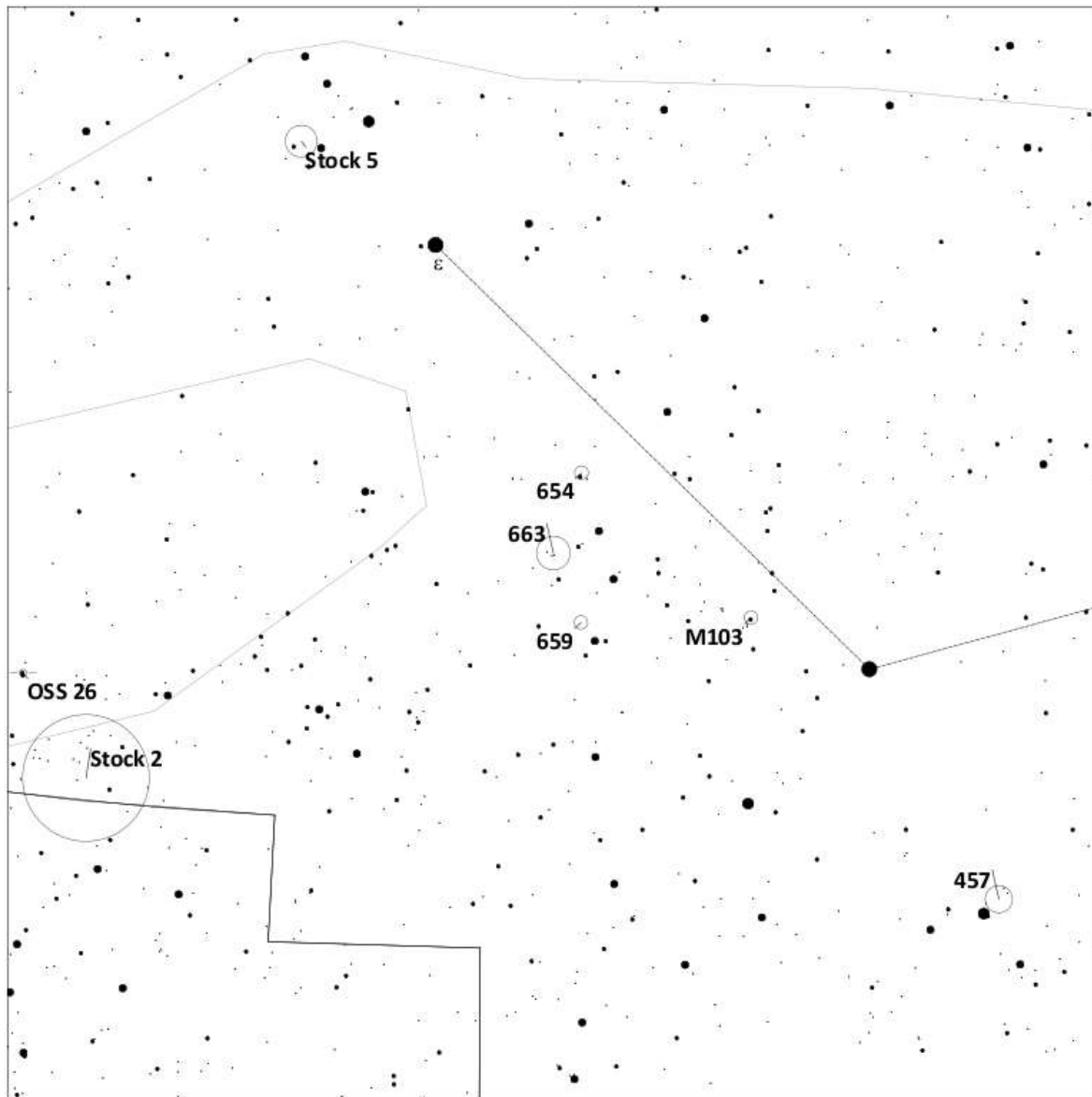
# M33



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

- |             |                    |           |            |
|-------------|--------------------|-----------|------------|
| ● ≤ 1.3     | ○ 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 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

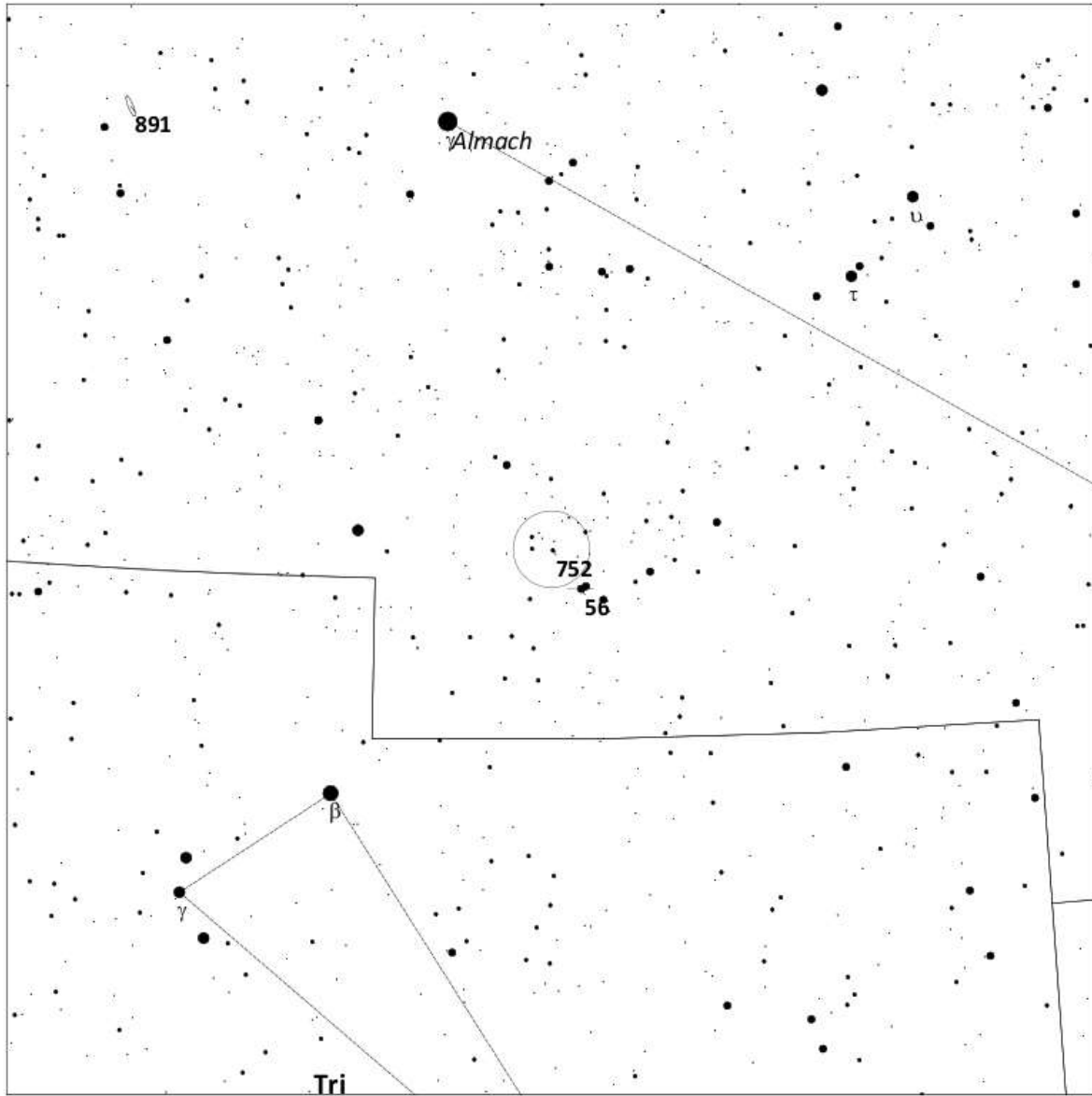
- Galaxy
- Open Cluster
- ⊕ Globular Cluster
- Diffuse Nebula
- Planetary Nebula
- ⊙ Variable Star
- Double Star

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

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



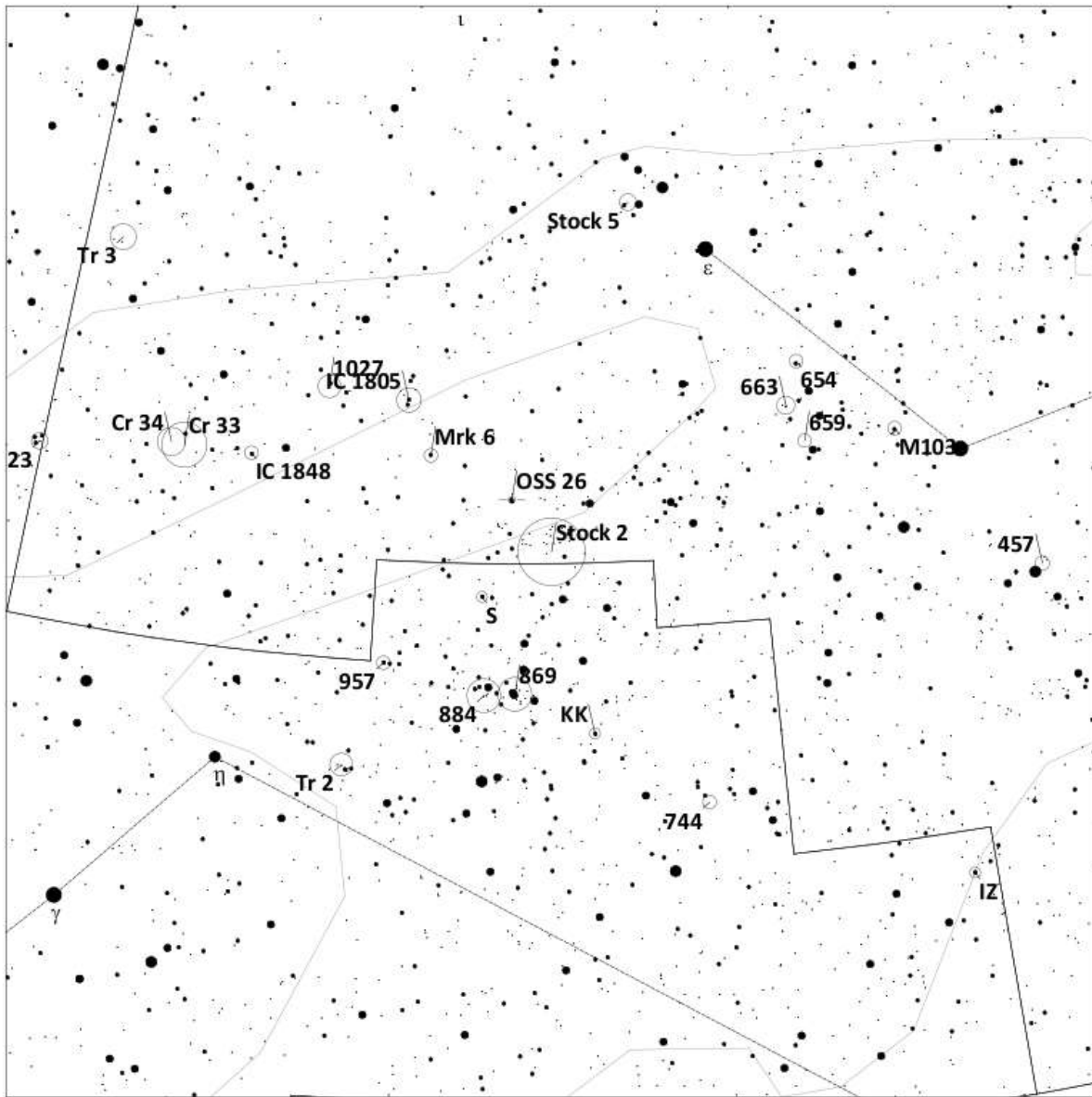
# NGC 752



**Touring the Universe Through Binoculars Atlas**  
**RA: 1h 57m, Dec: 37d 40m, FOV: 11d, Mag: 8.5**

- |             |                    |           |            |
|-------------|--------------------|-----------|------------|
| ● ≤ 1.3     | ○ 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 |            |

## 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
- 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