

**StarView**  
**Visible Object Listing for:**

<b>June 15, 2017</b>	<b>Local Time (Z-4): 21:30</b>	<b>Lat: 41.5</b>	<b>Minimum Criteria: Elev: 5° / Mag: 6 Sep: 10 arcmin / Size: 2 arcsec</b>
	<b>Sidereal Time: 13:42</b>	<b>Lon: -81.5</b>	

<b>Name</b>	<b>Con</b>	<b>Type</b>	<b>Mag</b>	<b>Sep/Size</b>	<b>Elev</b>
<b>kappa Bootes - Asellus Tertius</b>	<b>Boo</b>	<b>Double Star</b>	<b>4.5, 6.6</b>	<b>13.4 arcsec</b>	<b>78°</b>
<b>Zeta Bootis</b>	<b>Boo</b>	<b>Double Star</b>	<b>4.6, 4.5</b>	<b>0.8, 99 arcsec</b>	<b>59°</b>
<b>Iota Cancri</b>	<b>Can</b>	<b>Double Star</b>	<b>4.2, 6.6</b>	<b>30.6 arcsec</b>	<b>30°</b>
<b>M44 - Beehive Cluster, Praesepe</b>	<b>Can</b>	<b>Open Cluster</b>	<b>3.7</b>	<b>95 arcmin</b>	<b>24°</b>
<b>Eta Cassiopeiae - Achrid</b>	<b>Cas</b>	<b>Double Star</b>	<b>3.4, 7.5</b>	<b>13 arcsec</b>	<b>10°</b>
<b>Delta Cephei</b>	<b>Cep</b>	<b>Star</b>	<b>4</b>		<b>18°</b>
<b>24 Comae Berenices</b>	<b>Com</b>	<b>Double Star</b>	<b>5.2, 6.7</b>	<b>20.3 arcsec</b>	<b>63°</b>
<b>35 Comae Berenices</b>	<b>Com</b>	<b>Double Star</b>	<b>4.91</b>	<b>29 arcsec</b>	<b>67°</b>
<b>Alpha Canum Venaticorum - Cor Caroli</b>	<b>CVn</b>	<b>Double Star</b>	<b>2.9, 5.5</b>	<b>19.6 arcsec</b>	<b>81°</b>
<b>Y Cvn - La Superba</b>	<b>Cvn</b>	<b>Star</b>	<b>5</b>		<b>79°</b>
<b>17 Cygni</b>	<b>Cyg</b>	<b>Double Star</b>	<b>5</b>	<b>26 arcsec</b>	<b>21°</b>
<b>31 Cygni - Omicron 1</b>	<b>Cyg</b>	<b>Double Star</b>	<b>3.8</b>		<b>24°</b>
<b>32 Cygni - Omicron 2</b>	<b>Cyg</b>	<b>Double Star</b>	<b>3.98</b>		<b>25°</b>
<b>Beta Cygni - Albireo</b>	<b>Cyg</b>	<b>Double Star</b>	<b>3.1, 5.1</b>	<b>35 arcsec</b>	<b>20°</b>
<b>M39</b>	<b>Cyg</b>	<b>Open Cluster</b>	<b>4.6</b>	<b>32 arcmin</b>	<b>15°</b>
<b>North American Nebula - Caldwell 20</b>	<b>Cyg</b>	<b>Nebula</b>	<b>4</b>	<b>100 arcmin</b>	<b>17°</b>
<b>Nu Draconis</b>	<b>Dra</b>	<b>Double Star</b>	<b>4.88</b>	<b>63.4 arcsec</b>	<b>51°</b>
<b>Alpha Geminorum - Castor</b>	<b>Gem</b>	<b>Double Star</b>	<b>1.9, 2.9</b>	<b>4, 71 arcsec</b>	<b>19°</b>

<b>M13 - Hercules Cluster</b>	<b>Her</b>	<b>Globular Cluster</b>	<b>5.8</b>	<b>20 arcmin</b>	<b>55°</b>
<b>19 Lynceis - Struve 1062</b>	<b>Lyn</b>	<b>Double Star</b>	<b>5.6</b>	<b>14.8 arcsec</b>	<b>31°</b>
<b>Epsilon Lyrae - The Double Double</b>	<b>Lyr</b>	<b>Double Star</b>	<b>4.6, 5, 6</b>	<b>200,150,64 arcsec</b>	<b>34°</b>
<b>IC4665</b>	<b>Oph</b>	<b>Open Cluster</b>	<b>4.2</b>	<b>45 arcmin</b>	<b>25°</b>
<b>Double Cluster - Caldwell 14, Chi Persei</b>	<b>Per</b>	<b>Open Cluster</b>	<b>3.7, 3.8</b>	<b>60 arcmin</b>	<b>9°</b>
<b>Beta Scorpii - Graffias, Acrab</b>	<b>Sco</b>	<b>Double Star</b>	<b>2.6, 10.3</b>	<b>13.5 arcsec</b>	<b>20°</b>
<b>M4</b>	<b>Sco</b>	<b>Globular Cluster</b>	<b>5.9</b>	<b>2.5 arcmin</b>	<b>12°</b>
<b>Zeta Ursae Majoris - Mizar</b>	<b>Uma</b>	<b>Double Star</b>	<b>2.3, 4.0</b>	<b>14 arcsec</b>	<b>76°</b>
<b>Alpha Ursae Minoris - Polaris</b>	<b>Umi</b>	<b>Double Star</b>	<b>2.1, 9</b>	<b>18 arcsec</b>	<b>41°</b>
<b>Coathanger - Brocchi's cluster, Al Sufi's cluster</b>	<b>Vul</b>	<b>Asterism</b>	<b>3.6</b>	<b>60 arcmin</b>	<b>16°</b>

End of Listing: 28 of 134 Stars matched criteria

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### **kappa Bootes - Asellus Tertius (Boo)**

<b>RA: 14h 14m</b>	<b>Mag(v): 4.5, 6.6</b>	<b>Type: Double Star</b>
<b>Dec: 51° 47'</b>	<b>Sep: 13.4 arcsec</b>	<b>SP Class: A8IV</b>
<b>Distance: 155 ly</b>		<b>PA: 236° El: 78° / Az: 25°</b>

**This is a double star viewable by a small telescope. It's traditional name, Asellus Tertius is Latin for 'third donkey colt'.**

### **Zeta Bootis (Boo)**

<b>RA: 14h 41m</b>	<b>Mag(v): 4.6, 4.5</b>	<b>Type: Double Star</b>
<b>Dec: 13° 44'</b>	<b>Sep: 0.8, 99 arcsec</b>	<b>SP Class: A3IVn</b>
<b>Distance: 180 ly</b>	<b>Sep (AU): 44, 5500</b>	<b>PA: 30, 254° El: 59° / Az: 151°</b>

**A binary star system composed of two giant stars orbiting each other every 124 years.**

### **Iota Cancri (Can)**

<b>RA: 8h 47m</b>	<b>Mag(v): 4.2, 6.6</b>	<b>Type: Double Star</b>
<b>Dec: 28° 46'</b>	<b>Sep: 30.6 arcsec</b>	<b>SP Class: G8II, A3V</b>
<b>Distance: 298 ly</b>	<b>Sep (AU): 2785</b>	<b>PA: 307° El: 30° / Az: 283°</b>

**Iota Cancri is a double star consisting of a brighter yellow giant and white, dimmer, dwarf star. The brighter star is about 200 times brighter than our Sun. The distance between these stars is over 2500 AU and takes at least 65,000 years to orbit each other. Even at this distance the brighter star would seem as bright as our Moon. It is sometimes referred to as the "spring Albireo" due to the similar color contrast of the two stars.**

### **M44 - Beehive Cluster, Praesepe (Can)**

<b>RA: 8h 40m</b>	<b>Mag(v): 3.7</b>	<b>Type: Open Cluster (NGC: 2632)</b>
<b>Dec: 19° 59'</b>	<b>Size: 95 arcmin</b>	<b>SP Class: A, F, G, K, M</b>
<b>Distance: 525 ly</b>		<b>Mag: Low El: 24° / Az: 276°</b>

**This is an open cluster containing over 1000 stars with a total mass of over 500 Solar masses. The nebulous area can be seen without a telescope in a dark sky. It was recognized by the ancient Greeks and Chinese and studied by Galileo in 1609 where he resolved 40 stars. This cluster is estimated to be 600 million years old. The center area of this cluster is about 23 light years across. Two planets orbiting separate stars were discovered in 2012 by ground based telescopes. The Beehive is high over head during winter months.**

### **Eta Cassiopeiae - Achrid (Cas)**

<b>RA: 0h 49m</b>	<b>Mag(v): 3.4, 7.5</b>	<b>Type: Double Star</b>
<b>Dec: 57° 49'</b>	<b>Sep: 13 arcsec</b>	<b>SP Class: G0V, K7V</b>
<b>Distance: 19.4 ly</b>	<b>Sep (AU): 76</b>	<b>PA: 317° Mag: 133x El: 10° / Az: 7°</b>

**Achrid is a binary star system in the constellation Cassiopeia that is about 20 light years from earth. The brighter star is similar to our Sun along with a dimmer magnitude 7 class K dwarf star. It was discovered in 1779 by Sir William Herschel who also discovered the planet Uranus in 1781. He was later appointed the private astronmer to the King of England in 1782.**

### **Delta Cephei (Cep)**

<b>RA: 22h 29m</b>	<b>Mag(v): 4</b>	<b>Type: Star</b>
<b>Dec: 58° 25'</b>		<b>SP Class: F8, B7</b>
<b>Distance: 887 ly</b>		<b>El: 18° / Az: 24°</b>

**A binary star that is also a variable star. It varies from magnitude 3.48 to 4.37 over a 5.36 day period. The name of this star is used to describe the class of variable stars, Cepheid Variables, that change brightness over a regular time period.**

### **24 Comae Berenices (Com)**

<b>RA: 12h 35m</b>	<b>Mag(v): 5.2, 6.7</b>	<b>Type: Double Star</b>

<b>Dec: 18° 23'</b>	<b>Sep: 20.3 arcsec</b>	<b>SP Class: K2III, A7</b>
<b>Distance: 614 ly</b>	<b>Sep (AU): 3819</b>	<b>PA: 271° Mag: 50x El: 63° / Az: 216°</b>

**The primary star is an orange giant with a blue secondary star. Given the large separation, this is likely an optical double star.**

### 35 Comae Berenices (Com)

<b>RA: 12h 53m</b>	<b>Mag(v): 4.91</b>	<b>Type: Double Star</b>
<b>Dec: 21° 15'</b>	<b>Sep: 29 arcsec</b>	<b>SP Class: G8III</b>
<b>Distance: 324 ly</b>		<b>PA: 144° El: 67° / Az: 210°</b>

**A double star with a giant yellow G8 class star.**

### Alpha Canum Venaticorum - Cor Caroli (CVn)

<b>RA: 12h 56m</b>	<b>Mag(v): 2.9, 5.5</b>	<b>Type: Double Star</b>
<b>Dec: 38° 19'</b>	<b>Sep: 19.6 arcsec</b>	<b>SP Class: A0, B8p to A7p</b>
<b>Distance: 114 ly</b>	<b>Sep (AU): 655</b>	<b>PA: 229° El: 81° / Az: 253°</b>

**Cor Caroli is a favorite of amateur astronomers. It is the brighter star of a binary system. The two stars are easy to see in a small telescope even though they are separated by about 650 AU. There is a slight color difference between the two with one reddish and the other blue. The brighter star is 60 times brighter than our sun. Cor Caroli also varies in spectral brightness over a period of 5.5 days. It is believed there is a strong magnetic field that produces starspots of enormous extent causing the change in brightness as the stars rotate. The star was named after King Charles of England in 1660. Cor Caroli means "Charles Heart."**

### Y Cvn - La Superba (Cvn)

<b>RA: 12h 45m</b>	<b>Mag(v): 5</b>	<b>Type: Star</b>
<b>Dec: 45° 26'</b>		<b>SP Class: C</b>
<b>Distance: 711 ly</b>		<b>El: 79° / Az: 296°</b>

**This is a variable star whose brightness varies from a magnitude of 4.8 to 6.3 over a period of 160 days. This star is a bright, red giant "carbon star" with a surface temperature of about 2800K. Near the end of its life, carbon compounds migrate to the outer layer of the star and absorb the shorter wavelength blue light thus giving it such a red color. The radius of this star is about 2 AU which would be from our Sun to beyond the orbit of Mars.**

### 17 Cygni (Cyg)

<b>RA: 19h 46m</b>	<b>Mag(v): 5</b>	<b>Type: Double Star</b>
<b>Dec: 33° 44'</b>	<b>Sep: 26 arcsec</b>	<b>SP Class: F7V, M0.4</b>
<b>Distance: 69ly</b>	<b>Sep (AU): 16k</b>	<b>PA: 73° El: 21° / Az: 63°</b>

## A binary star system.

### 31 Cygni - Omicron 1 (Cyg)

RA: 20h 14m	Mag(v): 3.8	Type: Double Star
Dec: 46° 44'		SP Class: K4 + B4
Distance: 880 ly		El: 24° / Az: 48°

31 Cygni is an eclipsing binary star with small changes in brightness over a ten year period. One star is an orange supergiant with a second blue-white star. The brightness changes are due to one star eclipsing the other.

### 32 Cygni - Omicron 2 (Cyg)

RA: 20h 15m	Mag(v): 3.98	Type: Double Star
Dec: 47° 43'		SP Class: K4 + B6
Distance: 1100 ly		El: 25° / Az: 47°

Similar to 31 Cygni, this binary star system has a super large orange giant with a smaller hot white star in a 3.1 year orbital period. The larger star is almost 2 AU in diameter and takes 9 years for one rotation.

### Beta Cygni - Albireo (Cyg)

RA: 19h 31m	Mag(v): 3.1, 5.1	Type: Double Star
Dec: 27° 58'	Sep: 35 arcsec	SP Class: K3II
Distance: 385 ly	Sep (AU): 4015	PA: 54° Mag: 50x El: 20° / Az: 70°

Albireo is a beautiful double star in the constellation Cygnus, the swan. It is easy to find and easy to see with a small telescope. You'll see a bright yellow star contrasting with a fainter blue companion. The blue and gold colors have dubbed it "The Cub Scout Star." It can be easily seen in small telescopes. Albireo is about 430 light years away.

### M39 (Cyg)

RA: 21h 32m	Mag(v): 4.6	Type: Open Cluster (NGC: 7092)
Dec: 48° 25'	Size: 32 arcmin	
Distance: 824 ly		Mag: Low El: 15° / Az: 38°

M39 is a beautiful open cluster with about 10 bright blue stars that stand out in a roughly triangular shape. Four of the brighter stars form the corners and side of the triangle. There are about 30 stars spread out over an area about the size of the full moon. M39 is actually about 8 light years in diameter and 900 light years from earth. It is a good view in binoculars since it is about ½ degree across.

### North American Nebula - Caldwell 20 (Cyg)

RA: 20h 59m	Mag(v): 4	Type: Nebula (NGC: 7000)
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<b>Dec: 44° 32'</b>	<b>Size: 100 arcmin</b>	
<b>Distance: 1600 ly</b>		<b>Mag: Binoculars El: 17° / Az: 45°</b>
<b>A nebula that is more than four times the size of the full moon. It will appear as a foggy patch of light. It is a large interstellar cloud of ionized hydrogen gas. A band of interstellar dust absorbs the light to give it the rough shape of North America.</b>		

### Nu Draconis (Dra)

<b>RA: 17h 32m</b>	<b>Mag(v): 4.88</b>	<b>Type: Double Star</b>
<b>Dec: 55° 11'</b>	<b>Sep: 63.4 arcsec</b>	<b>SP Class: A6, A4</b>
<b>Distance: 99 ly</b>	<b>Sep (AU): 1900</b>	<b>PA: 312° Mag: 10-50x El: 51° / Az: 49°</b>
<b>A double star, with nearly equal magnitudes, and a 44,000 year rotation period.</b>		

### Alpha Geminorum - Castor (Gem)

<b>RA: 7h 35m</b>	<b>Mag(v): 1.9, 2.9</b>	<b>Type: Double Star</b>
<b>Dec: 31° 53'</b>	<b>Sep: 4, 71 arcsec</b>	<b>SP Class: A0IV</b>
<b>Distance: 52 ly</b>	<b>Sep (AU): 60, 1145</b>	<b>PA: 61, 164° Mag: 50-100x El: 19° / Az: 296°</b>

**Discovered as a visual binary in 1678, there are three visible stars that orbit with period of 19 hours and 10 days. Each of the two stars are also an eclipsing binary system. A nearby binary system is also gravitationally linked making this a sextuple star system.**

### M13 - Hercules Cluster (Her)

<b>RA: 16h 42m</b>	<b>Mag(v): 5.8</b>	<b>Type: Globular Cluster (NGC: 6205)</b>
<b>Dec: 36° 28'</b>	<b>Size: 20 arcmin</b>	
<b>Distance: 25k ly</b>		<b>Mag: Low El: 55° / Az: 83°</b>

**M13 is one of the best examples of a globular cluster with more than 100,000 stars.**

### 19 Lyncis - Struve 1062 (Lyn)

<b>RA: 7h 23m</b>	<b>Mag(v): 5.6</b>	<b>Type: Double Star</b>
<b>Dec: 55° 17'</b>	<b>Sep: 14.8 arcsec</b>	<b>SP Class: B4V</b>
<b>Distance: 468 ly</b>		<b>PA: 315° Mag: 100x El: 31° / Az: 319°</b>

**A blue double star.**

### Epsilon Lyrae - The Double Double (Lyr)

<b>RA: 18h 44m</b>	<b>Mag(v): 4.6, 5, 6</b>	<b>Type: Double Star</b>
<b>Dec: 39° 37'</b>	<b>Sep: 200,150,64</b>	<b>SP Class: F1V, A8V</b>

arcsec

Distance: 162 ly Sep (AU): 10200, 128 PA: 173, 350, 82° Mag: Binoculars El: 34° / Az: 65°

This system contains two sets of binary stars.

### IC4665 (Oph)

RA: 17h 46m	Mag(v): 4.2	Type: Open Cluster
Dec: 5° 43'	Size: 45 arcmin	
Distance: 1400 ly		Mag: Binoculars El: 25° / Az: 106°

This open star cluster began to develop less than 40 million years ago. The relatively large size of 97' likely eluded the narrow field telescopes of Messier and Hershel.

### Double Cluster - Caldwell 14, Chi Persei (Per)

RA: 2h 20m	Mag(v): 3.7, 3.8	Type: Open Cluster (NGC: 869, 884)
Dec: 57° 8'	Size: 60 arcmin	SP Class: B0
Distance: 7500 ly		Mag: Binoculars El: 9° / Az: 355°

This open cluster has over 300 blue-white super-giant stars in each cluster.

### Beta Scorpii - Graffias, Acrab (Sco)

RA: 16h 5m	Mag(v): 2.6, 10.3	Type: Double Star
Dec: -19° -48'	Sep: 13.5 arcsec	SP Class: B0.5V
Distance: 530 ly	Sep (AU): 81, 2209	PA: 132, 21° El: 20° / Az: 144°

This is a multiple star system is composed of six stars.

### M4 (Sco)

RA: 16h 24m	Mag(v): 5.9	Type: Globular Cluster (NGC: 6121)
Dec: -26° -32'	Size: 2.5 arcmin	
Distance: 5200 ly		El: 12° / Az: 143°

A fuzzy ball of light about the size of the Moon. One of the easiest globular clusters to find, being located 1.3 degrees west of Antares. Both objects are visible with a wide field telescope.

### Zeta Ursae Majoris - Mizar (Uma)

RA: 13h 24m	Mag(v): 2.3, 4.0	Type: Double Star
Dec: 54° 56'	Sep: 14 arcsec	SP Class: A1V, A5V
Distance: 83 ly	Sep (AU): 345, 16	PA: 152, 71° Mag: 10-50x El: 76° / Az: 349°

Mizar and it's neighbor Alcor are a binary star system that is 80 light years away in the constellation Ursa Major, the Great Bear, otherwise known as the Big Dipper. These stars are found in the middle of the handle of the Big

**Dipper.** In the past, some have used the two stars as a test of your eyesight if you can see both stars. Mizar, the brighter star, is itself a double star, though you won't see this in a telescope. Spectroscopic analysis shows Mizar has two additional stars and Alcor has three. Spectroscopy gives us the color spectrum of each star which astronomers can use to determine if it is coming from a single star or more than one. You are really looking at a total of seven stars.

### Alpha Ursae Minoris - Polaris (Umi)

<b>RA: 2h 32m</b>	<b>Mag(v): 2.1, 9</b>	<b>Type: Double Star</b>
<b>Dec: 89° 16'</b>	<b>Sep: 18 arcsec</b>	<b>SP Class: F7Ib</b>
<b>Distance: 325 ly</b>	<b>Sep (AU): 2430</b>	<b>PA: 218° Mag: 50x El: 41° / Az: 360°</b>

**The North Star as used in celestial navigation. It has two companion stars that orbit at 18 and 2400 AU. Polaris is a 4.5 solar mass F7 yellow supergiant.**

### Coathanger - Brocchi's cluster, Al Sufi's cluster (Vul)

<b>RA: 19h 25m</b>	<b>Mag(v): 3.6</b>	<b>Type: Asterism</b>
<b>Dec: 20° 12'</b>	<b>Size: 60 arcmin</b>	<b>SP Class: A, K</b>
<b>Distance: ly</b>		<b>Mag: Binoculars El: 16° / Az: 77°</b>

**Ten visible stars make up a coathanger shape spanning 1 degree across.**