

Constellation Guide

Boötes (Boo)

Evening Visibility: **April – June**

Opposition: May

Latitude Visibility: **+90° to -50°**

Online Information: | In-The-Sky.org | Constellation Guide.com |

Constellation Targets

[Alkalurops](#), [Delta Boötis](#), [NGC-5875](#), HD 134066, ι Boötis, [Xi Boötis](#), β Boötis, Izar, [Zeta Boötis](#), [Pi Boötis](#), [NGC-5676](#), HR 5386, [Iota Boötis](#), Napoleon's Hat, [NGC-5466](#), [NGC-5248](#)

Mythology/Back Story

Boötes name come from the Greek word meaning ox driver, plowman or herdsman and was first cataloged by the Greek astronomer Ptolemy in the 2nd century. In one story of this constellation, Boötes is Arcas, son of Zeuse and Callisto (see Ursa Major for more details on this story). In another story, Boötes represents Icarus, a grape grower who learned how to make wine from the god Dionysus, unfortunately he had a grizzly ending after inviting some friends over to drink his wine and the friends woke up with a hang-over the next day, suspecting that he tried to kill them, they finished him of in his sleep.

Boötes Void

The [Boötes Void](#), also known as the **Great Nothing** is a roughly spherical region of space of nearly 200 million light years in radius that contains a very low number of galaxies, 60 as opposed to an average of about 2,000 galaxies that may be expected to reside in this volume of space. This is one of the largest know voids in the visible universe and takes up approximately 20° in diameter of the night sky in the area of Boötes and is why there are very few galaxies found in this constellation.

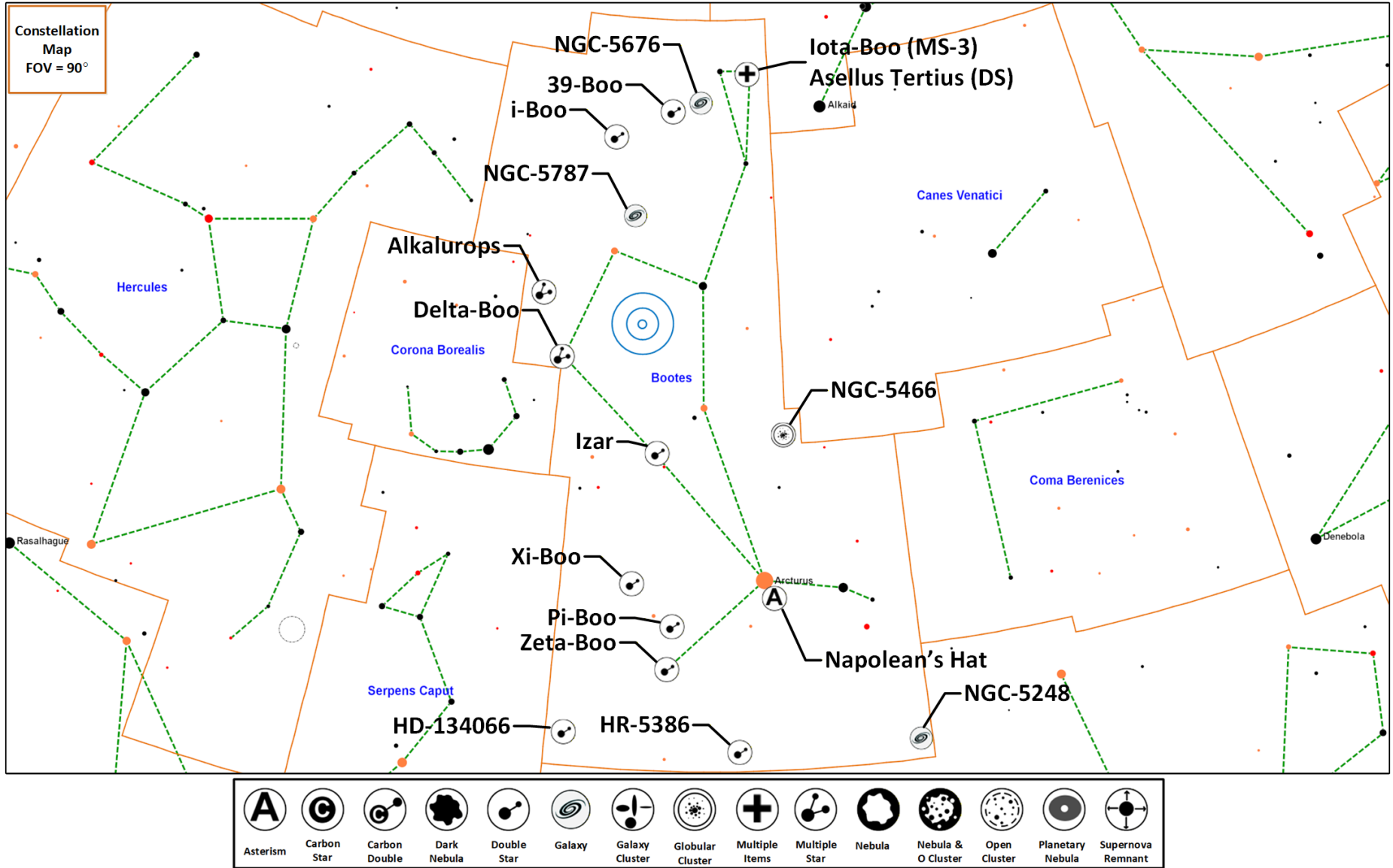
Constellation Highlights

No messier objects reside in this constellation, but there is a fairly bright globular cluster, multiple star systems and a few galaxies.

- **Alkalurops** (MS-3) – Celebrated triple star system
- **Xi Boötis** (DS) – Close, colorful double star

Constellation Guide

- **Izar (DS)** – Pale orange and sea-green double star
- **Napoleon's Hat (AS)** – Binocular and telescope asterism
- **Iota Bootis (MS-3)** – Binocular double, telescope triple
- **NGC-5466 (GC)** – A loose, low density globular cluster



Constellation Guide

Constellation Objects Summary

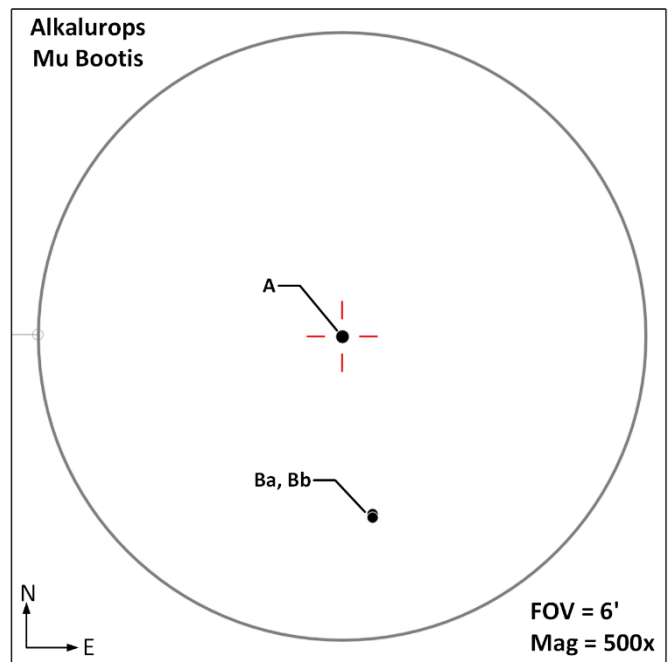
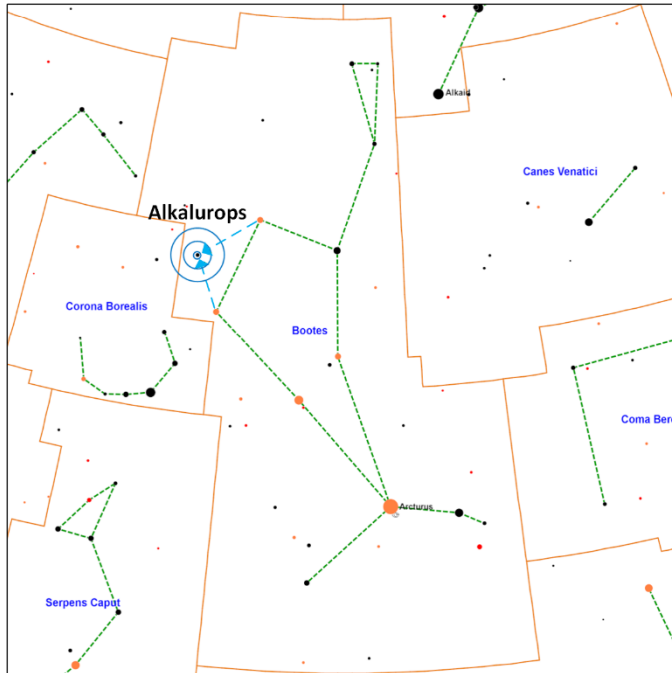
Object (Type)	Links	Gear	Aliases	Stats
Alkalurops (MS-3)	1 , 2	B, T	SAO-064686, HIP 75411, 51 Boo, HR 5733, HD 137391, STFA 28, ADS 9626, SAO-064687, HIP 75415, STF 1938, Mu1 Boötis, Mu2 Boötis, μ Bootis	AB M=4.3, 7.1 Sep=109" PA=170° Color= YellowWhite, Yellow Spec= F2IVa+G0V BaBb M= 7.1, 7.6 Sep=2.2" PA=360° Color= Yellow Spec=G0V
Delta Boötis (MS-3)	1 , 2	B, T	SAO-064589, HIP 74666, 49 Boo, HR 5681, HD 135722, STFA 27, ADS 9569, δ Boötis, Qigong	AB M=3.6, 7.9 Sep=105" PA=78° Color=Yellow, Yellow Spec=G8III, G0V AC M=3.6, 14.3 Sep=93" PA=3.9° Color=Yellow Spec=G8IIICN-1
NGC-5875 (G)	1	T	UGC 9745, PGC 54095, MCG 9-25-27, CGCG 274-27	M=12.4 Size=2.3'x1.2' SB=22.1 MC=SAb
HD 134066 (DS)	1	T	SAO-120850, HIP 74016, ADS 9507, STF 1910	AB M=7.3, 7.5 Sep=3.9" PA=212° Color = yellow, yellow Spec=G2V,G3V
i Boötis (DS)	1	T	SAO-05357, HIP 73695, 44 Boo, HR 5618, HD 133640, STF 1909, ADS 9494	AB M=5.2, 6.1 Sep=0.84" PA=220° Color= yellow-white, yellow-orange Spec= F7V, K4V
Xi Boötis (DS)	1 , 2	T	SAO-101250, HIP 72659, 37 Boo, HR 5544, HD 131156, STF 1888, ADS 9413, ξ Boötis	AB M=4.8, 6.9 Sep=4.7" PA=287° Period= 152y Color= yellow, yellow-orange Spec= G8V, K5V
39 Boötis (DS)	1	T	SAO-045231, HIP 72524, HR 5538, HD 131041, STF 1890, ADS 9406	AB M=6.3, 6.7 Sep=2.9" PA=46° Period=2,114y Color=yellow-white, yellow-white Spec=F6V, F5V
Izar (DS)	1 , 2	T	SAO-083500, HIP 72105, 36 Boo, HR 5506, HD 129989, STF 1877, ADS 9372, Epsilon Boötis, ϵ Boötis, Pulcherrima	AB M=2.6, 4.8 Sep=3.0" PA=347° Period = 1,000+ y Color=pale-orange, sea-green Spec= K0, A2
Zeta Boötis (DS)	1 , 2	T	SAO-101145, HIP 71795, 30 Boo, HR 5478, HD 129247, STF 1865, ADS 9343, ζ Boötis	AB M=4.5, 4.5 Sep=0.25" PA=333° Period=125y Color= white, white Spec= A0V, A0V
π Bootis (DS)	1 , 2	T	SAO-101139, HIP 71762, 29 Boo, HR 5476, HD 129175, STF 1864, ADS 9338, π 1 Boötis, π 2 Boötis	AB M=4.9, 5.8 Sep=5.4" PA=114° Color= BlueWhite Spec= B9 V, A6 V
NGC-5676 (G)	1	T	UGC 9366, PGC 51978, MCG 8-26-43, CGCG 248-3, CGCG 247-42, GC 3935	M=12.3 Size=4.0'x1.1' SB=22.5 MC=Sbc
HR 5386 (DS)	1	T	SAO-120426, HIP 70327, HD 126129, STF 1835, ADS 9247, WDS14234+0827, SACDBL195	A, BC M=5.0, 6.8 Sep=6.3" PA=197° Color= white, yellow-white Spec=A0V, F2V BC M=7.4, 7.7 Sep=0.7" PA=53°

Constellation Guide

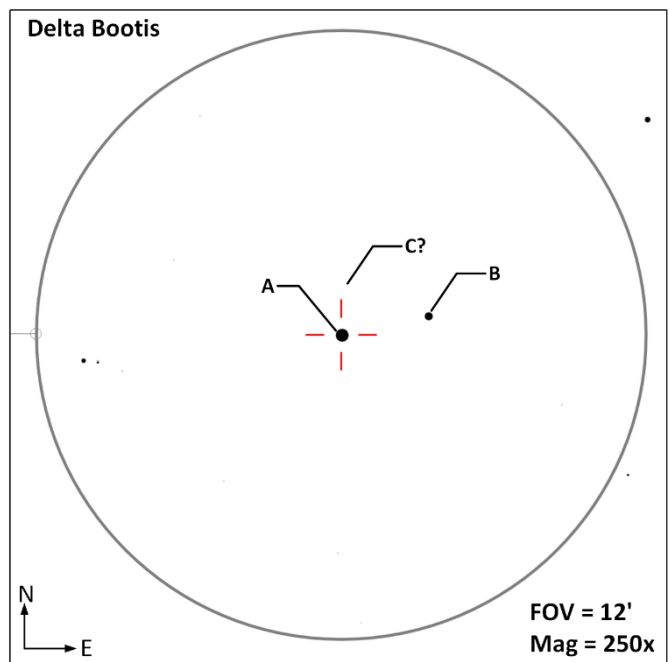
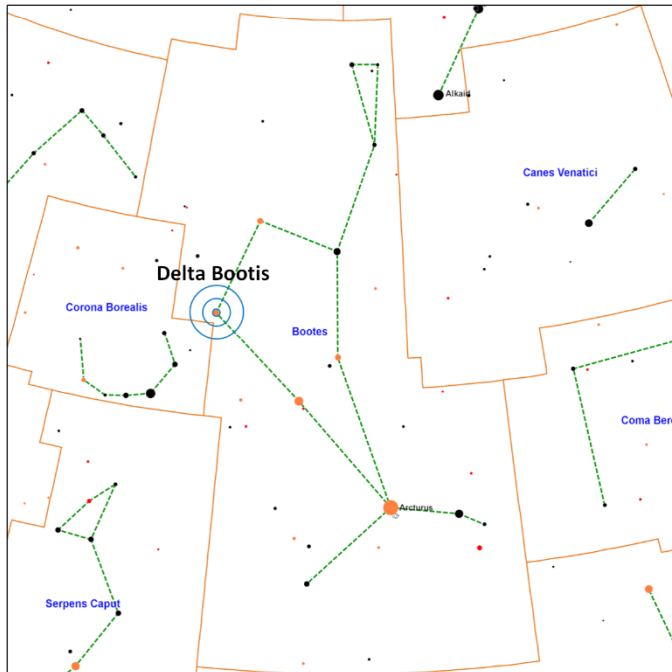
Object (Type)	Links	Gear	Aliases	Stats
Iota Boötis (MS-3)	1 , 2	B, T	SAO-029071, HIP 69713, HR 5350, HD 125161, 21 Boo, ι Boo, STFA 26, ADS 9198, Asellus Secundus	AB M=4.8, 7.4 Sep=38.8" PA=33° color=WhiteYellow,White Spec= A7IV+K0 AC M=4.8, 13.5 Sep=94" PA=186° color=White Spec= A7IV
Napoleon's Hat (AS)		B, T	Picot 1, Napoleon's Hat, Ramakers 6, SACAst57, APOC694	Stars=7 Size=20'x07' Ref Star=SAO-100931
Asellus Tertius (DS)	1 , 2	T	SAO-029045, HIP 59481, 17 Boo, HR 5328, HD 124674, STF 1821, TOK 295, ADS 9173, Kappa Bootis, κ Boo	AB M=4.5, 6.6 Sep=13.7" PA=235° Perios=142 yr Color= White, Yellow-White Spec=A7V, F1V
NGC-5466 (GC)	1	T	Mel 124, C1403+287	M=9.2 Size=9.0' SB=22.6 MC=XII
NGC-5248 (G)	1		Caldwell 45, C-45, UGC 8616, PGC 48130, CGCG 073-054, MCG +02-35-015	M=11.0 Size=6.2'x4.5' SB=23.2 MC=SBbc

Constellation Guide

Alkalurops (MS-3 AB | M=4.3, 7.1 | Sep=109" | PA=170° | Color= YellowWhite, Yellow | Spec= F2IVa+G0V || BaBb | M=7.1, 7.6 | Sep=2.2" | PA=360° | Color= Yellow | Spec=G0V) – A celebrated triple star system. The AB components orbit each other every 125,000 years while the Ba, Bb pair complete an orbit ever 260 years. This system is located 118 light years away.

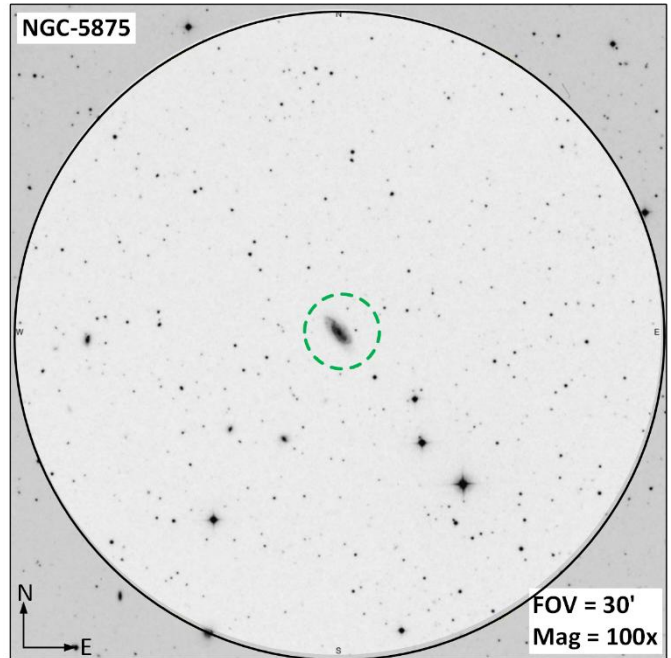
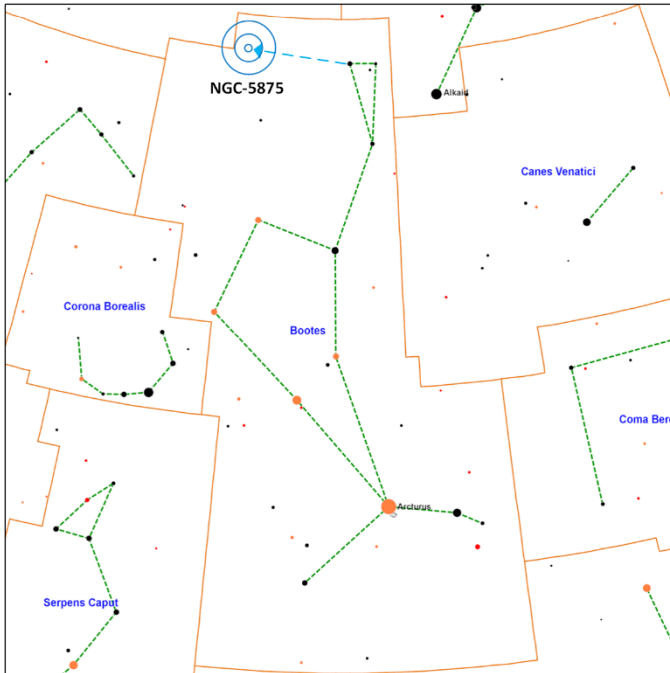


Delta Boötis (MS-3 AB | M=3.6, 7.9 | Sep=105" | PA=78° | Color=Yellow, Yellow | Spec=G8III, G0V || AC | M=3.6, 14.3 | Sep=93" | PA=3.9° | Color=Yellow | Spec=G8IIICN-1) – Located 122 light years away. It is unknown if the C component is physically associated with the A and B components.

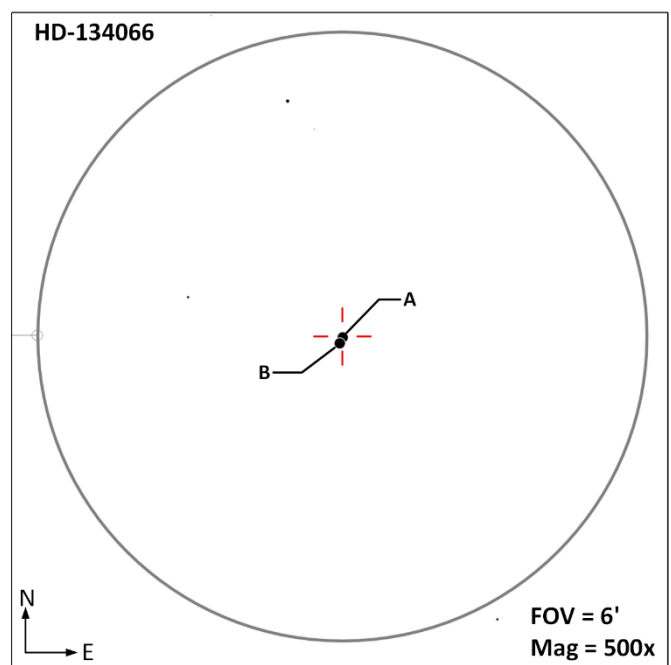
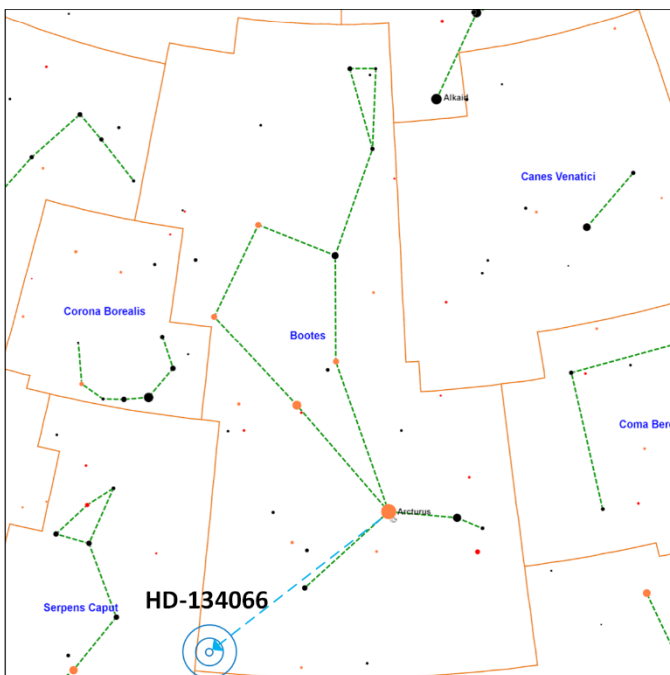


Constellation Guide

NGC-5875 (G | M=12.4 | Size=2.3'x1.2' | SB=22.1 | MC=SAB |) – Located 173 million light years away with a physical diameter for 104,306 light years, this galaxy is receding at a speed of 1.2% the speed of light from us.

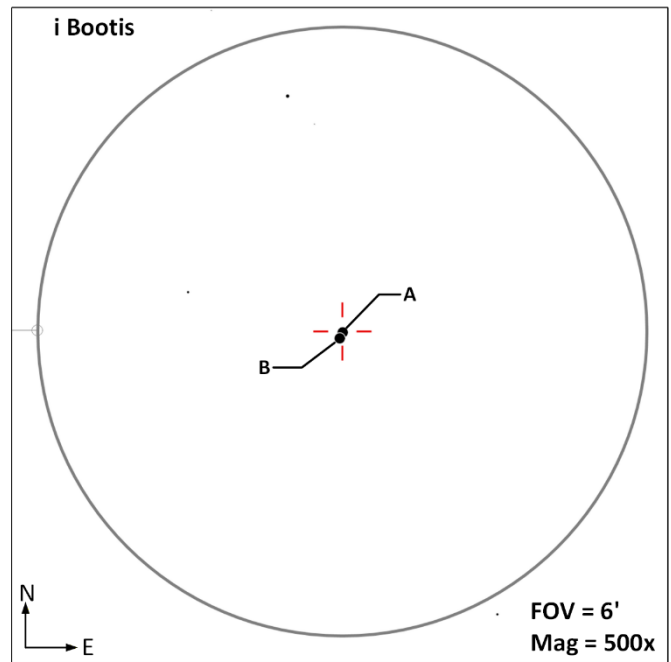
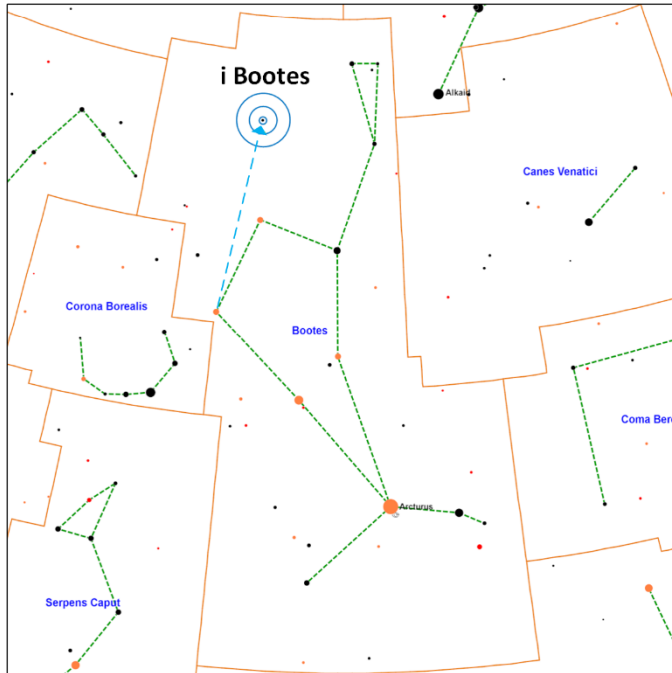


HD 134066 (DS AB | M=7.3, 7.5 | Sep=3.9'' | PA=212° | Color = Yellow, Yellow | Spec=G2V, G3V |) – A pair of evenly matched yellow stars located 103 light years away. This double orbit each other at an average distance of 123 AU.

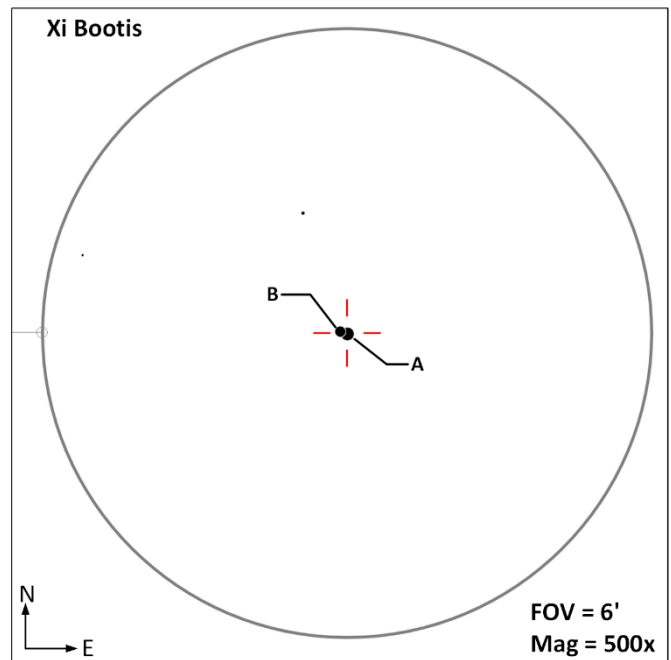
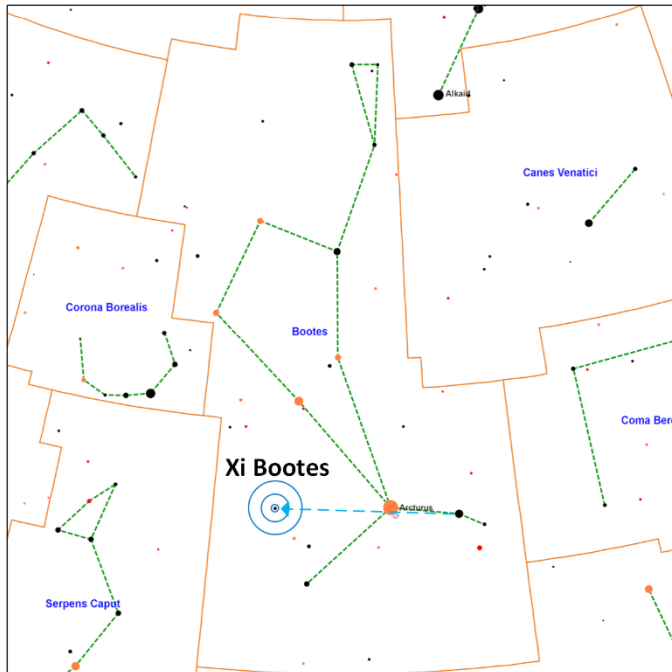


Constellation Guide

i Boötis (DS AB | M=5.2, 6.1 | Sep=0.84" | PA=220° | Color= yellow-white, yellow-orange | Spec= F7V, K4V) – Located 40.8 light years away and with an estimated orbital period of 215 years. This double will likely require a minimal aperture of 200mm to resolve.

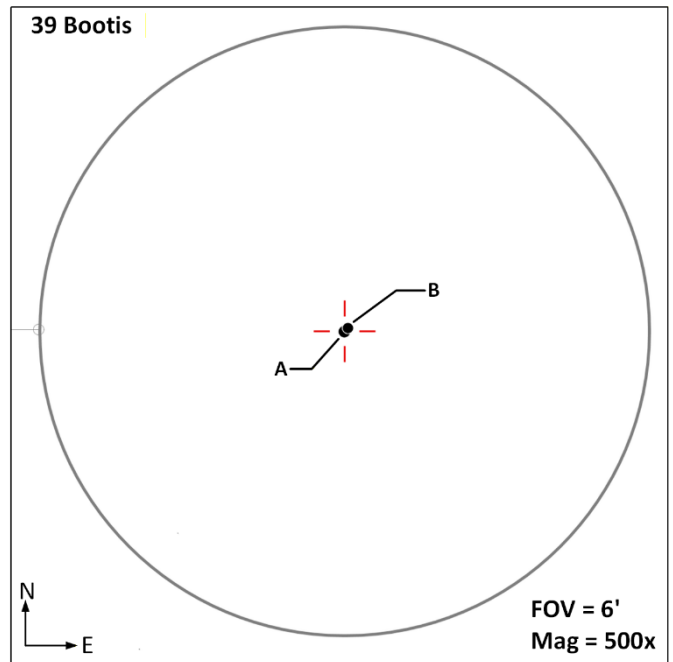
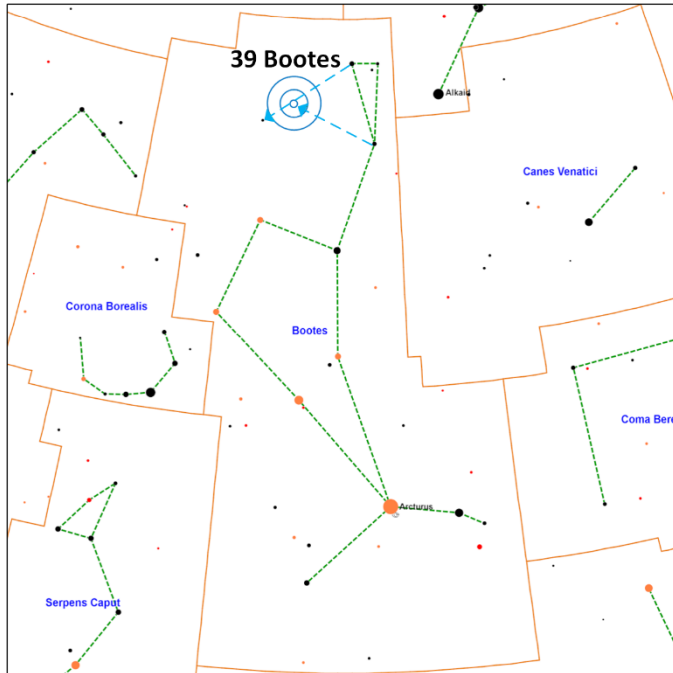


Xi Boötis (DS AB | M=4.8, 6.9 | Sep=4.7" | PA=287° | Period= 152y | Color= yellow,yellow-orange | Spec= G8V+K5V) – Described as a bright yellow star with a reddish-violet companion, this colorful double star system is one of the nearest star systems to earth located 22 light years away. The double orbit each other every 152 years.

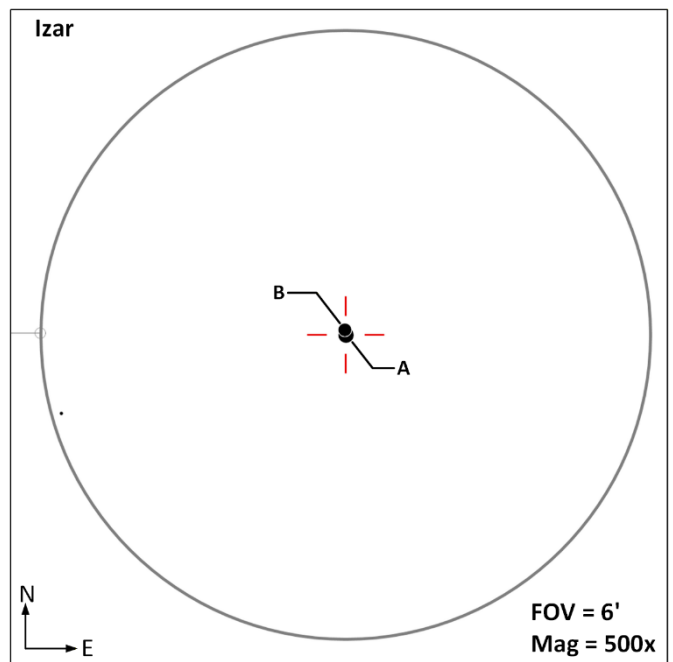
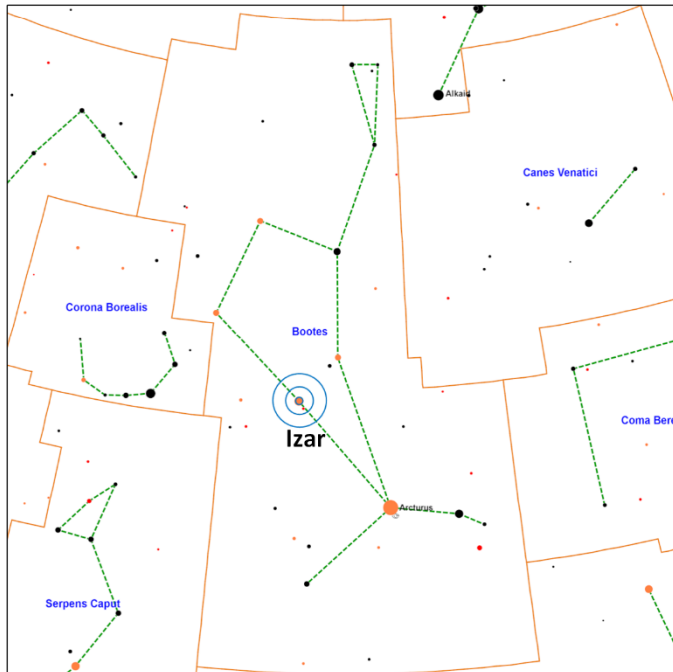


Constellation Guide

39 Boötis (DS AB | M=6.3, 6.7 | Sep=2.9" | PA=46° | Period=2,114y | Color=yellow-white, yellow-white | Spec=F6V, F5V |) – This double star of evenly matched stars both in color and brightness is located 224 light years from earth and orbit each other every 2,114 years.

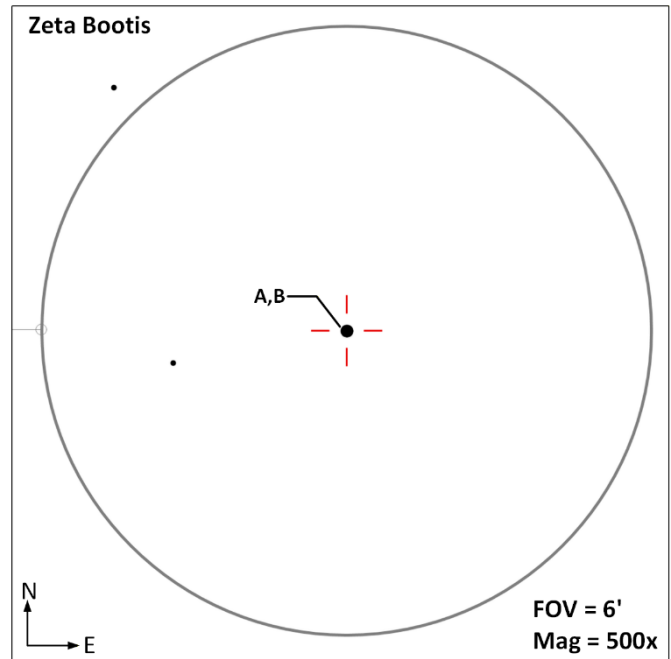
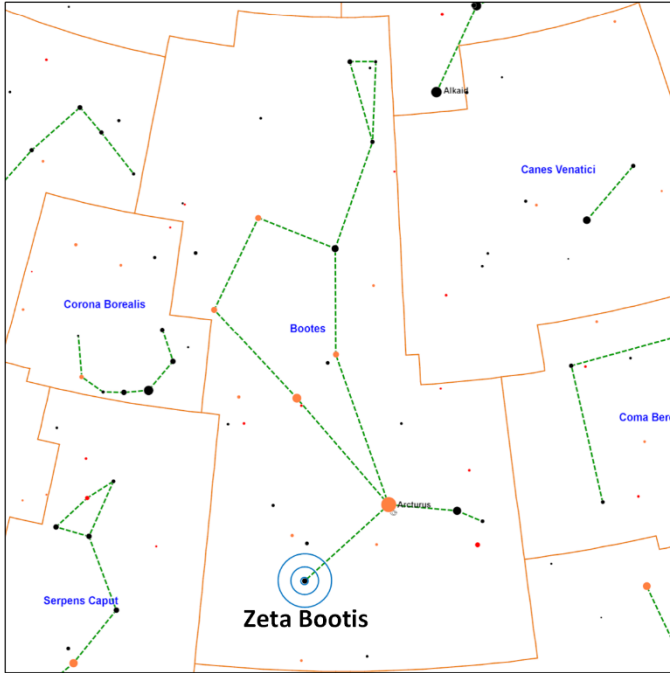


Izar (DS AB | M=2.6, 4.8 | Sep=3.0" | PA=347° | Period = 1,000+ y | Color=pale-orange, sea-green | Spec= K0, A2 |) – Also called Pulcherrima, meaning “the most beautiful”, given this name by Struve after viewing this golden yellow and greenish stars together. This system is located 203 light years away and have a orbital period in excess of 1,000 years. A telescope with an aperture of 76 mm or greater is required to resolve this pair.

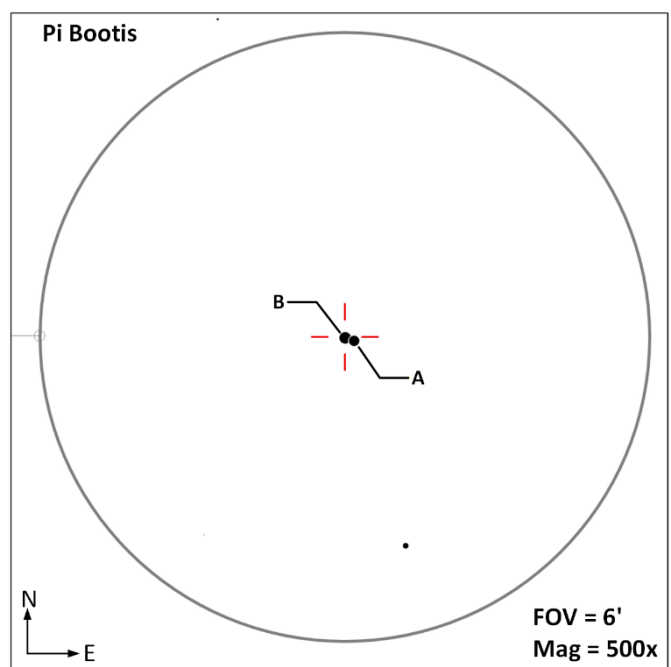
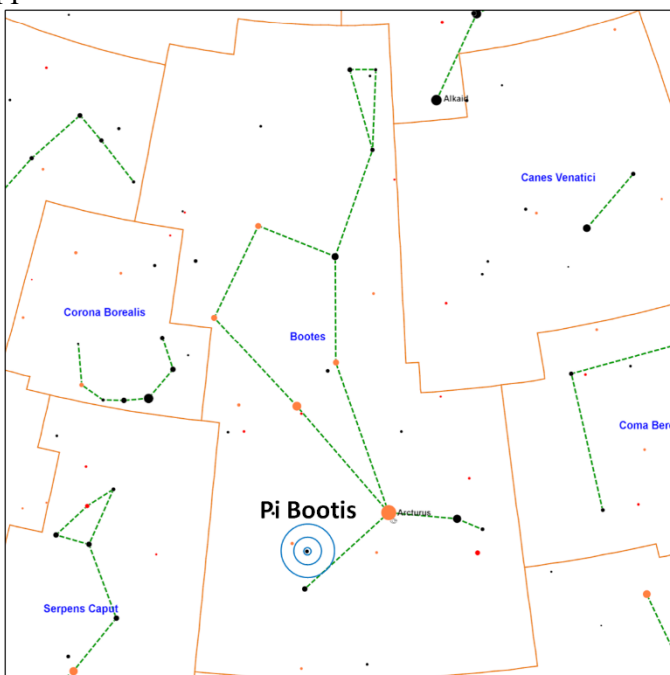


Constellation Guide

Zeta Boötis (DS AB | M=4.5, 4.5 | Sep=0.25'' | PA=333° | Period=125y | Color= white, white | Spec= A0V, A0V) – An interesting and challenging double star. The system is 176 light years away with an orbital period of 125 years. This pair have an extremely elliptical orbit bring them as close as 1.4AU to 64 AU during this period. Their closest approach was in 2021 and their furthest separation will be in 2082. Any planets initially associated with this system would have been tossed out long ago to do the extreme orbit of these two suns.

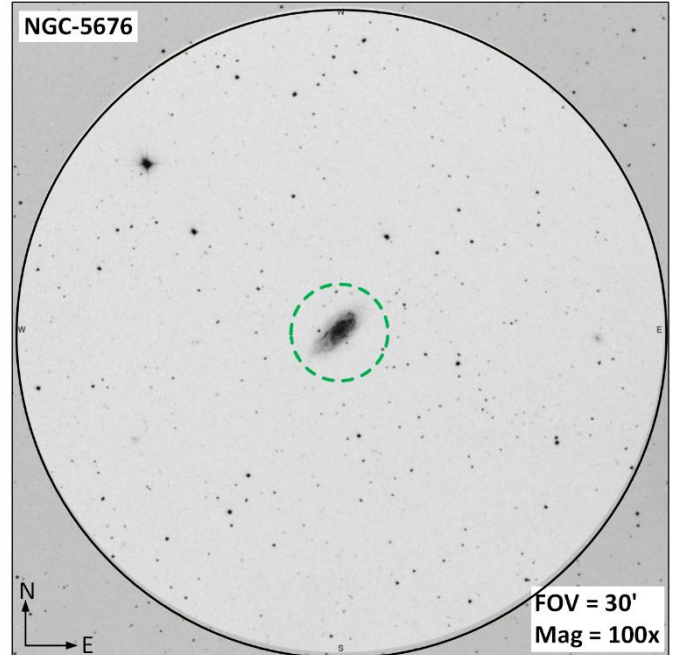
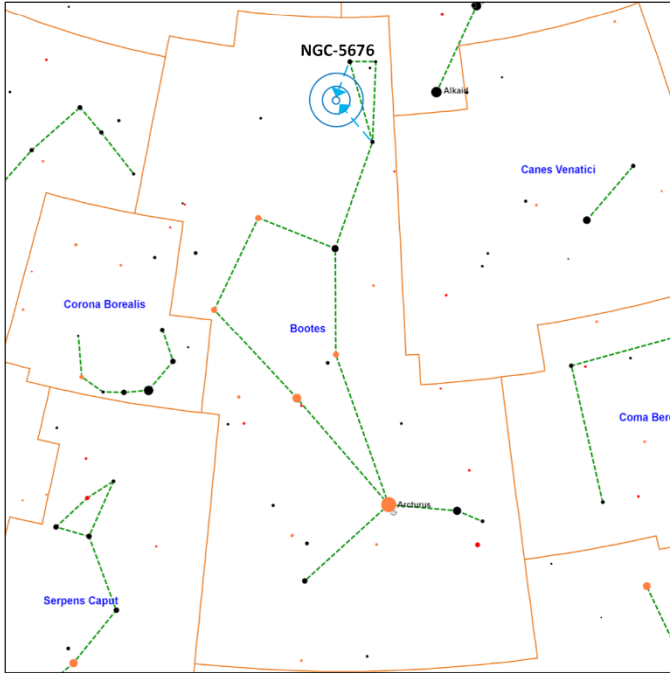


π Bootis (DS AB | M=4.9, 5.8 | Sep=5.4'' | PA=114° | Color= BlueWhite | Spec= B9 V, A6 V) – Located approximately 320 light years away, this system has a similar appearance to Kappa Bootis, but the components appear closer.

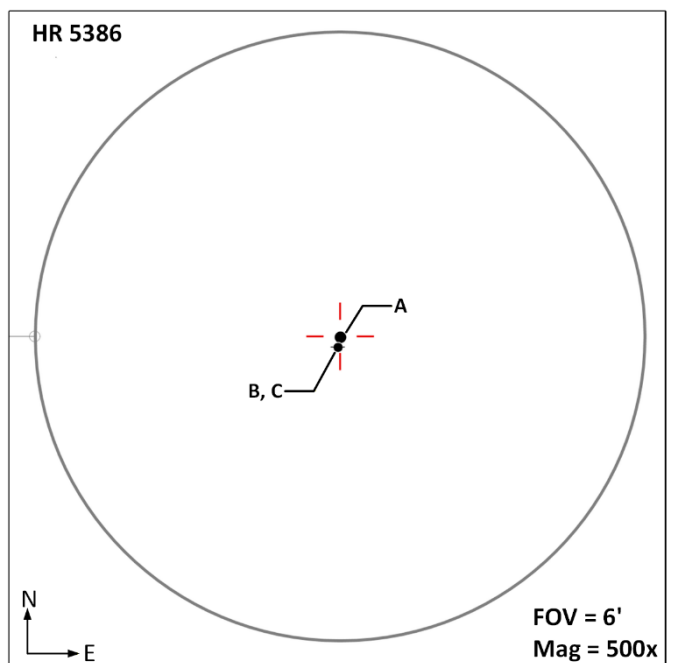
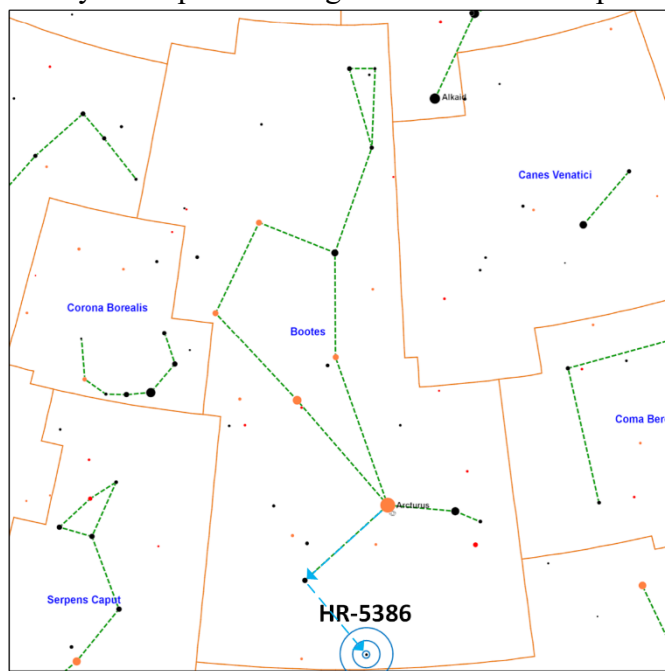


Constellation Guide

NGC-5676 (G | M=12.3 | Size=4.0'x1.1' | SB=22.5 | MC=Sbc |) – Located 112 light years away this [flocculent galaxy](#) is given its classification due to its asymmetric appearance in long exposure photographs showing distinct spiral arms on the north side of the galaxy but a more chaotic appearance on the south side. A telescope of 6" or more aperture in dark skies will be required to locate this galaxy. This galaxy is in the foreground of the [Boötes Void](#).

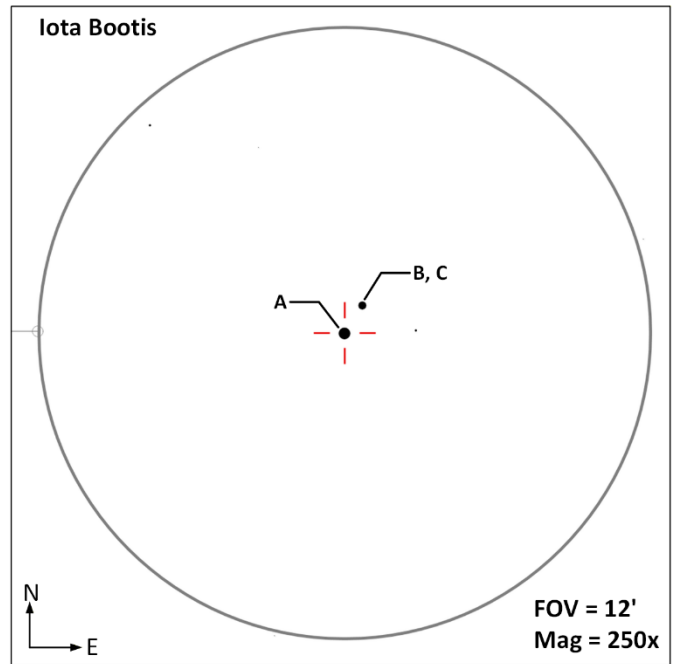
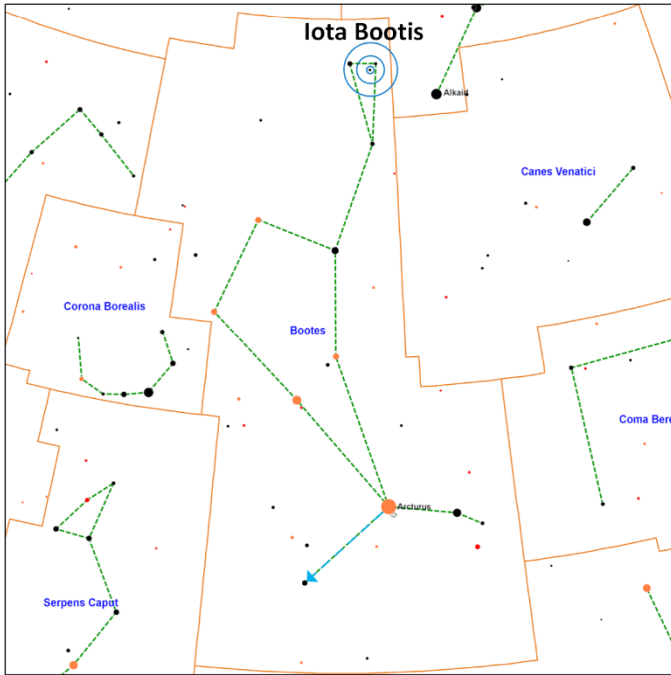


HR 5386 (DS A, BC | M=5.0, 6.8 | Sep=6.3" | PA=197° | Color= white, yellow-white | Spec=A0V, F2V |) – Located 215 light years away this is a triple star system with BC components having a separation of 0.3" so probably not separable for ground-based telescopes.

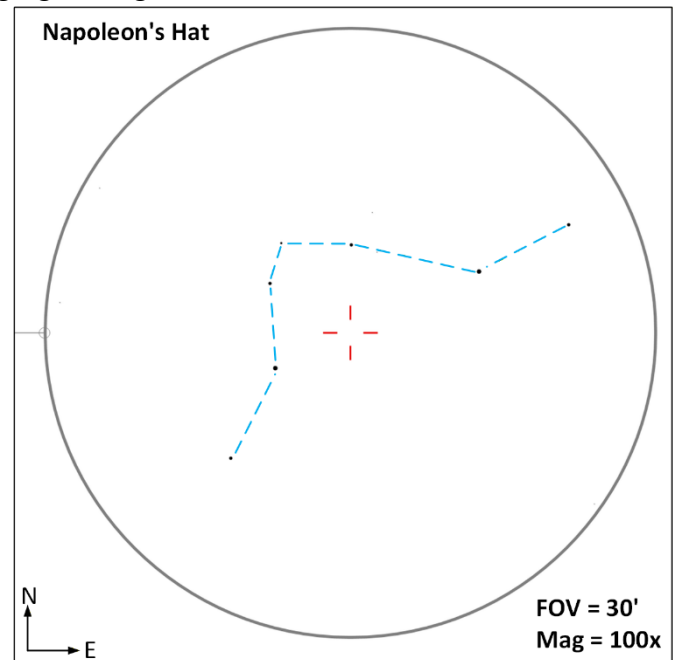
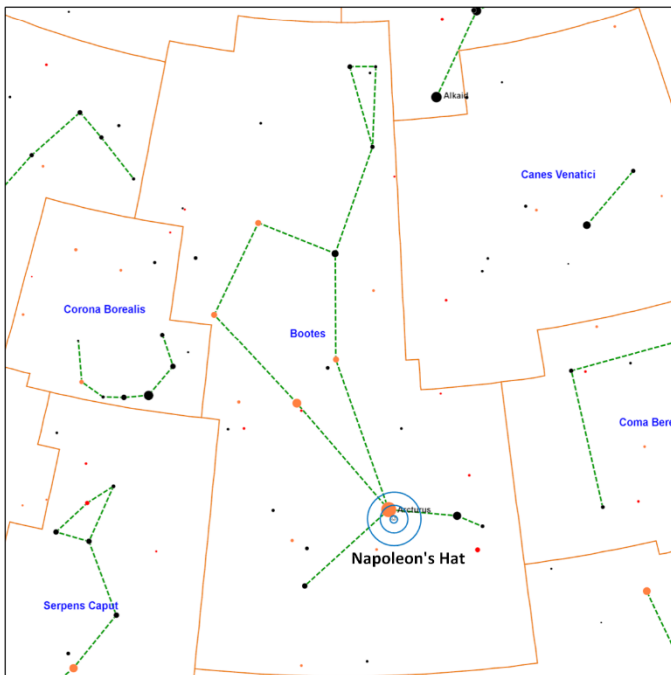


Constellation Guide

Iota Bootis (MS-3 AB | M=4.8, 7.4 | Sep=38.8" | PA=33° | color= WhiteYellow,White | Spec= A7IV+K0 || AC | M=4.8, 13.5 | Sep=94" | PA=186° | color=White | Spec= A7IV |) – Asellus Secundus, Latin for “second donkey colt” is a good double for both binoculars and a small telescope. Located 97 light years away.

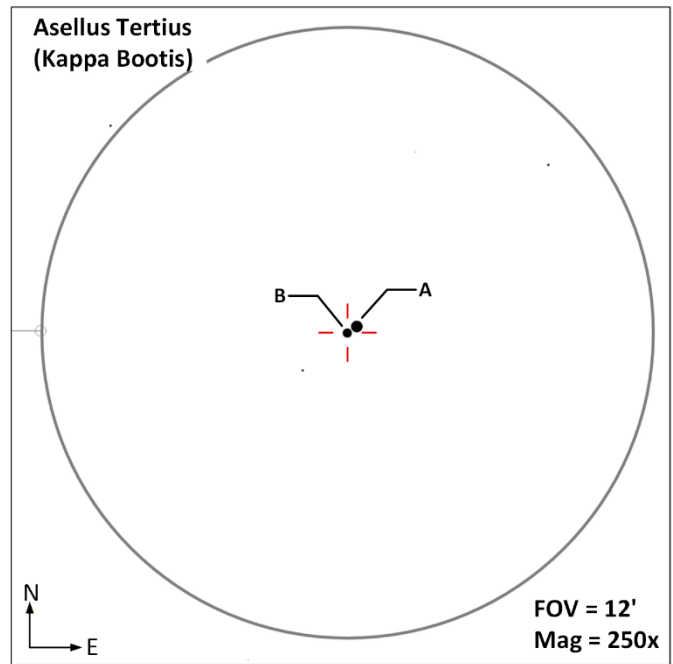
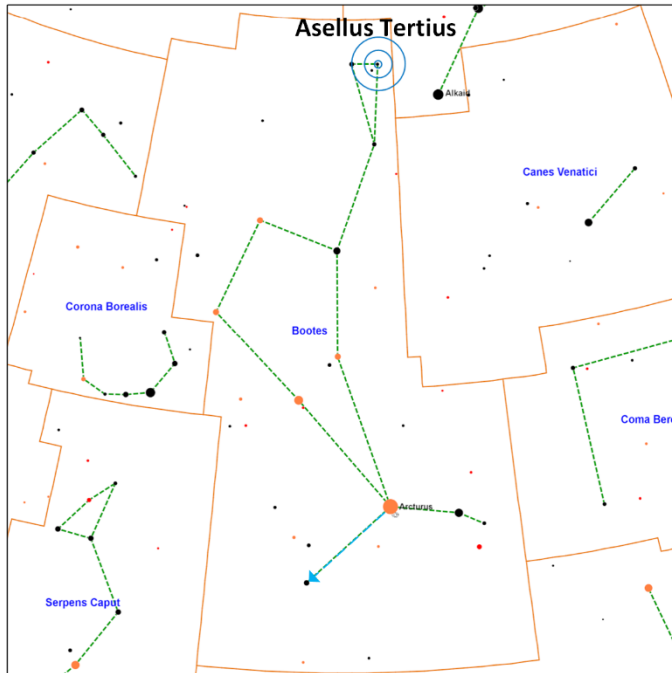


Napoleon's Hat (AS | Stars=7 | Size=20'x07' | Ref Star=SAO-100931 |) – Located directly under Arcturus (RA=14h 14m, DEC=18d 33m, this set of seven stars ranging in magnitude from 7 to 11 form this asterism.

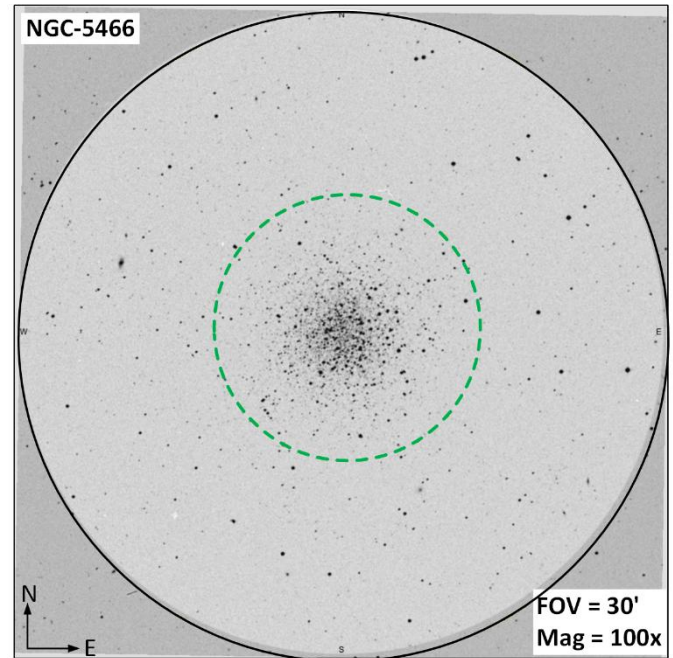
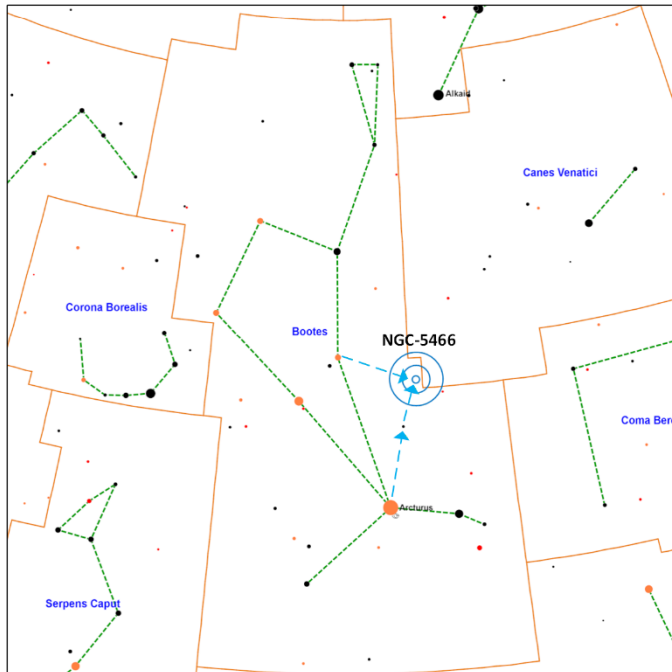


Constellation Guide

Asellus Tertius (DS AB | M=4.5, 6.6 | Sep=13.7" | PA=235° | Period=142 yr | Color= White, Yellow-White | Spec=A7V, F1V) – Located 162 light years from earth with a period of 142 years, this is a nice target for small telescopes. One description of this pair is a bright white primary with a bluish secondary.

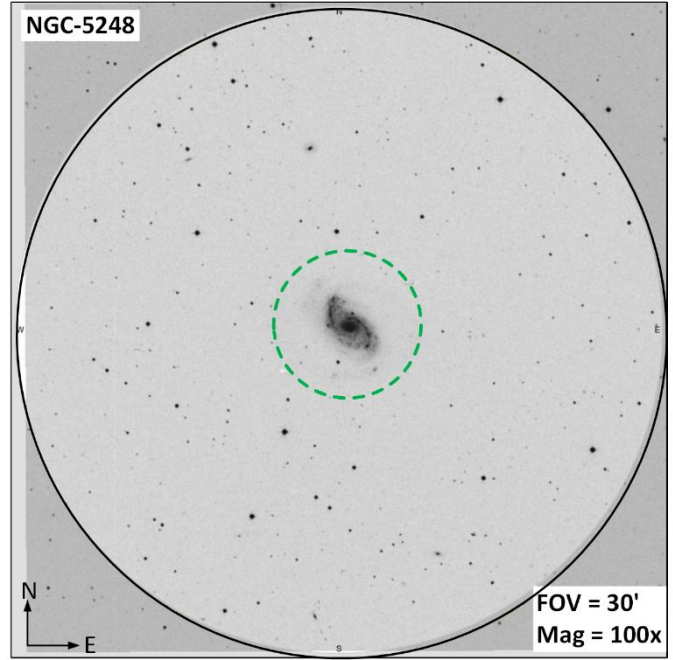
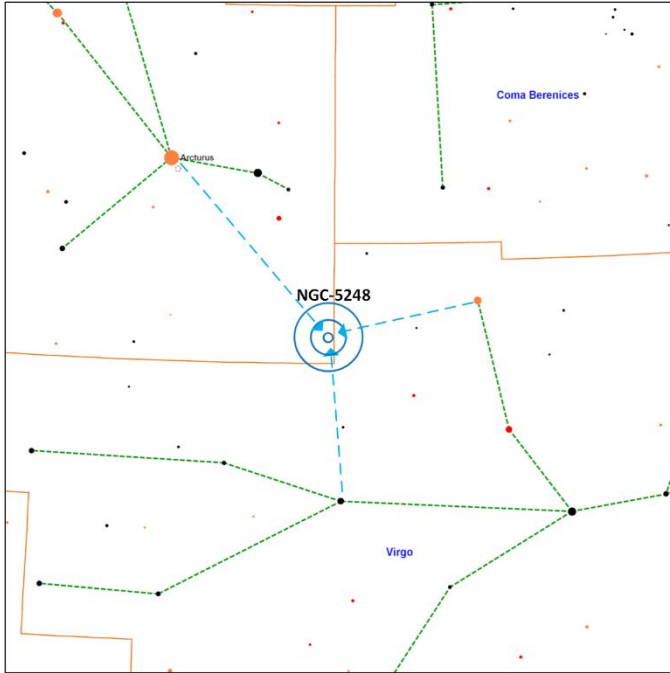


NGC-5466 (GC | M=9.2 | Size=9.0' | SB=22.6 | MC=XII) – Located 53,000 light years away, this is a loose cluster with a low central density compared to most other globulars. This is expected to be part of a stellar stream, a 1.4° wide star lane extending from Boötes to Ursa Major.



Constellation Guide

NGC-5248 (G | M=11.0 | Size=6.2'x4.5' | SB=23.2 | MC=SBbc |) – A compact barred spiral galaxy located 69 million light years away. Although in the Boötes constellation this galaxy is a member of the Vergo Cluster.



Constellation Guide

Blank

Constellation Guide
Observation Log: Boötes (Boo)

Equipment Config A: _____ **Config B:** _____

Notes: _____

Date	Time	Config	Target	Notes

Date	Time	Config	Target	Notes

Constellation Guide

Observation Log: Boötes (Boo)

Equipment Config A: _____ **Config B:** _____

Notes: _____

Date	Time	Config	Target	Notes

Date	Time	Config	Target	Notes

Constellation Guide

References, Resources and Tools used to create this document

The resources listed below were utilized to generate this document.

References

- Books
 - [Objects in the Heavens](#): Peter Birren
 - [Touring the Universe through Binoculars](#): Philip Harrington
 - [The Deep Sky](#): Philip Harrington
 - [Double and Multiple Stars and How to Observe Them](#): James Mullaney
 - Celestial Portraits: [Tom Polakis](#)
 - Star Clusters: Bret Archinal, Steve Hynes
 - [Sky Spot](#) Books
 - Bright Telescopic Objects: Brent Watson
 - Select Double Stars: Brent Watson
 - Overlooked Objects: Brent Watson
- Asterisms
 - Astronomical League: [Asterisms observing program](#) List
 - Asterisms: Demeiza Ramakers
 - [Pattern Asterisms](#): John Chiravalle
 - Milwaukee Astronomical Society: [Binocular Asterisms](#)
 - Deep-Sky.co.uk: [Observing Asterisms](#) (David Ratlege)
- [Saguaro Astronomy Club](#)
 - Asterisms List
 - [110 Best of the NGC](#)
 - Red Stars List
- Online
 - [Wikipedia](#)
 - The Garden Astronomer: [Double, Multiple, and Special Star Observations List](#)
 - Sky & Telescope: [Colored Double Stars, Real and Imagined](#)
 - [In-The-Sky.org](#)
 - [Constellation-guide.com](#)

Applications

- [SkyTools](#) 4.1 Visual Professional
- [AstroPlanner](#) Version 2.4
- [Cartes du Ciel](#) Version 4.3
- [Sky Safari](#) Pro 7
- Microsoft Office Home and business 2021 - Word
- Microsoft Visio Professional 2021
- [IrfanView](#) Version 4.72