

Constellation Guide

Constellation: Cassiopeia (Cas)

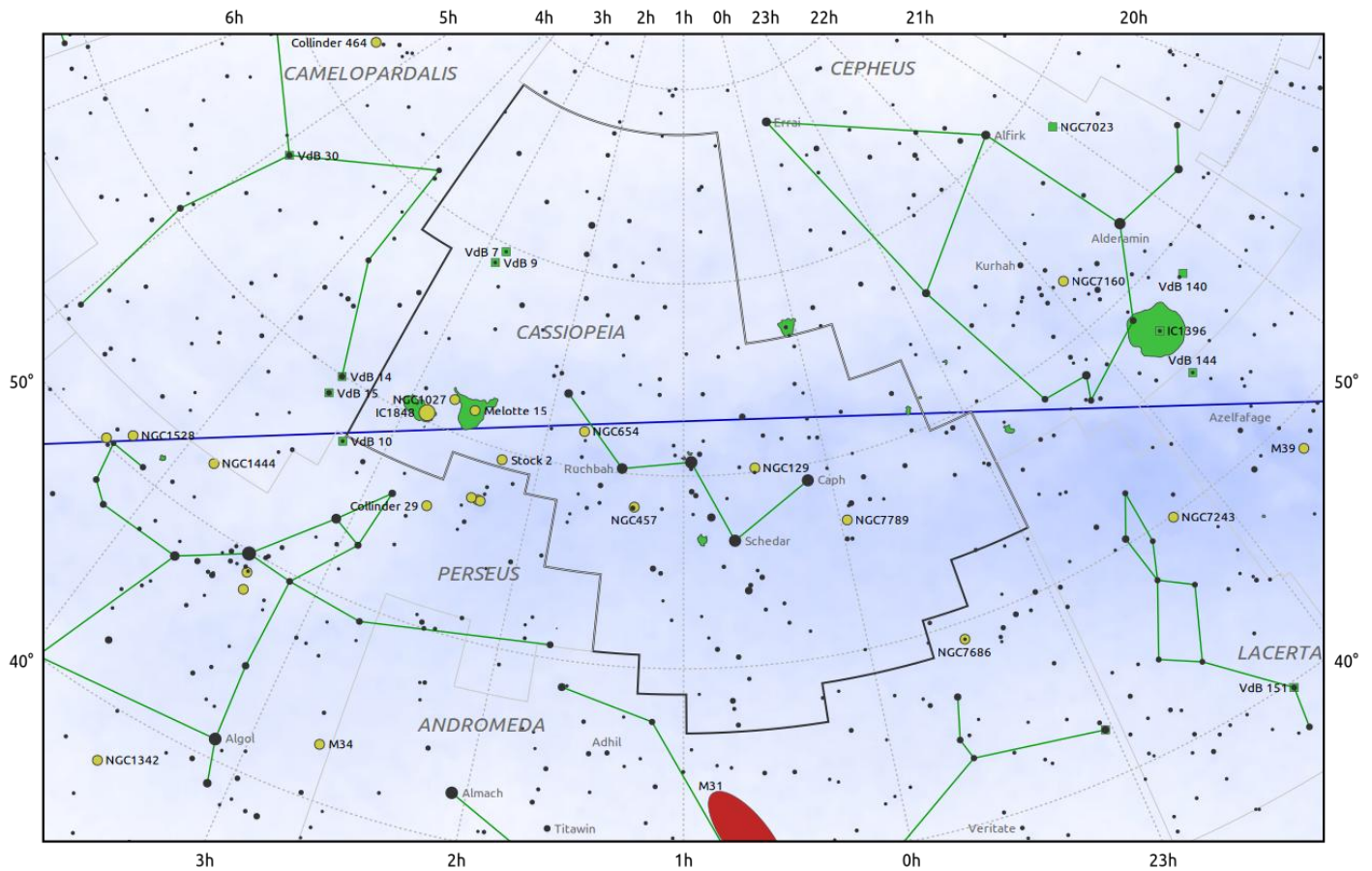
Evening Visibility: **September – November**

Opposition: October

Latitude Visibility: **+90° to -20°**

Online Information: | [In-The-Sky.org](https://www.in-the-sky.org) | [Constellation-guide.com](https://www.constellation-guide.com) |

[In-The-Sky.org](https://www.in-the-sky.org) Constellation Map



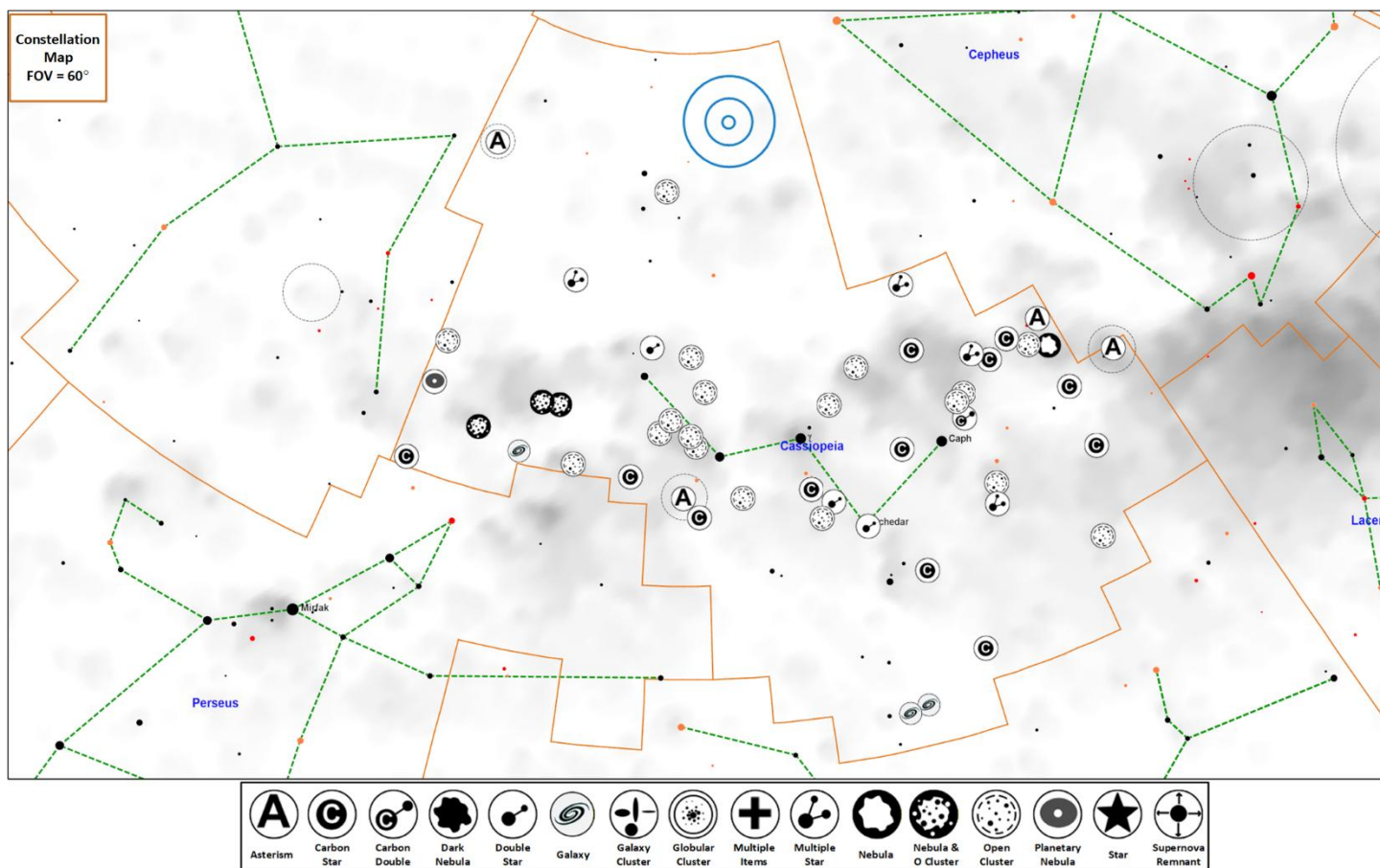
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Magnitude scale: • 6.0 • 5.0 • 4.0 • 3.0 • 2.0 • 1.0

— The Equator — Ecliptic Plane — Galactic Plane

● Galaxy ■ Bright nebula ● Open cluster ● Globular cluster ◆ Planetary nebula

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Constellation Targets

[WZ Cas](#), [HR 9094](#), [UX Cas](#), [ST Cas](#), [Ling 1](#), [FR Cas](#), [NQ Cas](#), [King 14](#), [NGC 147](#), [NGC 185](#), [Shedar](#), [NGC 225](#), [LDN 1291](#), [LDN 1300](#), [LDN 1294](#), [Achird](#), [NGC 281](#), [W Cas](#), [NGC 457](#), [V466 Cas](#), [Phi Cas](#), [NGC 559](#), [LDN 1325](#), [LDN 1326](#), [WW Cas](#), [NGC 609](#), [STAR 13](#), [NGC 663](#), [NGC 654](#), [NGC 659](#), [M 103](#), [Trumpler 1](#), [Collinder 463](#), [HD 11092](#), [X Cas](#), [Stock 2](#), [NGC 896](#), [IC 1795](#), [LDN 1359](#), [iota Cas](#), [IC 1805](#), [Melotte 15](#), [LDN 1370](#), [Maffei 1](#), [IC 1848](#), [HD 17505](#), [Collinder 33](#), [Collinder 34](#), [LDN 1376](#), [IC 289](#), [V623 Cas](#), [Trumpler 3](#), [STAR 15](#), [STAR 29](#), [STAR 12](#), [NGC 7635](#), [LDN 1231](#), [V398 Cas](#), [V353 Cas](#), [M 52](#), [DS Cas](#), [Stock 12](#), [PZ Cas](#), [6 Cas](#), [NGC 7789](#), [NGC 7790](#), [Berkeley 58](#), [NGC 7788](#), [Sigma Cas](#)

Mythology/Back Story

This constellation is named after the beautiful queen of Ethiopia in Greek mythology who was mother to Andromeda and wife to King Cepheus. In the sky she is depicted sitting in a chair, but is most easily recognized by the asterism in the shape of a "W" or "M" with one leg kicked out formed by the five brightest stars in the constellation. Cassiopeia was first catalogued by the Greek astronomer Ptolemy in the 2nd century CE.

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Constellation Highlights

Cassiopeia contains many open clusters along with carbon and multiple star systems.

- **WZ Cas** (DS, CS) – One of my favorite doubles, exceptional!
- **Achird** (DS) – Showcase double
- **NGC 457** (OC) – Owl Cluster, V466 Cas, Phi Cas in one open cluster
- **HD 11092** (DS) – Noted to have orange and blue components
- **STAR 29** (AS) – 13 stars forming the shape of "7" (Binocular)
- **M 52** (OC) – Scorpion Cluster
- **Shedar** (DS) – Color optical double.
- **NGC 281** (EN, OC) – Pacman Nebula
- **Cassiopeia OB8 Association** (OC) – Open clusters NGC 654, Tr 1, NGC 663, NGC 659, M 103
- **Iota Cas** (MS-3) – Exceptional triple star system.
- **V353 Cas** (CS) – BV index of +3.47, should be quite red
- **NGC 7789** (OC) – Caroline's Rose

Object (Type)	Links	Gear	Aliases	Stats
WZ Cas (DS, CS)	1 , 2	B, T	SAO-021002; HIP 99; HD 224855; BD+59°2812; CCCS 3214; SACDBL290; STT 254; STTA 254; EsB 764; OΣΣ254 Cas; WZ Cassiopeiae	Magnitude Range= 7.4 to 8.3 Spec=C9,2JLi, ? BV=+2.84 Color=red AB Mag=7.4, 8.3 Sep=57.8" PA=88.8° mBortle=9 mApt=50mm Spec=NIab: p Color=red, blue
HR 9094 (MS-3)	1	B, T	SAO-010937; HIP 207; HD 225009; HR 9094; ADS 1; BD+65 1987; STF 3053; WDS00026+6606; Σ3053	AB Mag=6,7.2 Sep=15.2" PA=70° mBortle=9 mApt=50mm Spec=G9III, A1V Color=yellow-orange, white AC Mag=6,11 Sep=98.53" PA=291° mBortle=9 mApt=70mm Spec=G9III, ? Color=yellow-orange, ?
UX Cas (VS)		T	CCCS 4; GCVS180037; MSB 43; TYC 4018-0961-1; UX Cassiopeiae	Magnitude range =9.5 to 11.5 Period=360d Spec=C6,2 mBortle=9 mApt=50mm BV=+3.36 Color = red
ST Cas (CS)		T	HIP 1401; HD 1306; BD +49 41; CCCS 10; GCVS180020; TYC 3255-0823-1; ST Cassiopeiae	Magnitude Range= 9 to 10 Spec=C4,4 BV=+2.62 Color=deep red
Ling 1 (AS)		B, T	SAO-11095; HIP 1486; HD1400; BD+61 32	Size=32'
FR Cas (VS)		T	CCCS 13; D 237; GCVS180181; MSB 44; TYC 3665-0350-1; FR Cassiopeiae	Mag = 10.5 Mag Range(p)=12.7 to 13.9 Period=unknown BV=+2.8 Color=red mBortle=9 mApt=60mm MC=C4,3
NQ Cas (CS)		T	HIP 1945; HD 1994; BD +53 66; CCCS 14; D 238; TYC 3653-0117-1; NQ Cassiopeiae	Mag=9.3 Magnitude Range(p)= 10.6 to 11.5 Period=unknown Spec=C4,5J BV=+1.83 Color=deep red
King 14 (OC)		T	C 0029+628; K14; OCISM 64; OCL 297; Alter 1; Lund 19	Mag=8.5 Size=8' SB=21.4 mBortle=4 mApt=150mm MC=III1p

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Object (Type)	Links	Gear	Aliases	Stats
NGC 147 (G)	1	T	C 17; DDO 3; MCG +08-02-005; PGC 2004; UGC 326; Caldwell 17; Levy 81	Mag=10.5 Size=13.2'x7.8' SB=24.2 MC=E5/p elliptical
NGC 185 (G)	1	T	C18; MCG +08-02-010; PGC 2329; UGC 396; Caldwell 18	Mag=10.1 Size=11.7'x10' SB=23.9 MC=E3, elliptical
Shedar (DS)	1 , 2	B, T	SAO-21609; HIP 3179; α Cas; 18 Cas; HD 3712; HR 168; ADS 561; BD+55 139; FK5 21; H518; WDS00405+5632; Alpha Cas; alp Cas AD	AD Mag=2.2,9 Sep=70.9" PA=282° mBortle=9 mApt=50mm Spec=K0IIIa, ? Color=pale rose, blue-white
NGC 225 (OC)	1	T	C 0040+615; Collinder 7; Cr 7; OCL 305; Lund 25; Sailboat Cluster	Mag=7 Size=12' SB=21.0 mBortle=9 mApt=70mm MC=III1p n
LDN 1291 (DN)		T	LM 2	Size=2.1' mBortle=4 mApt=102mm Opacity=5
LDN 1300 (DN)		T		Size=3' mBortle=4 mApt=70mm Opacity=5
LDN 1294 (DN)		T		Size=1.5' mBortle=4 mApt=150mm Opacity=5
Achird (DS)	1 , 2	T	SAO-021732; HIP 3821; Eta Cas; η Cas; 24 Cas; HD 4614; HR 219; ADS 671; LHS 122; STF 60	AB Mag=3.4,7.4 Sep=13.6" PA=328° mBortle=9 mApt=50mm Period=479y Spec=G0V, M0V Color=yellow, orange-red
NGC 281 (EN)	1	B, T	IC 11; IC 1590; Cr 8; Sh2-184; C0049+563; CTB 7; LBN 616; Lund 34; Mrk 1; OCl 313; Pacman Nebula	Mag=7.4 Size=35' SB=23.7
W Cas (CS)		T	HIP 4284; HD 5235; BD +57 165; CCCS 38; TYC 3680-1824-1; EsB 13	Mag=9.0 Mag Range= 7.8 to 12.5 Period=1.1y Spec=C7,1e BV=+3.6 Color=deep red
NGC 457 (OC)	1	T	Phi Cassiopeiae Cluster; C-13; Cr 12; Mel 7; C0115+580; OCL 321; Caldwl 13; Caldwell 13; Dragonfly Cluster; ET Cluster; Kachina Doll Cluster; Lund 43; Owl Cluster; Raab 3	Mag=6.4 Size=13' SB=20.6 mBortle=9 mApt=60mm MC=II3r
V466 Cas (VS)		T	HD 236697; GCVS180466	Mag=8.6 mBortle=9 mApt=50mm MC=M1.5I
Phi Cas (DS)	1 , 2	B, T	SAO-22191; HIP 6242; ϕ Cas; 34 Cas; HD 7902; HD 7927; HR 382; ADS 1073; BD+57 260; H323; WDS01201+5814	AC Mag=5.1,7 Sep=134" PA=231° mBortle=9 mApt=50mm Spec=F0Ia, B6Ib Color=yellow-white, blue-white
NGC 559 (OC)	1	T	Collinder 13; Cr 13; C0126+630; C8; IRAS 01259+6301; OCL 322; Caldwl 8; Caldwell 8; Lund 45	Mag=9.5 Size=9' SB=22.9 mApt=250mm MC=I1m
LDN 1325 (DN)		T	CB 9	Size=1.9' mBortle=4 mApt=114mm Opacity=5

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Object (Type)	Links	Gear	Aliases	Stats
LDN 1326 (DN)		T		Size=1.9' mBortle=4 mApt=114mm Opacity=5
WW Cas (CS)		T	HIP 7260; CCCS 70; GCVS180045; MSB 1	Magnitude Range= 9.1 to 11.7 Spec=C5,5 BV=+2.1 Color=deep red
NGC 609 (OC)	1	T	Collinder 16; Cr 16; C0133+643; K 3; OCL 325; King 3; Lund 50	Mag=11 Size=3' SB=22.0 MC=II3r
STAR 13 (AS)		B	Queen's Kite	Size=220'x160' Ref Star: HD9812; SAO-22441; HIP 7559
Cassiopeia OB8 Association				
NGC 663 (OC)	1	B, T	C 10; Cr 20; Mel 11; C0142+610; OCL 333; Caldwell 10; Caldwell 10; Lawnmower Cluster; Lund 55; Collinder 20; Raab 7	Mag=7.1 Size=16' SB=21.7 mBortle=9 mApt=80mm MC=II3r
NGC 654 (OC)	1	T	Collinder 18; Mel9; C0140+616; OCL330; Cr18; Fuzzy Butterfly Cluster; Lund53; Raab 5	Mag=6.5 Size=5' SB=18.6 mBortle=9 mApt=60mm MC=II2r
NGC 659 (OC)	1	T	Collinder 19; Mel10; C0140+604; OCL332; Cr19; Lund54; Raab 6; Yin-Yang Cluster	Mag=7.9 Size=5' SB=20.0 mBortle=9 mApt=114mm MC=I2m
M 103 (OC)	1	T	NGC-581; Collinder 14; Cr 14; Mel 8; C0129+604; Lund 46; OCL 326; Raab 4	Mag=7.4 Size=5' SB=19.5 mBortle=9 mApt=102mm MC=II2m
Trumpler 1 (OC)		T	C 0132+610; Collinder 15; Cr 15; OCISM 76; OCL 328; Lund 48; Mrk 3; Tr 1	Mag=8.1 Size=4' SB=19.7 mBortle=7 mApt=114mm MC=II2p
Collinder 463 (OC)		B, T	C0144+717; CR463; OCL 324; Crescent Cluster; Lund 57	Mag=5.6 Size=57' SB=17.4 mBortle=9 mApt=50mm MC=III2m
HD 11092 (DS)	1	B, T	SAO-012006; HIP 8626; BD+64°243; SACDBL331; STF163; WDS01513+6451; Σ163; Σ163 Cas	AB Mag=6.8,9.1 Sep=34.5" PA=37° mBortle=9 mApt=50mm Spec=K4Ib-IIa, ? Color=orange, blue
X Cas (VS)		T	HIP 9057; CCCS 87; D 245; GCVS180007; TYC 3695-2198-1; X Cassiopeiae	Mag=9.4 Mag Range = 9.2 to 12.8 Period= 1.2 y BV=+2.11 mBortle=9 mApt=50mm MC=C0ev
Stock 2 (OC)		B	C 0211+590; OCL 348; Jelly Fish; Lund 71; Musclemans Cluster; Mushroom Cluster; St2	Mag=4.4 Size=60' SB=21.9 mBortle=9 mApt=50mm MC=I2m
iota Cas (MS-3)	1 , 2	T	SAO-12298; HIP 11569; ι Cas; HD 15089; HR 707; ADS 1860; BD+66 213; STF262; WDS02291+6724; Σ262	AB Mag=4.7,6.9 Sep=3" PA=231° mBortle=9 mApt=60mm Spec=A5p, F5V Color=white, yellow-white BC Mag=6.9,9.1 Sep=8.5" PA=99° mBortle=9 mApt=50mm Spec=F5V, G5 Color=yellow-white, yellow AC Mag=4.7,9.1 Sep=6.9" PA=117° mBortle=9 mApt=50mm Spec=A5p, G5 Color=white, yellow

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Object (Type)	Links	Gear	Aliases	Stats
The Heart and Soul Complex (W3/W4/W5) – the Cassiopeia OB6 Association				
NGC 896 (EN)	1	B, T	The Fishhead Nebula; IC1795; LBN 645; SG 1 4; Ced 6	Westerhout 3 Complex: Mag=10 Size=27'x13' SB=25.0 mApt=200mm
IC 1795 (EN)		B, T	NGC-896; LBN 645	Westerhout 3 Complex: Mag=10 Size=20' SB=25.1
LDN 1359 (DN)		T		Westerhout 3 Complex: Size=8.4' mBortle=4 mApt=50mm Opacity=5
IC 1805 (OC, EN)	1	B, T	Cr 26; Sh 2- 190; Mel 15; C0228+612; NRL 15; RAFGL 333; Lund 81; Mrk 7; OCl 352; Raab 11	Westerhout 4 Complex: Mag=6.5 Size=45' SB=23.4 mBortle=9 mApt=60mm
Melotte 15 (OC)		B, T	IC 1805; Collinder 26; Cr 26; Sh 2-190; Mel 15; C0228+612; NRL 15; OCL 352; RAFGL 333; Lund 81; Mrk 7; Raab 11	Westerhout 4 Complex: Mag=6.6 Size=21' SB=21.8 mBortle=9 mApt=60mm MC=II3m n
LDN 1370 (DN)		T		Westerhout 4 Complex: Size=6.3' mBortle=4 mApt=50mm Opacity=5
IC 1848 (EN)	1	B	Sh2-199; LBN 667; OCL 364; Soul Nebula	Westerhout 5 Complex: Mag=6.5 Size=60'x30' SB=23.3
HD 17505 (DS)	1	T	SAO-12470; HIP 13296; ADS 2161; STF306; WDS02511+6025; Σ306	Westerhout 5 Complex: AB Mag=7.4,9.09 Sep=2.2" PA=93° mBortle=9 mApt=70mm Spec=O6.5III, O8 Color=blue, blue
Collinder 33 (OC)		B, T	IC 1848; Sh 2- 199; C0247+602; C0255+602; CTB 11; W 5; Lund 95; Mrk 8; OCl 364	Westerhout 5 Complex: Mag=5.9 Size=25' SB=21.5 mBortle=9 mApt=50mm
Collinder 34 (OC)		B, T	C0257+602; Lund 97; OCl 369	Westerhout 5 Complex: Mag=6.8 Size=25' SB=22.4 mBortle=9 mApt=70mm MC=I3p
LDN 1376 (DN)		T		Westerhout 5 Complex: Size=4.7' mBortle=4 mApt=50mm Opacity=5
Maffei 1 (G)	1	T	PGC 9892; UGCA 34; Sharpless 191	Mag=14 Size=5'x3' SB=25.6 MC=E3
IC 289 (PN)	1	T	PK 138+02.1; PN G138.8+02.8	Mag=13.3 Size=0.6' SB=20.8 mApt=200mm MC=Elliptical
V623 Cas (VS)		T	SAO-023858; HIP 14827; HD 19557; GCVS180623	Mag=7.6 Mag Range = 7.3 to 7.7 Period=Unknown BV=+2.3 Color = red mBortle=9 mApt=50mm MC=C4,5J
Trumpler 3 (OC)	1	B, T	Cr 36; C0307+630; OCL 366; Collinder 36; Ha 1; Harvard 1; Lund 101; Tr 3	Mag=7 Size=12' SB=21.0 mBortle=9 mApt=70mm MC=III2m
STAR 15 (AS)		B	APOC4021; Harrington 15; Kemble's Kite; Measuring Scoop; Ramakers 9	Size=90'x30' Stars=7 Centering Star: V805 Cas; SAO-004917; HIP-16319

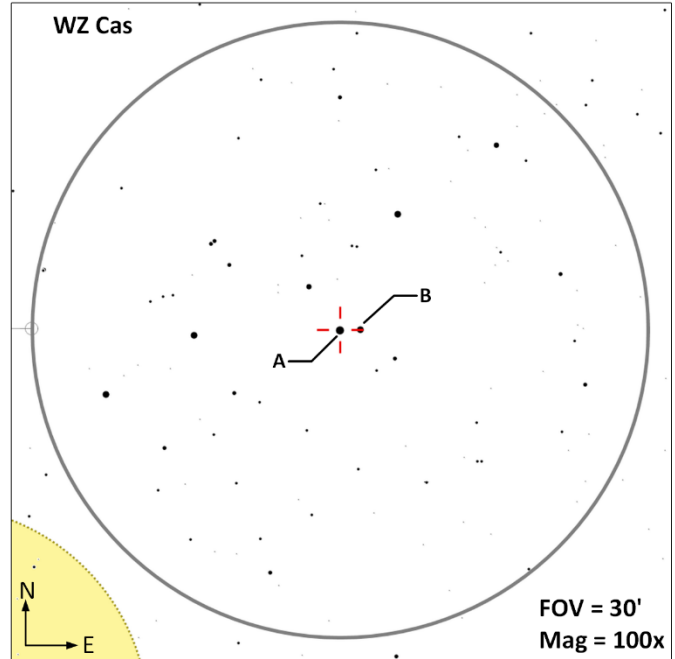
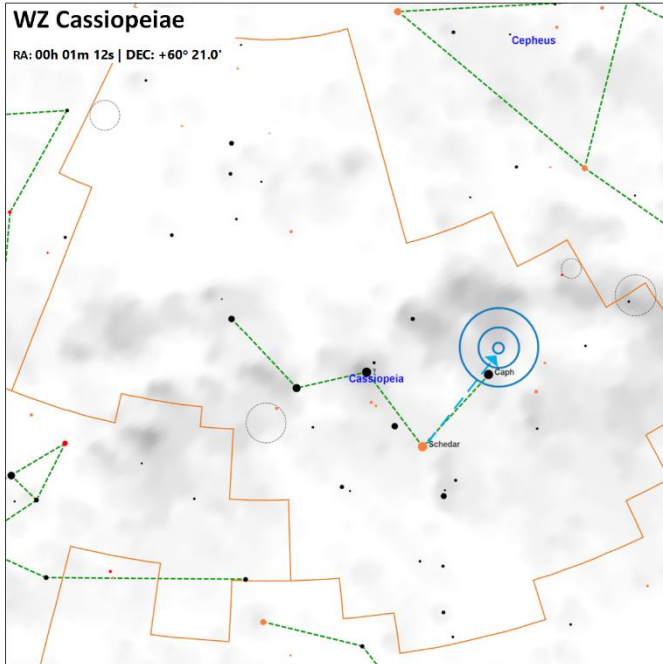
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Object (Type)	Links	Gear	Aliases	Stats
STAR 29 (AS)		B	Lucky 7	Size=70'x125' Stars = 13 Centering Star: 1 Cas; SAO-035147; HIP 114104
STAR 12 (AS)		B	Airplane; Party Balloon	Size=60' Stars=14 Centering Star: HR 8886; SAO-20572; HIP-115245
NGC 7635 (EN)	1	T	C 11; Sh 2-162; LBN 548; Bubble Nebula; Caldwell 11	Mag=10 Size=8' SB=23.1
LDN 1231 (DN)		T		Size=3.9' mBortle=4 mApt=60mm Opacity=5
V398 Cas (CS)		T	HD240275; BD+58 02583	Mag=8.7 Mag Range(p)= 11.2 to 12.1 Period=Unknown BV=+2.89 Color=red
V353 Cas (CS)		T	CCCS 3186; GCVS180353; MSB 42; TYC 4003-0145-1	Mag=9.7 Mag Range(p)= 13.5 to 15 Period=1y Spec=R8 BV=+3.47 Color=deep red
M 52 (OC)	1	T	The Scorpion; NGC-7654; Cassiopeia Salt-and-Pepper; October Salt-and-Pepper; Scorpion Cluster	Mag=6.9 Size=13' SB=21.1 mBortle=9 mApt=70mm MC=II2r
DS Cas (VS)		T	CCCS 3190; D 362; GCVS180141	Mag=10.7 Mag Range(p)= 13.8 to 16.2 Period=340 d BV=+2.9 mBortle=9 mApt=60mm MC=C5+,3
Stock 12 (OC)		B, T	C2334+521; OCL 258; Lund 1042; St 12	Size=40' SB=16.6 MC=IV2p
PZ Cas (VS)	1	T	HIP 117078; BD +60 2613; GCVS180324; STI 1204; WDS 23441+6147	Mag=8.7 Mag Range= 8.2 to 10.2 Period=850 d BV=+2.6 mBortle=9 mApt=50mm MC=M3Iab
6 Cas (MS-3)	1 , 2	B, T	SAO-020869; HIP 117447; HD 223385; ADS 17022; STT 508; V 566	AB Mag=5.7,8 Sep=1.5" PA=194° mBortle=9 mApt=114mm Spec=A3Ia+, O9.75 Color=white, blue AC Mag=5.7,10.2 Sep=63" PA=311° mBortle=9 mApt=50mm Spec=A3Ia+, ? Color=white, ?
NGC 7789 (OC)	1	B, T	Cr 460; Mel 245; C2354+564; OCL 269; Caroline's Haystack; Caroline's Rose; Raab 152; White Rose Cluster	Mag=6.7 Size=16' SB=21.3 mBortle=9 mApt=60mm MC=II2r
NGC 7790 (OC)	1	T	CR 461; Collinder 461; C2355+609; OCISM 60; OCL 276	Mag=7.1 Size=4.5' SB=19.0 mBortle=9 mApt=80mm MC=II2m
Berkeley 58 (OC)		T	C2357+606; OCL 277; Berk 58	Mag=9.7 Size=11' SB=23.5 mApt=250mm MC=II1m
NGC 7788 (OC)		B, T	Collinder 459; Cr 459; OCL 275; C2354+611	Mag=9.4 Size=4.0' SB=21.0 MC=I2p
Sigma Cas (DS)	1 , 2	T	SAO-035947; HIP 118243; σ Cas; 8 Cas; HD 224572; HR 9071; ADS 17140; STF 3049; WDS23590+5545; Σ3049	AB Mag=5,7.2 Sep=3.1" PA=326° mBortle=9 mApt=60mm Spec=B1V, B3V Color=blue-white, blue-white

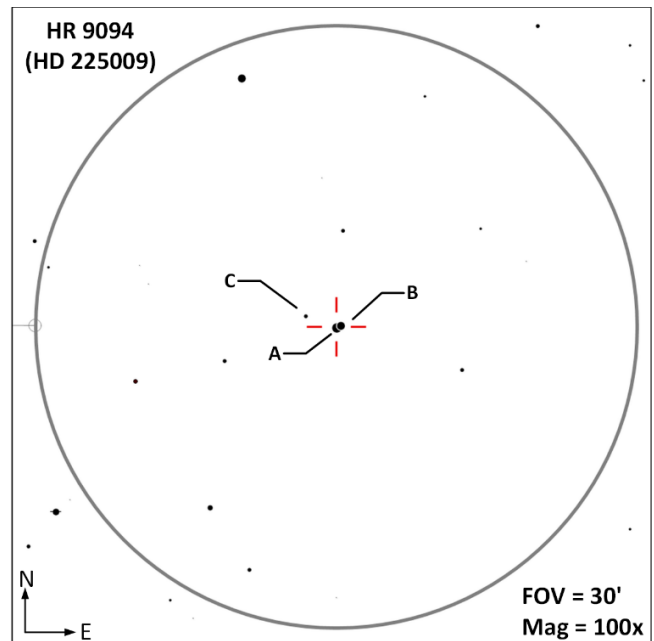
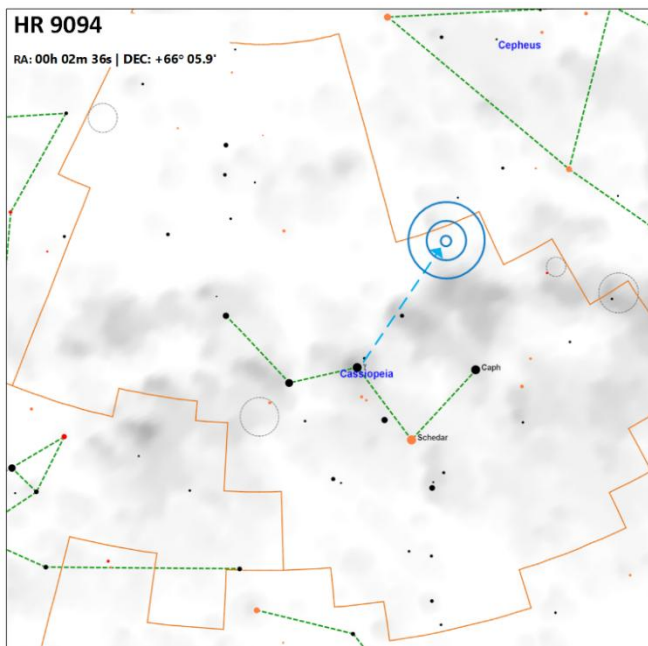
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WZ Cas (DS, CS || Magnitude Range= 7.4 to 8.3 | Spec=C9,2JLi, ? | BV=+2.84 | Color=red || **AB** | Mag=7.4, 8.3 | Sep=57.8" | PA=88.8° | mBortle=9 | mApt=50mm | Spec=NIab: p | Color=red, blue |) This ranks in my top 5 favorite doubles. A dark red primary and blue companion in a field of stars. This is an optical double, and sometimes (as with many carbon stars) it can take a few seconds before the red from the primary becomes apparent. A delight to view that should not be missed.

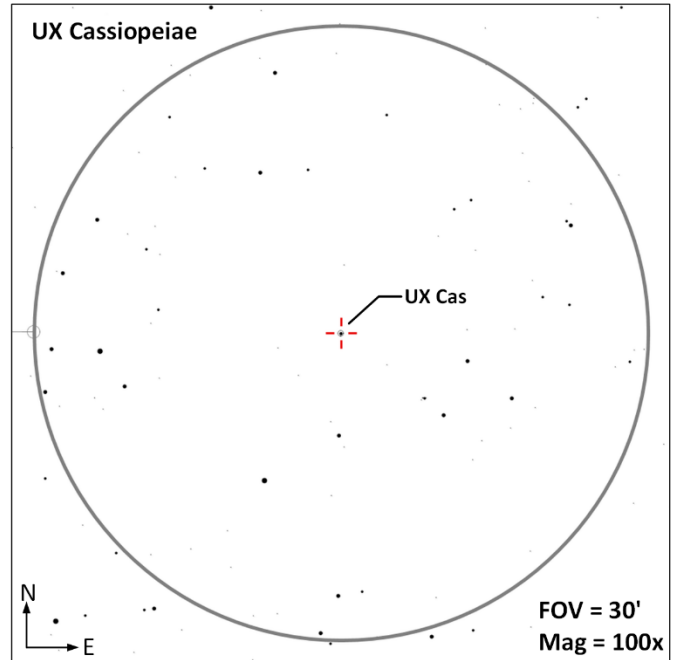
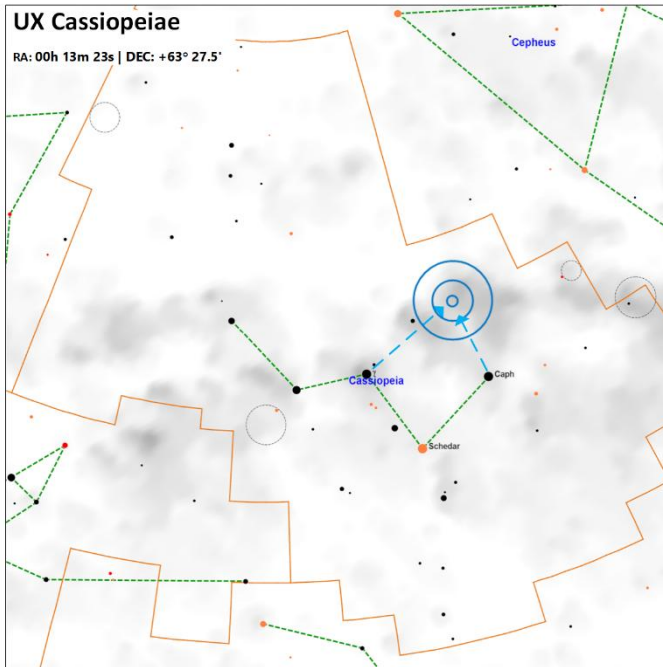


HR 9094 (MS-3 || **AB** | Mag=6,7.2 | Sep=15.2" | PA=70° | mBortle=9 | mApt=50mm | Spec=G9III, A1V | Color=yellow-orange, white || **AC** | Mag=6,11 | Sep=98.53" | PA=291° | mBortle=9 | mApt=70mm | Spec=G9III, ? | Color=yellow-orange, ? |) In this triple system the AB pair is an optical pair and the AC pair is undetermined. This system appears on a number of favorites lists.

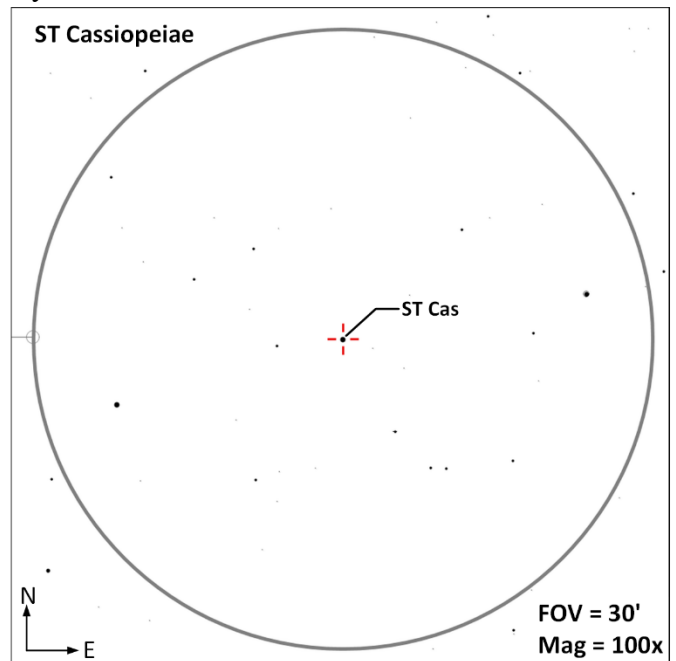
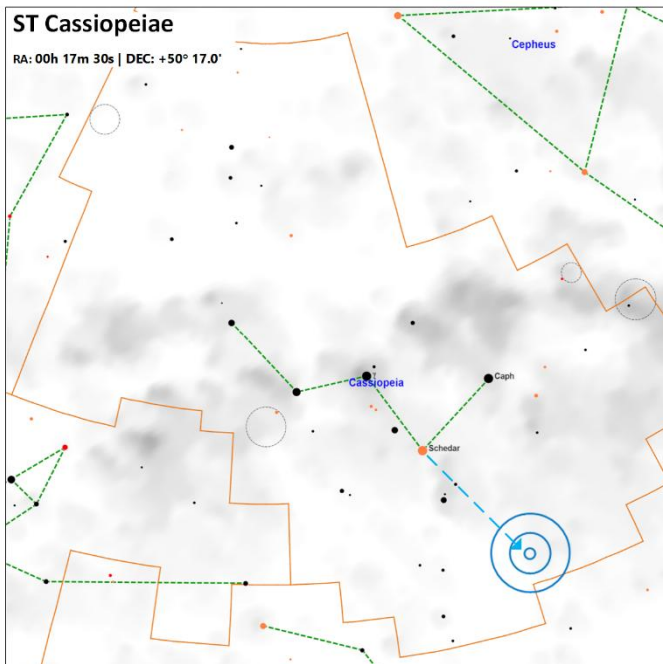


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UX Cas (VS || Magnitude range =9.5 to 11.5 | Period=360d | Spec=C6,2 | mBortle=9 | mApt=50mm | BV=+3.36 | Color = red |) As with many carbon stars, this star is variable. It appears on a number of carbon star lists.

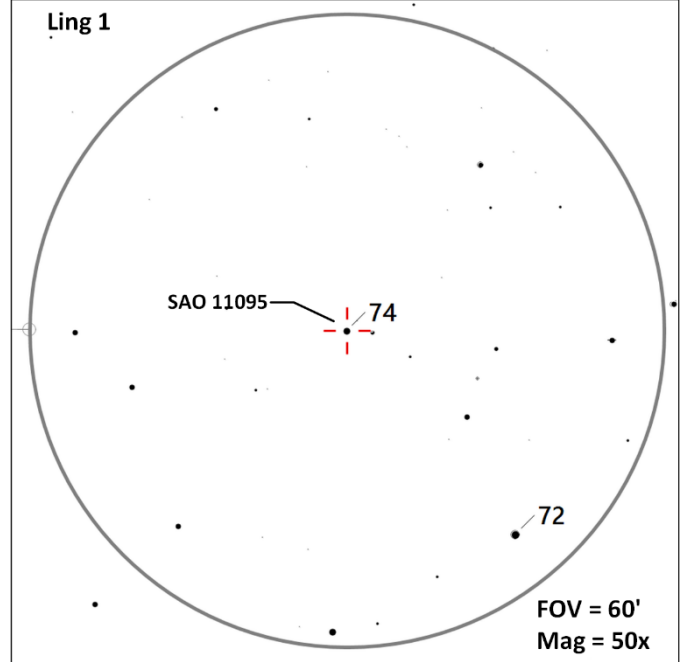
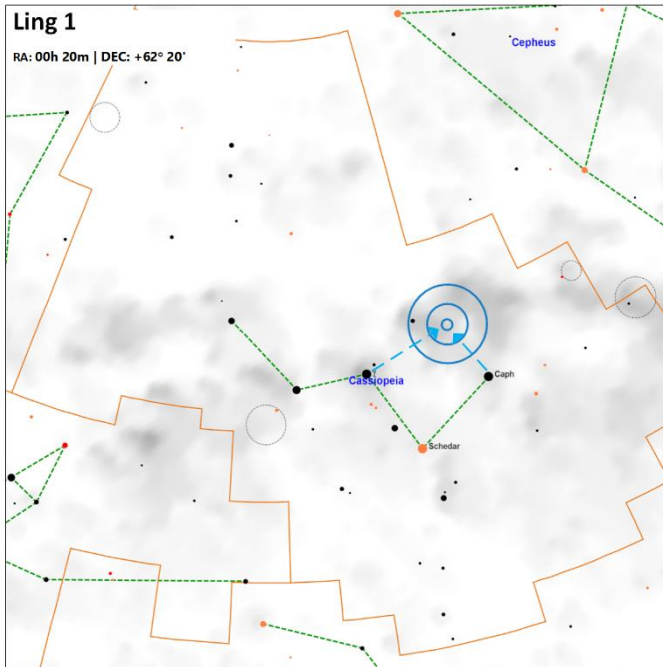


ST Cas (CS || Magnitude Range= 9 to 10 | Spec=C4,4 | BV=+2.62 | Color=deep red |) Located 2,064 light years away, with an energy output of 88 times the Sun's luminosity.

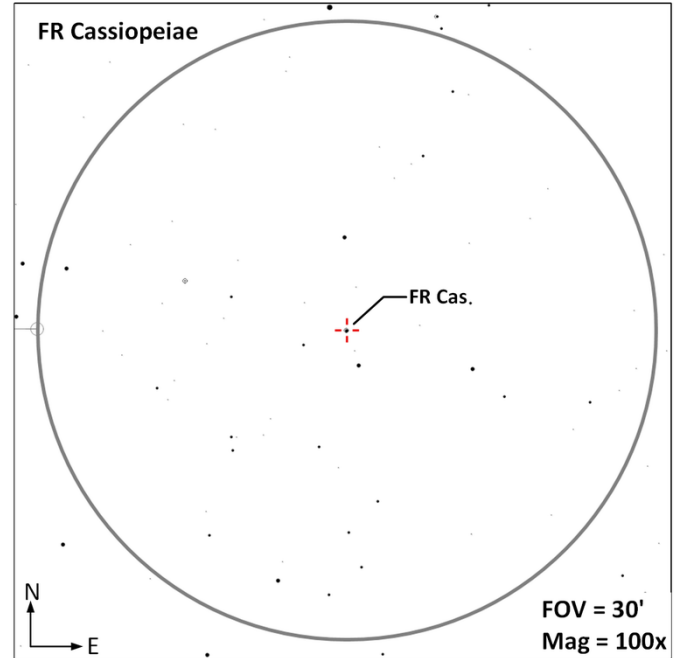
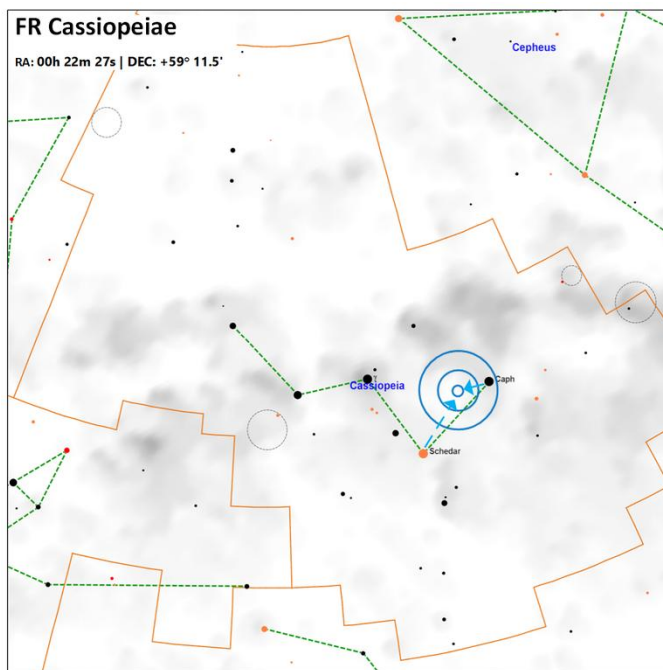


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Ling 1 (AS || Size=32' ||) Described as a large, looping cluster of stars. Well isolated as a group when scope is moved S of the open cluster Stock 20. This object is listed on the Kemble's Fifty-to-the-Pole list.

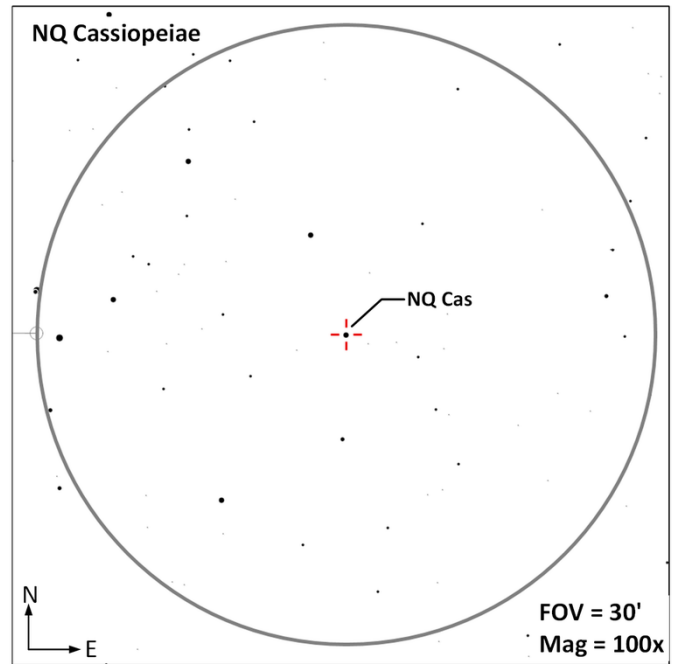
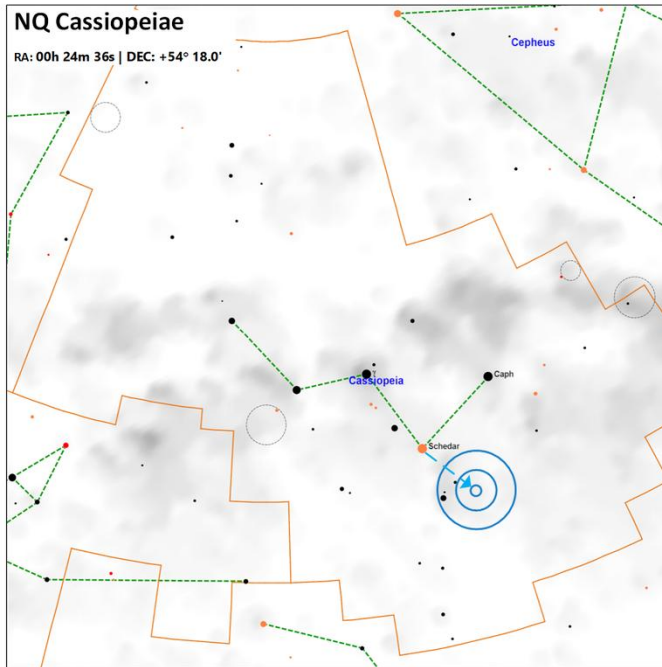


FR Cas (VS || Mag = 10.5 | Mag Range(p)=12.7 to 13.9 | Period=unknown | BV=+2.8 | Color=red | mBortle=9 | mAp=60mm | MC=C4,3 ||) A variable star appearing on the SAC carbon star list. Note how the Mag Range(p) does not correspond to the actual visual magnitude. This is because the magnitude range is measured with a bias to the blue spectrum, exactly where carbon stars are very weak, so the range is NOT a good representation of the visual magnitude.

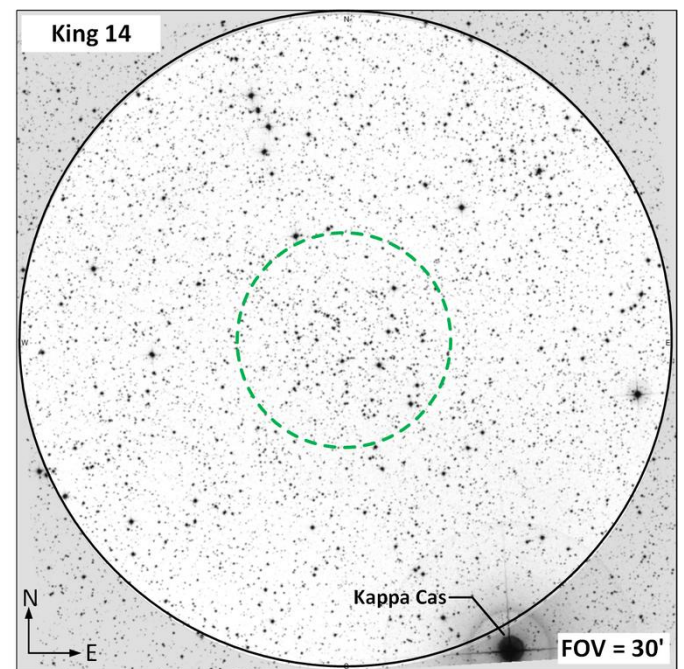
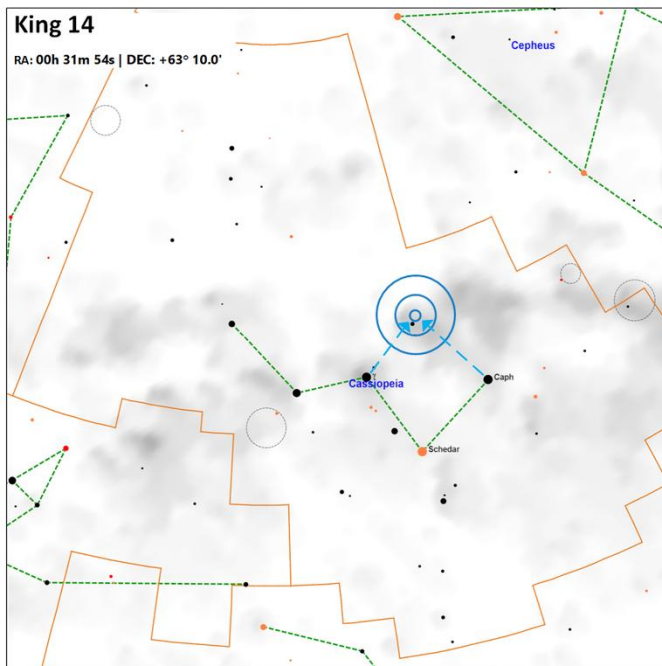


Constellation Guide

NQ Cas (CS || Mag=9.3 | Magnitude Range(p)= 10.6 to 11.5 | Period=unknown | Spec=C4,5J | BV=+1.83 | Color=deep red) Listed on the RASC Carbon Stars list and the 100 Carbon Stars list.

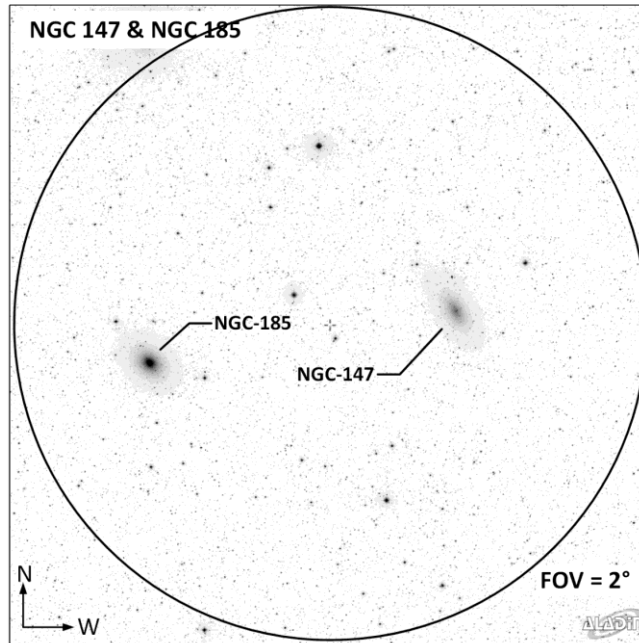


King 14 (OC || Mag=8.5 | Size=8' | SB=21.4 | mBortle=4 | mApt=150mm | MC=III1p) On the Kemble's Fifty-to-the-Pole list. Located 9,654 light years away with an estimated physical diameter of 22 light years. Trumpler Classification is III-Detached with no noticeable concentration, 1-Most stars are nearly the same apparent brightness, p-Poor cluster with fewer than 50 stars.



Constellation Guide

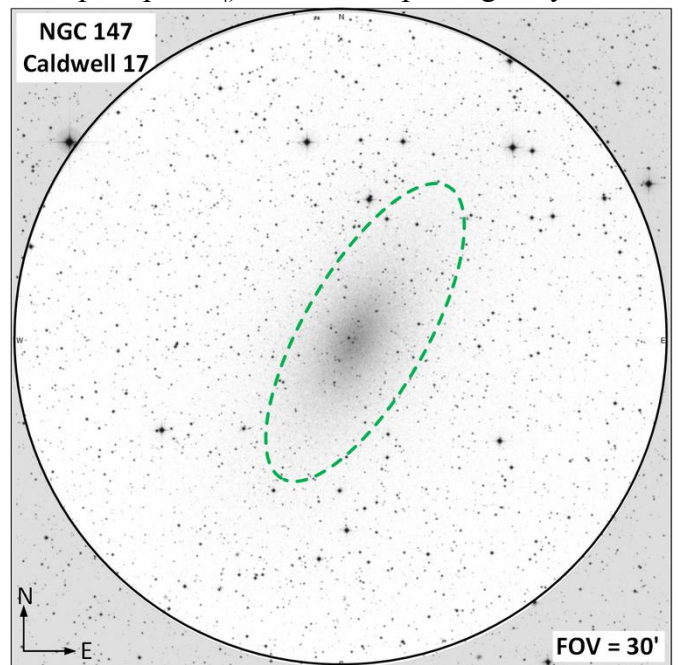
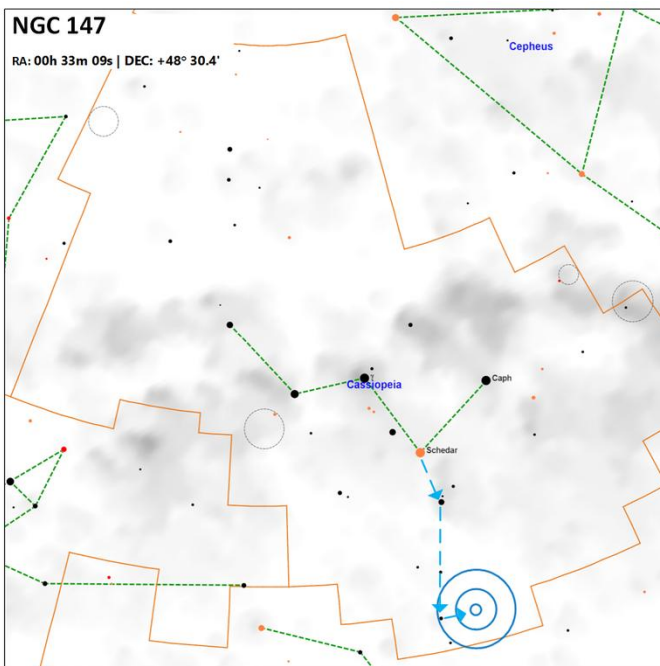
NGC 147 and NGC 185 - Satellites of the Andromeda Galaxy



NGC 147 and NGC 185 are dwarf elliptical galaxies orbiting the Andromeda Galaxy, about 2.5 million light-years away. They lie just under a degree apart in the sky, a distance of about 35,000 light-years from each other.

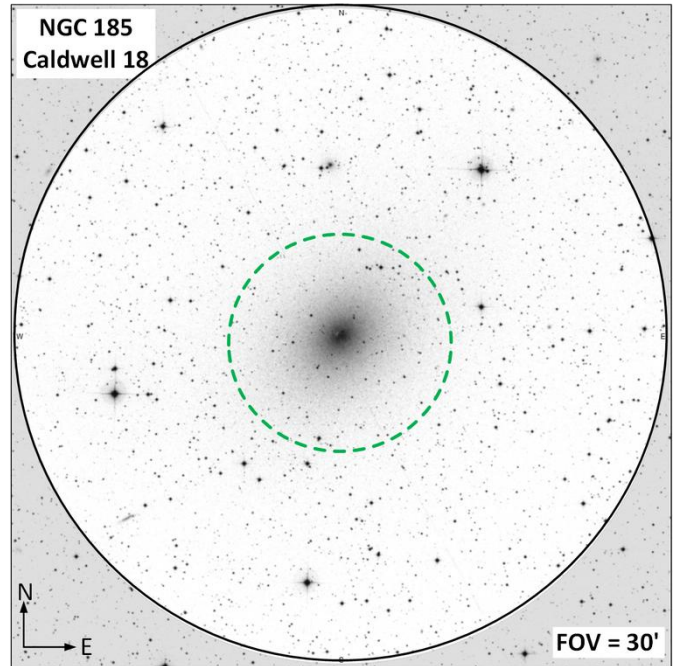
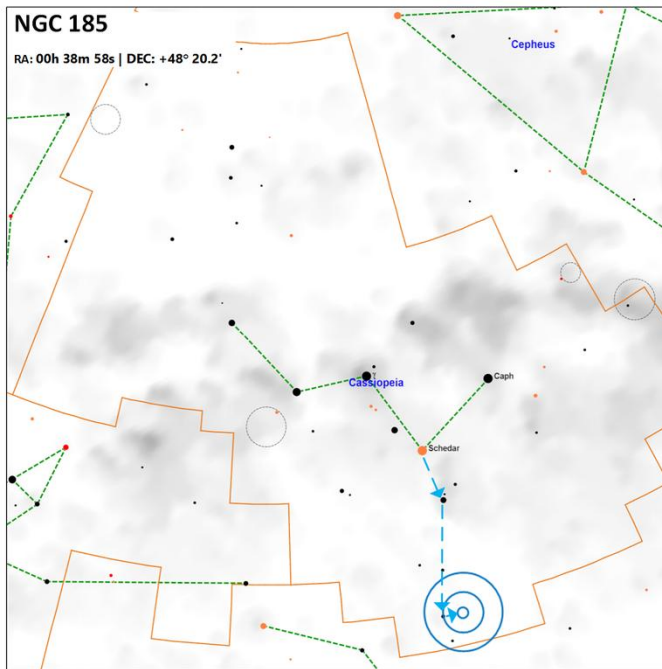
While NGC 185 is brighter and more compact and is visible in small telescopes, NGC 147 is slightly larger but has lower surface brightness and is the harder of the two to observe.

NGC 147 (G || Mag=10.5 | Size=13.2'x7.8' | SB=24.2 | MC=E5/p elliptical |) A dwarf elliptical galaxy.

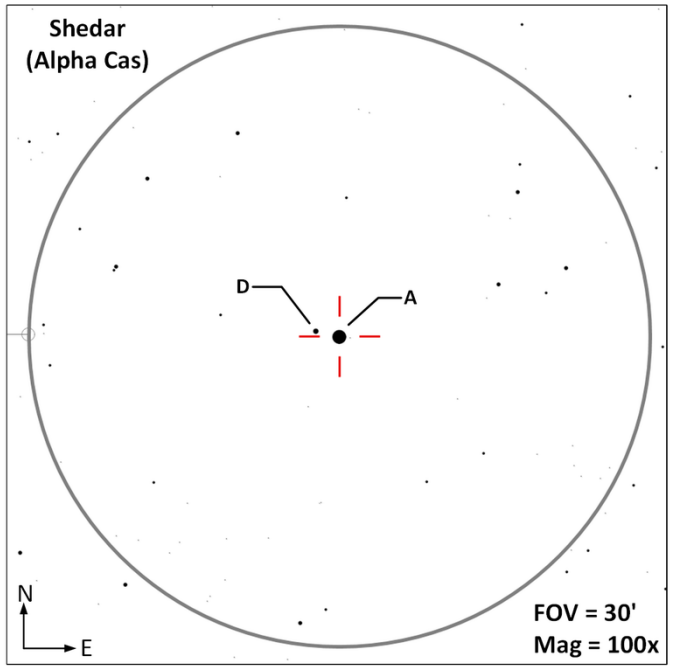
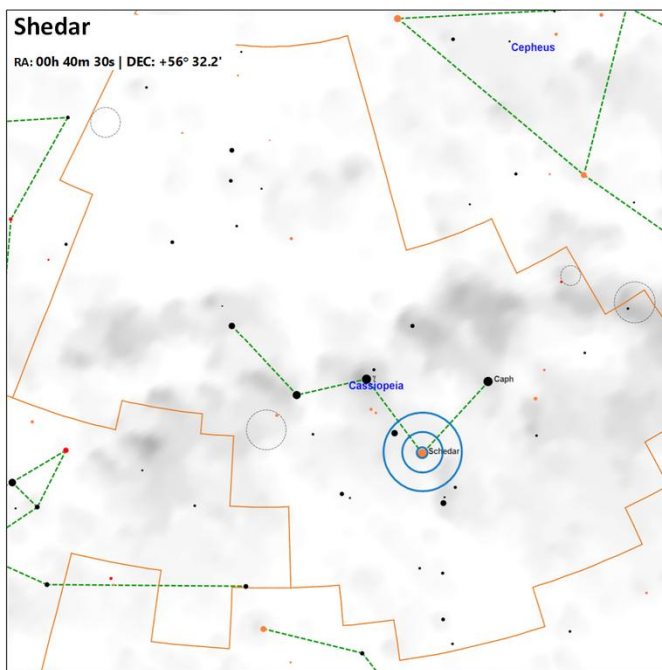


Constellation Guide

NGC 185 (G || Mag=10.1 | Size=11.7'x10' | SB=23.9 | MC=E3, elliptical |) M 31 satellite galaxy (along with NGC 147). This galaxy is located 2.1 million light years away.

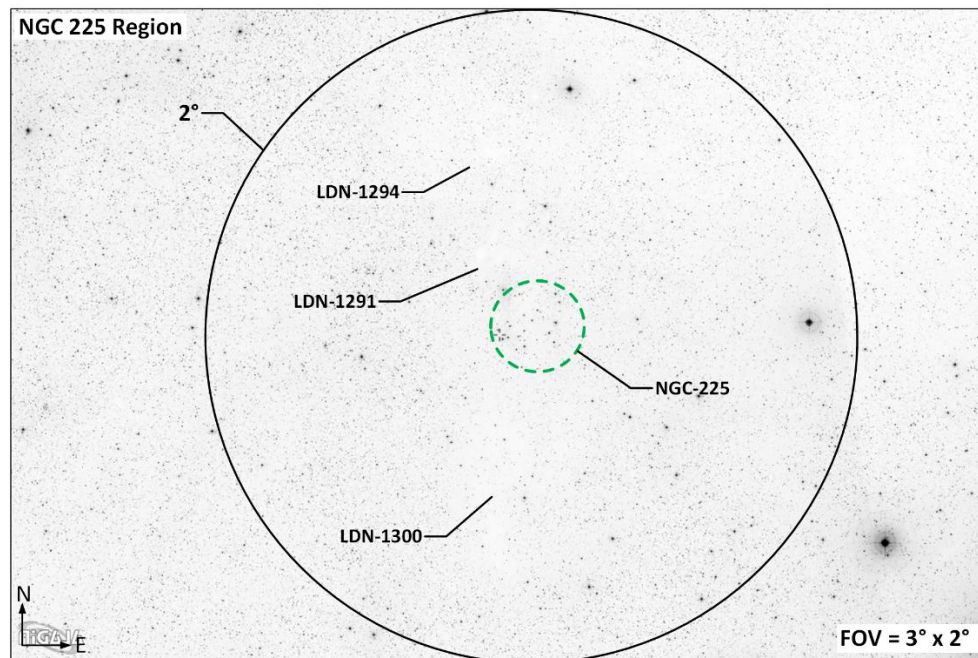


Schedar (DS || AD | Mag=2.2,9 | Sep=70.9" | PA=282° | mBortle=9 | mApt=50mm | Spec=K0IIIa, ? | Color=pale rose, blue-white |) Located 228 light years away, this is an optical double.



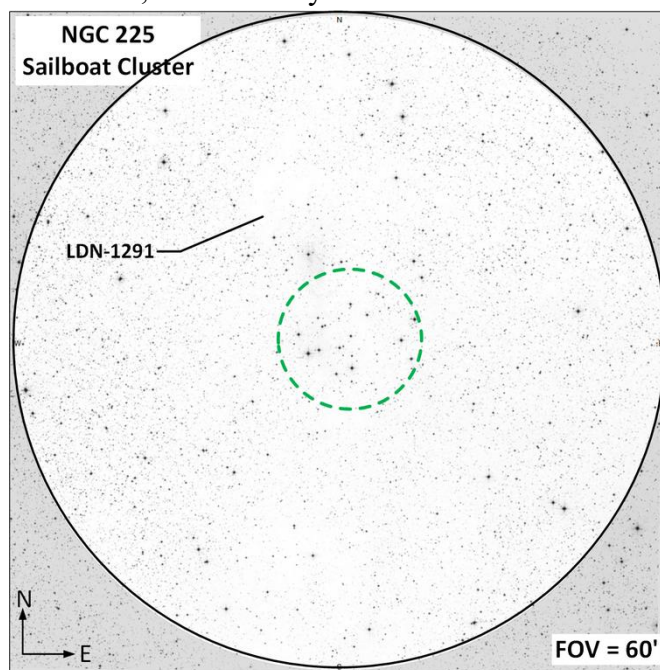
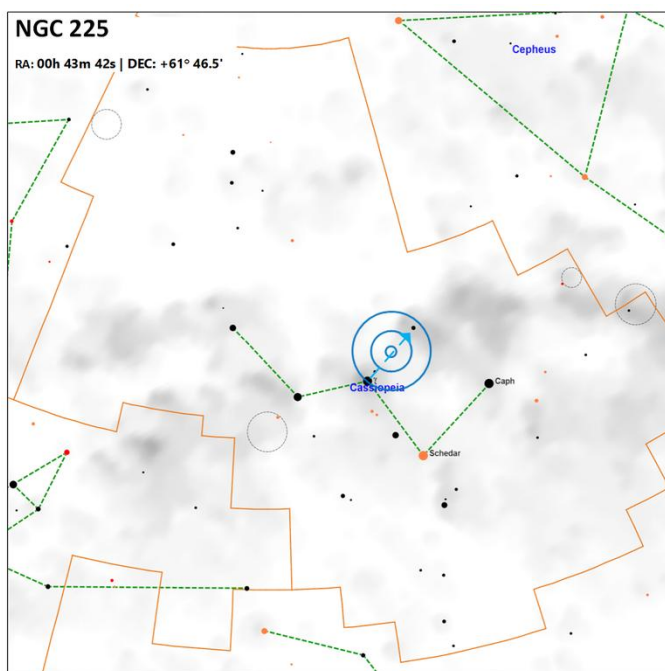
Constellation Guide

NGC 225 Region



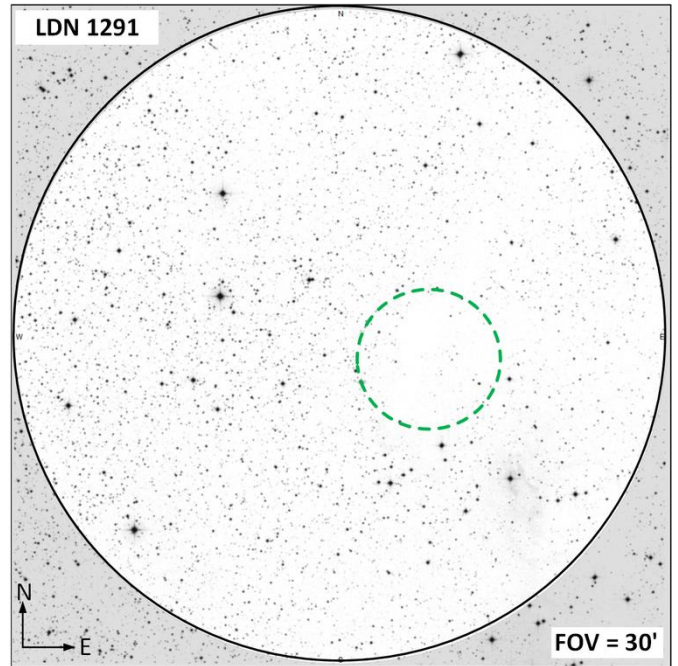
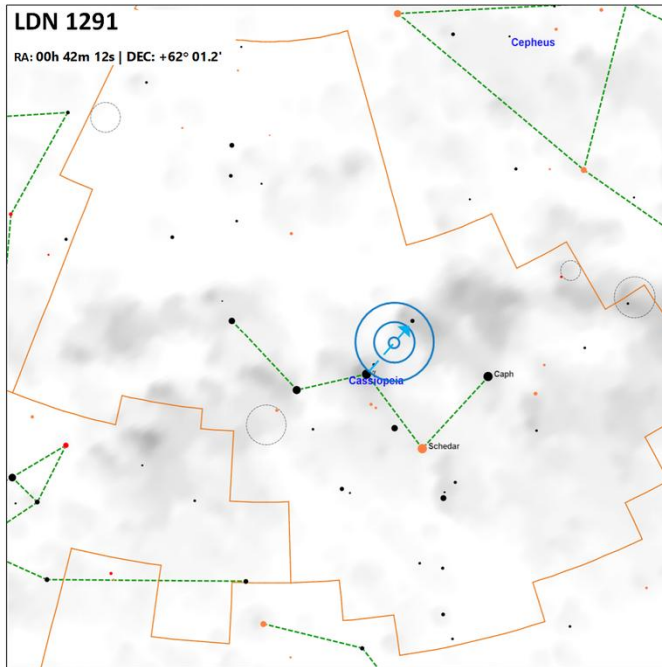
The NGC 225 region consists of an open cluster (NGC 225) and three nearby dark nebulae.

NGC 225 (OC || Mag=7 | Size=12' | SB=21.0 | mBortle=9 | mApt=70mm | MC=III1p n |) Located 2,100 light years away with Trumpler classification III-Detached with no noticeable concentration, 1-Most stars are nearly the same apparent brightness, p-Poor cluster with fewer than 50 stars, n-Nebulosity associated with cluster.

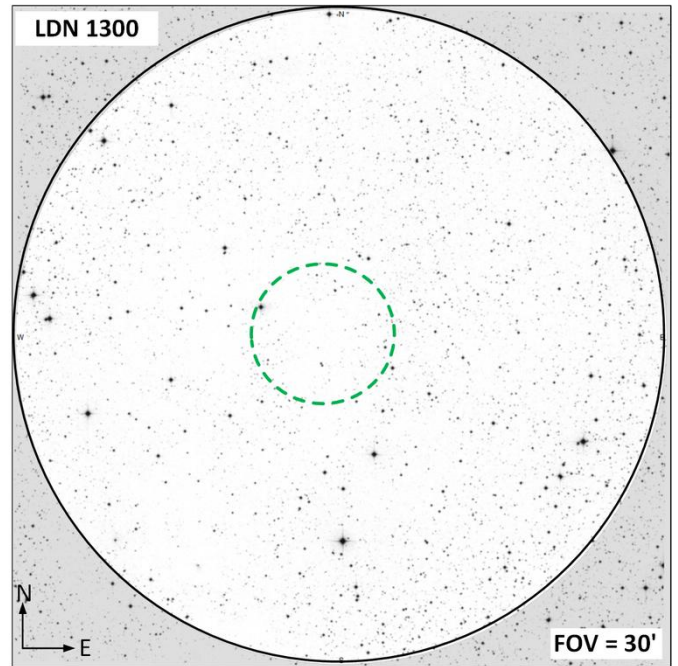
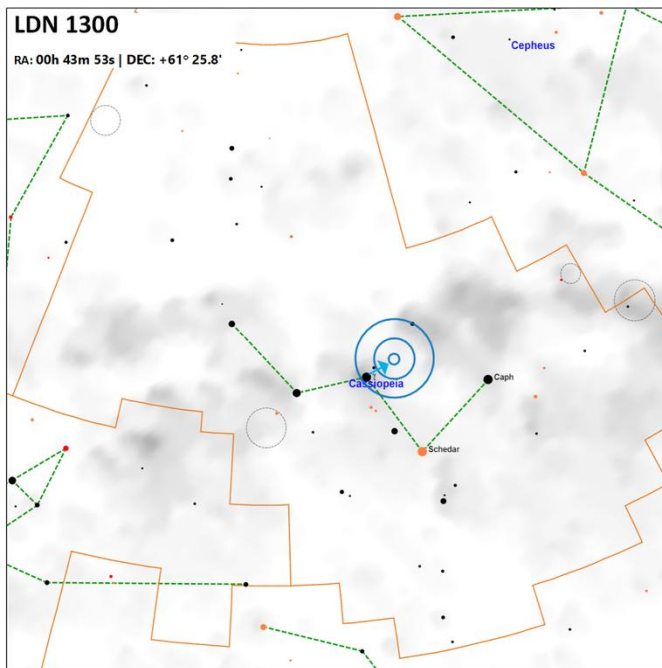


Constellation Guide

LDN 1291 (DN || Size=2.1' | mBortle=4 | mApt=102mm | Opacity=5 |) Small dark nebula. Some picture this as the "mast" of the Sailboat Cluster (NGC 225).

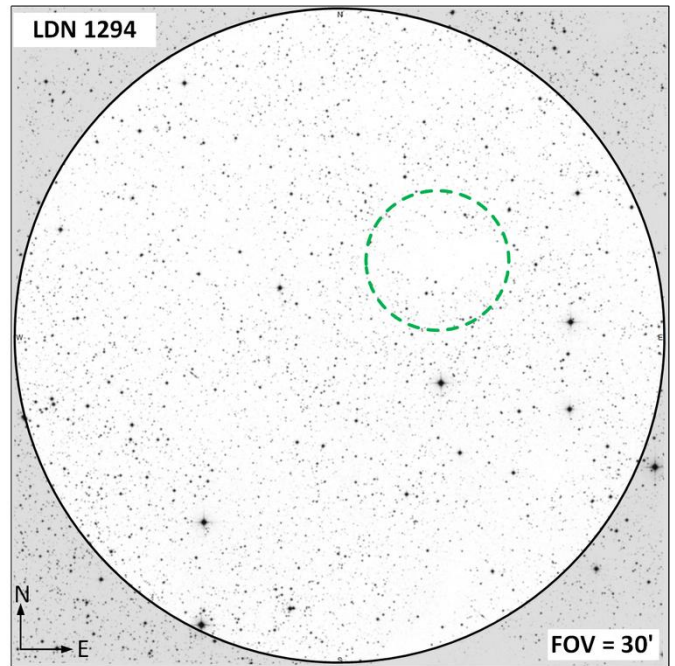
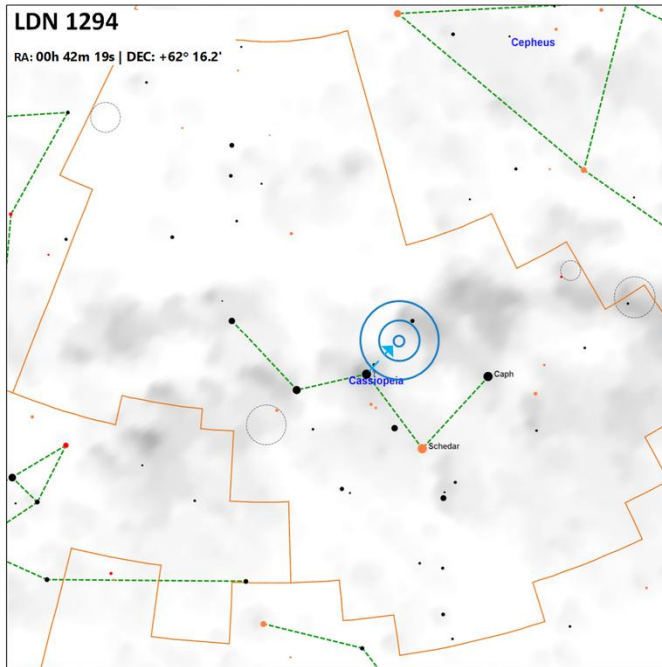


LDN 1300 (DN || Size=3' | mBortle=4 | mApt=70mm | Opacity=5 |) Dark nebula. Limited data available for this object, but it is associated with the other dark nebulae in the area (LDN 1291 & 1294) with an estimated distance of 2,200 light years.

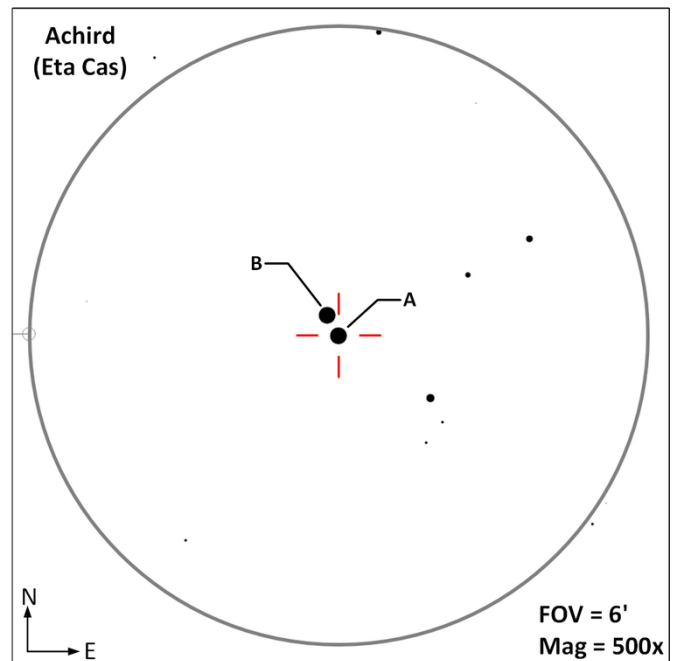
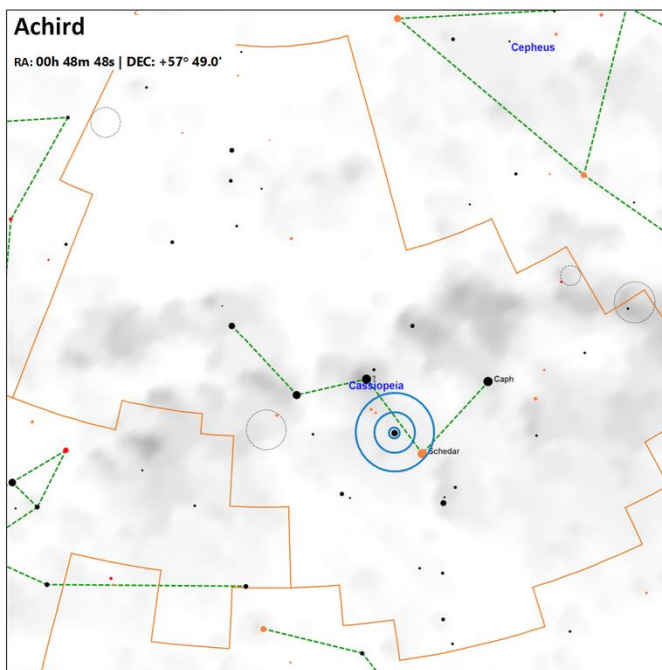


Constellation Guide

LDN 1294 (DN || Size=1.5' | mBortle=4 | mApt=150mm | Opacity=5 |) Another small dark nebula in the NGC 225 region.

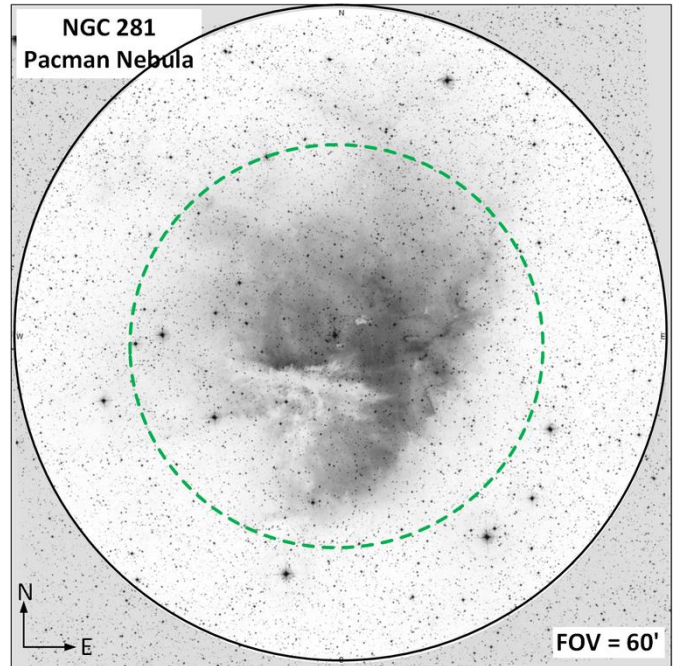
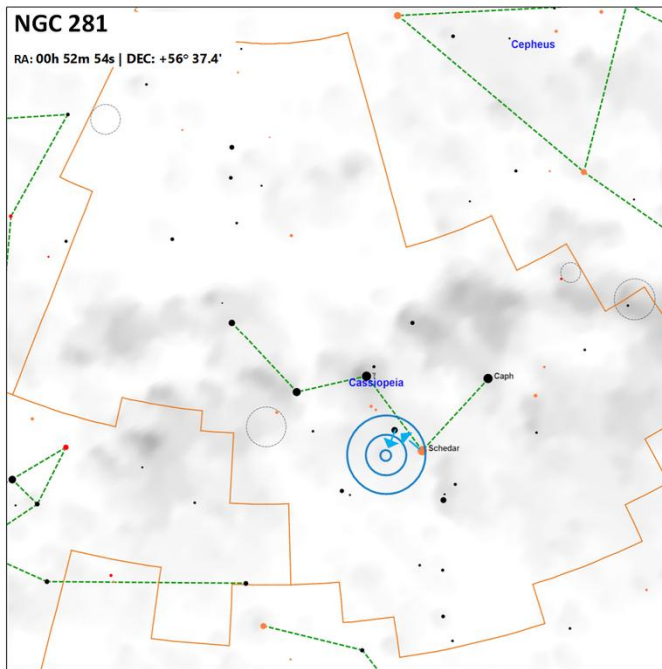


Achird (DS || AB | Mag=3.4,7.4 | Sep=13.6" | PA=328° | mBortle=9 | mApt=50mm | Period=479y | Spec=G0V, M0V | Color=yellow, orange-red |) Considered a showcase double, Achird is located 19.4 light years away with a period of 479 years. The pair has a large orbital eccentricity bringing the pair as close as 36 AU to each other. Colors reported for the pair range from gold, yellow or topaz for the primary and orange, red, purple or garnet for the secondary.

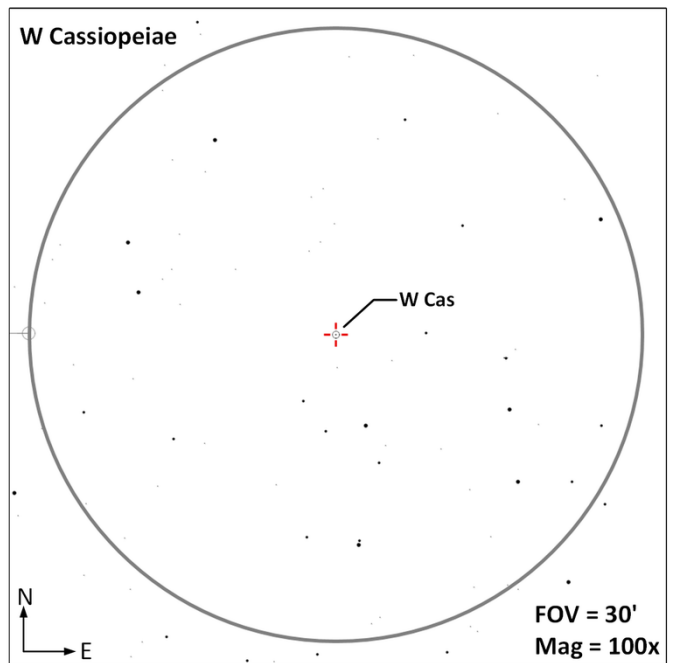
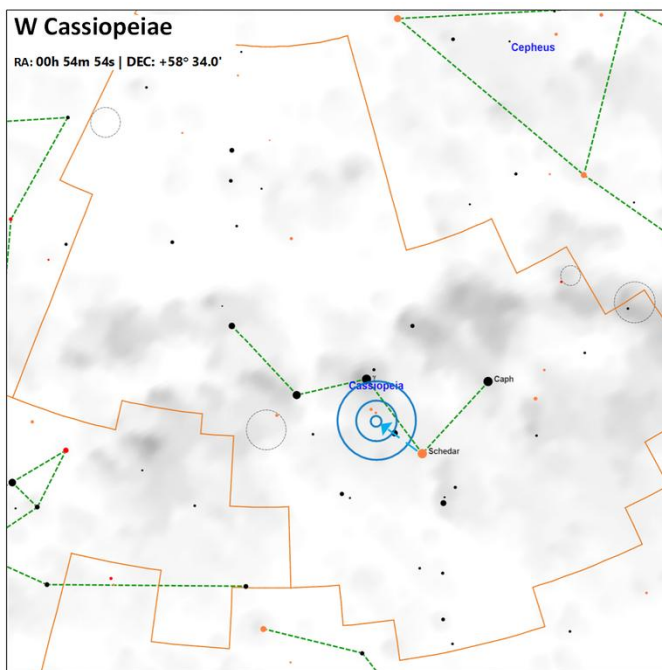


Constellation Guide

NGC 281 (EN || Mag=7.4 | Size=35' | SB=23.7 |) The Pacman Nebula is an emission nebula located in the [Perseus Spiral Arm](#) of the Milky Way about 9,500 light years away. NGC 281 is associated with the open cluster IC 1590 and several Bok globules have been identified in this region.

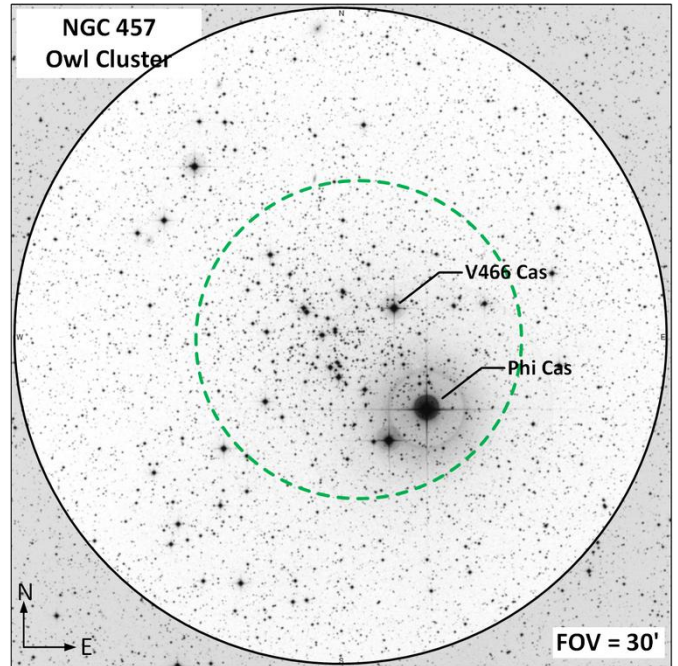
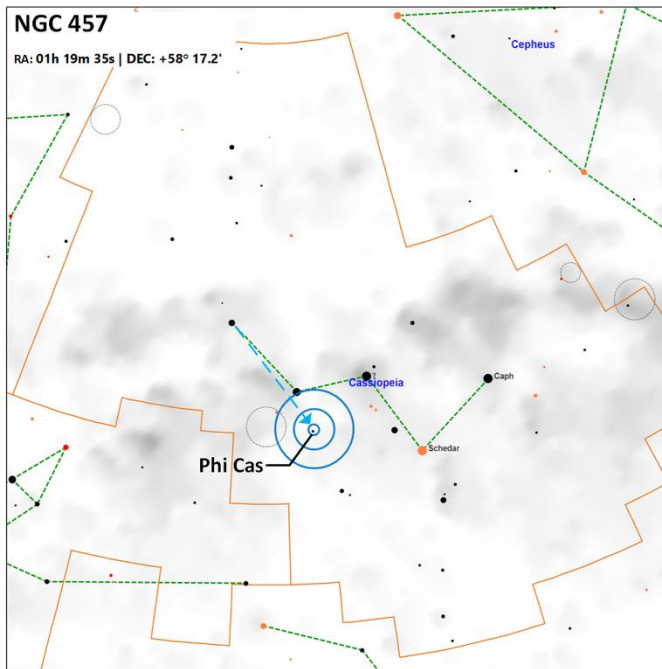


W Cas (CS || Mag=9.0 | Mag Range= 7.8 to 12.5 | Period=1.1y | Spec=C7,1e | BV=+3.6 | Color=deep red |) A pulsating Mira-type variable with a period of 408 days. With a BV value of +3.6 this star should appear very red.

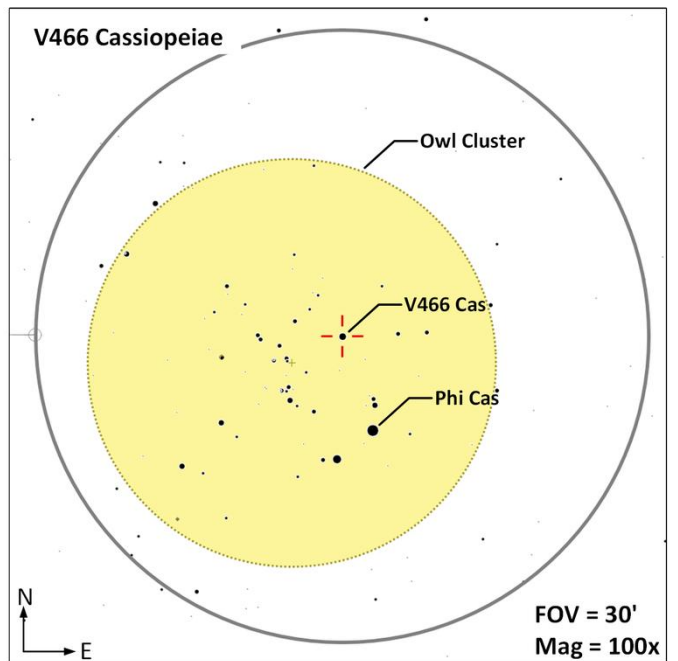
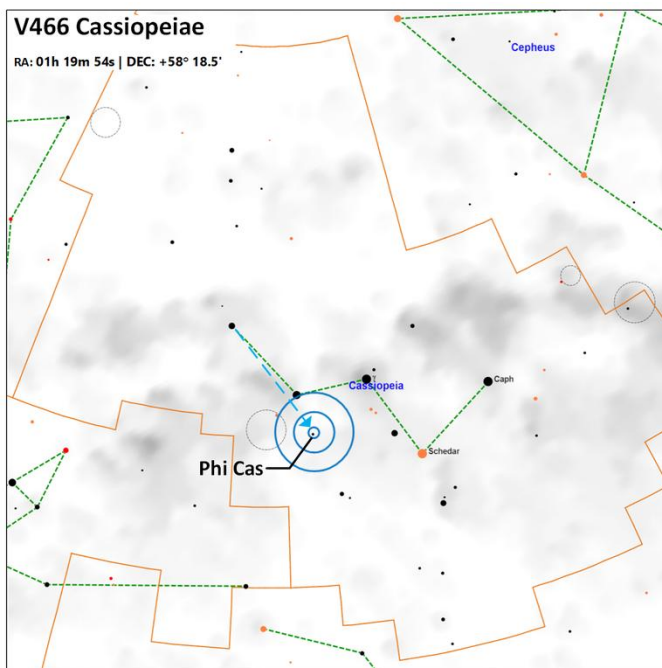


Constellation Guide

NGC 457 (OC || Mag=6.4 | Size=13' | SB=20.6 | mBortle=9 | mApt=60mm | MC=II3r) NGC 457 lies about 7,900 light-years away and is roughly 21 million years old; around 60 stars are considered true members. After Phi Cas, the next brightest star in the field is the red supergiant variable V466 Cas, which is treated as a cluster member. This is a favorite open cluster for many astronomers.

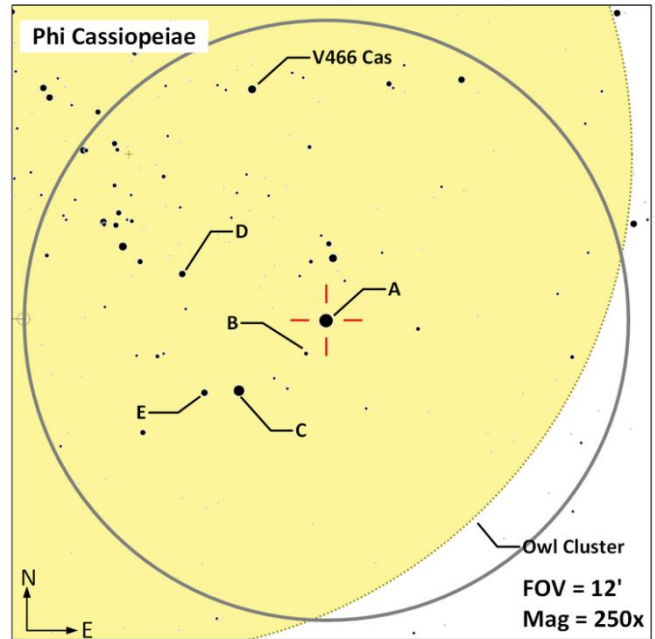
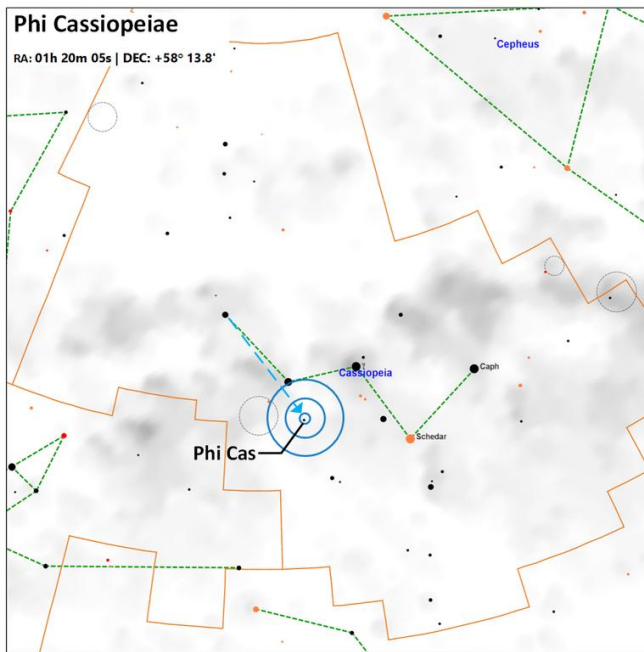


V466 Cas (VS || Mag=8.6 | mBortle=9 | mApt=50mm | MC=M1.5I) A variable star appearing in the Owl Cluster.

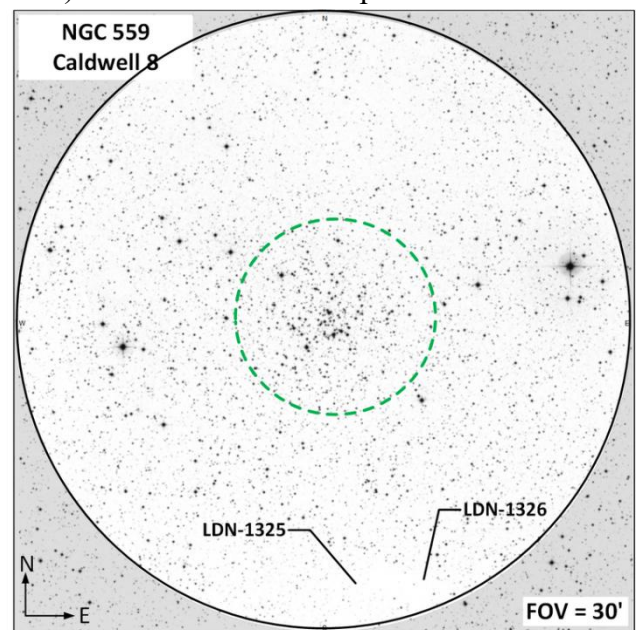
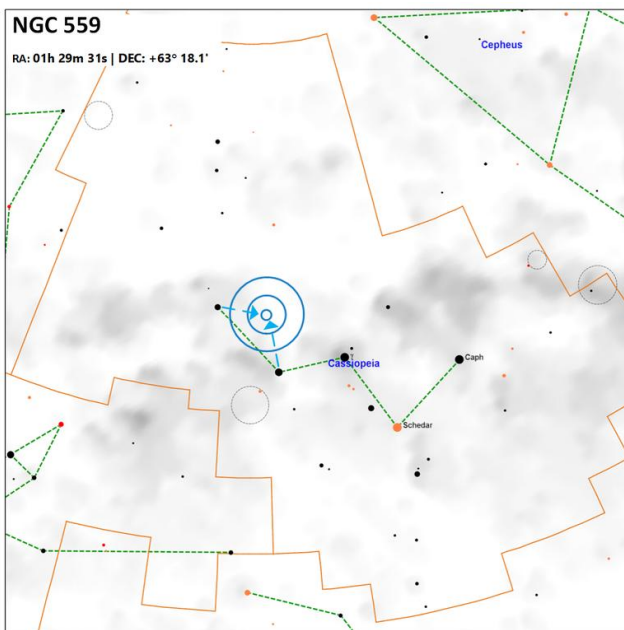


Constellation Guide

Phi Cas (DS || AC | Mag=5.1,7 | Sep=134" | PA=231° | mBortle=9 | mApt=50mm | Spec=F0Ia, B6Ib | Color=yellow-white, blue-white |) Listed as a quintuple star system, none of the components in this system are verified physical components. This is common with many multiple star systems in open clusters; it seems difficult to determine what stars in open clusters are physically associated with each other or just members of the cluster. Most astronomers observe the AC components as a double star system. While the distance to the AC components matches the open cluster distance, the A component is one of the most luminous stars known. Some consider membership to NGC 457 doubtful because the A & C components are so much brighter and evolved than the rest of the members of the cluster.

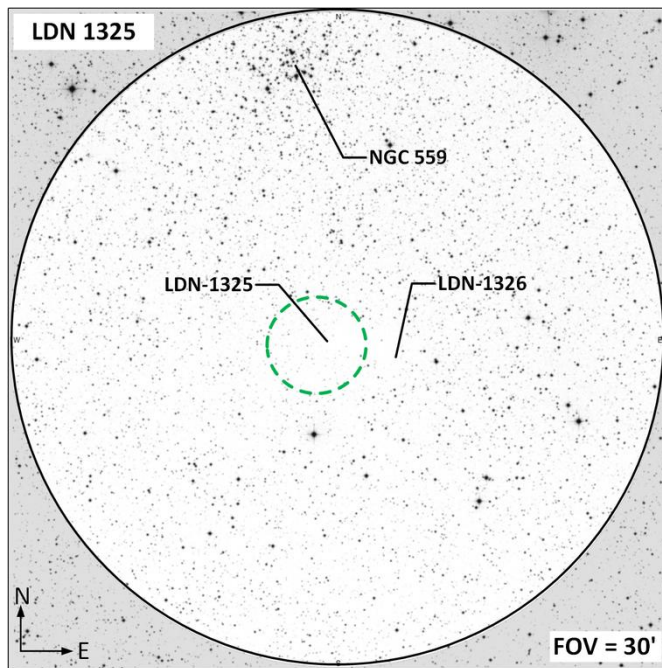
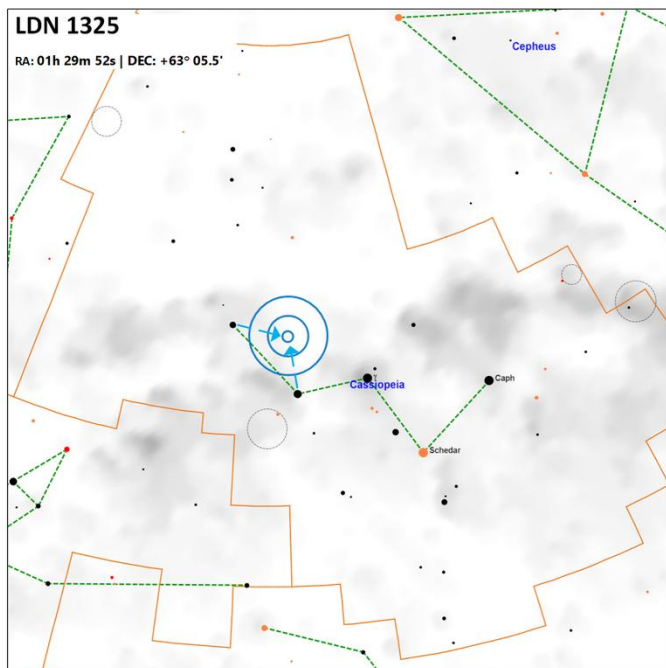


NGC 559 (OC || Mag=9.5 | Size=9' | SB=22.9 | mApt=250mm | MC=11m |) Caldwell 8 is located 7,900 light years away. There are two small dark nebulae (LDN 1325, 1326) located close to this open cluster.

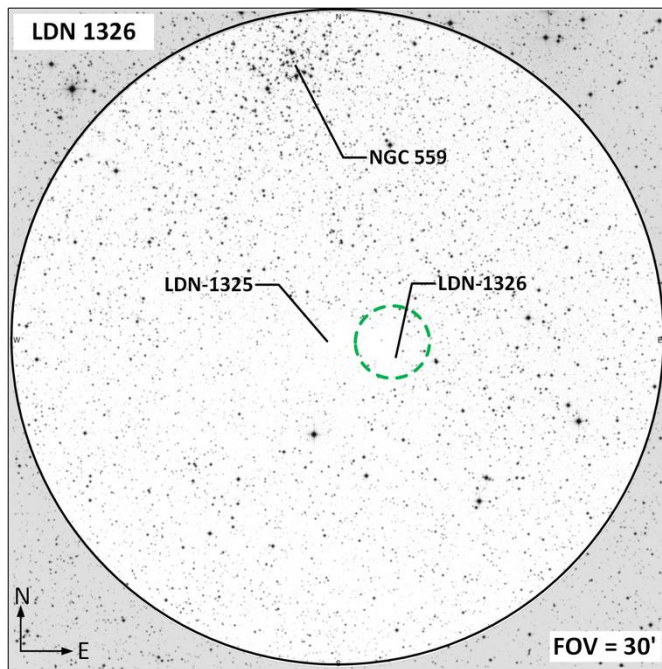
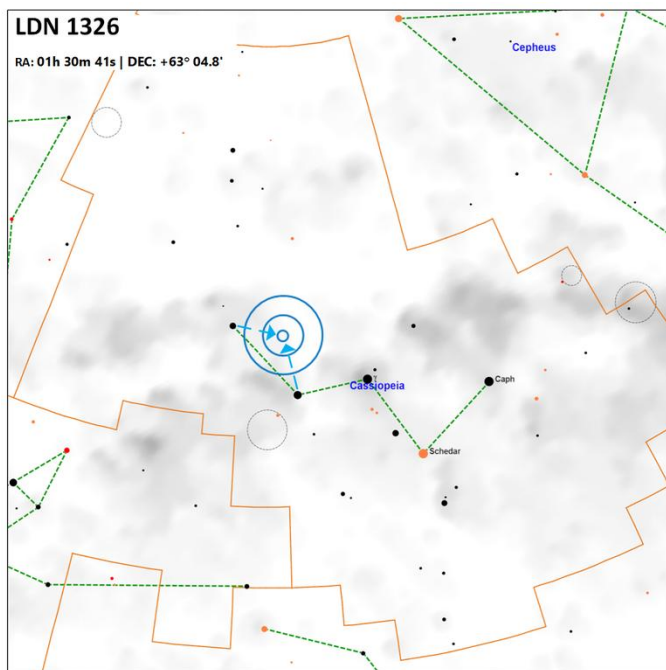


Constellation Guide

LDN 1325 (DN || Size=1.9' | mBortle=4 | mApt=114mm | Opacity=5 ||) A small dark nebula located close to the open cluster NGC 559.

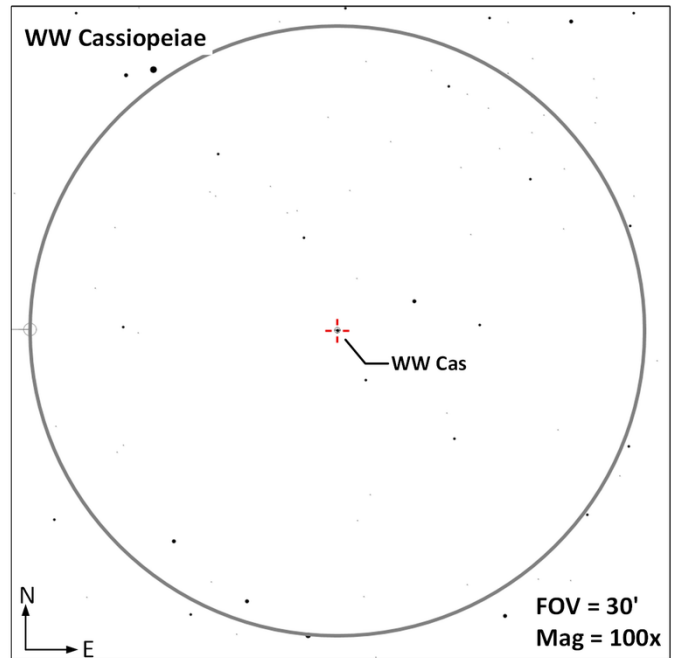
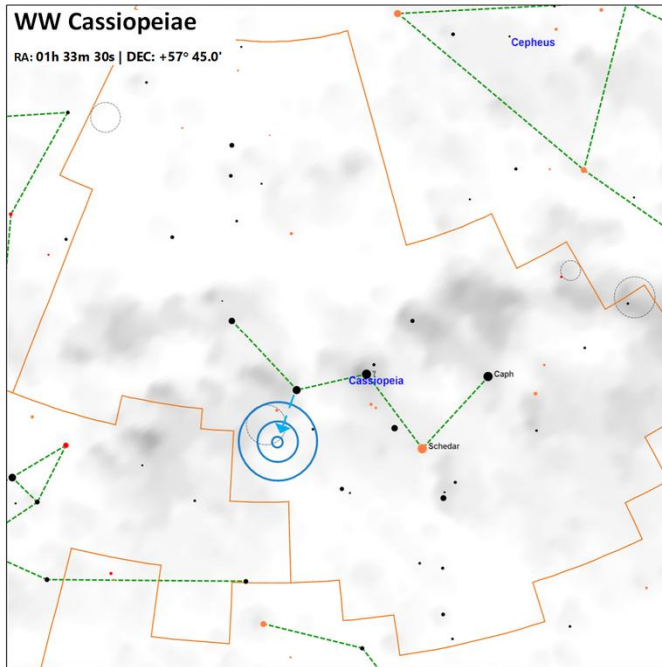


LDN 1326 (DN || Size=1.9' | mBortle=4 | mApt=114mm | Opacity=5 ||) A small dark nebula located close to the open cluster NGC 559.

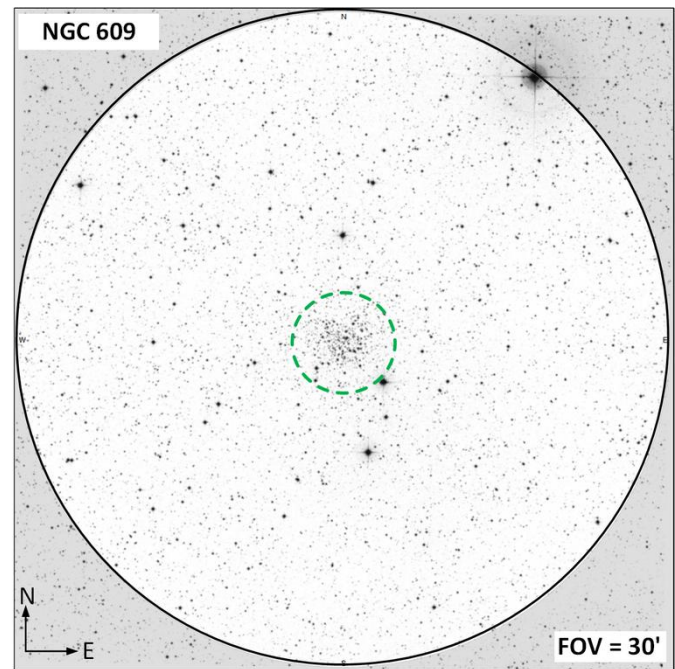
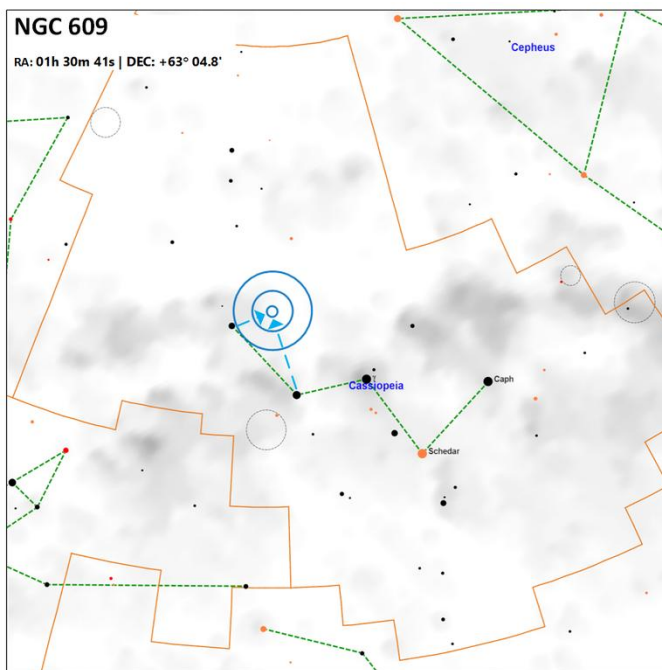


Constellation Guide

WW Cas (CS || Magnitude Range= 9.1 to 11.7 | Spec=C5,5 | BV=+2.1 | Color=deep red |) A variable carbon star located 1,200 light years away with an unknown period.

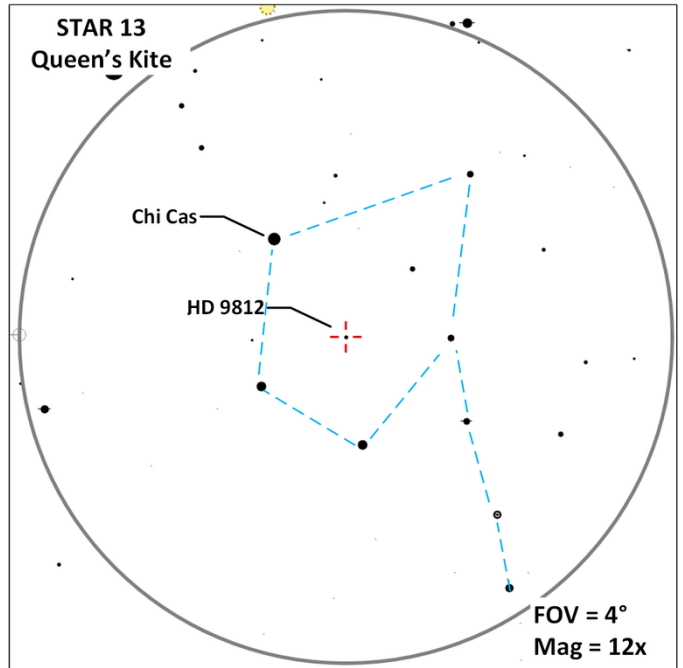
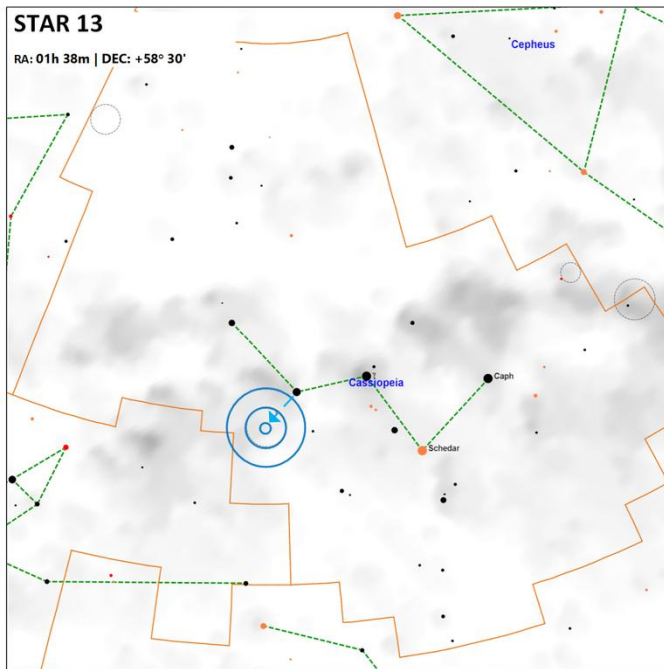


NGC 609 (OC || Mag=11 | Size=3' | SB=22.0 | MC=II3r |) A small open cluster located 13,000 light years away with a physical diameter of 11 light years. Trumpler classification II-Detached with little central concentration, 3-Composed of bright and faint stars, r-Rich cluster with over 100 stars. Appears on the RASC Deep Sky Challenge list.



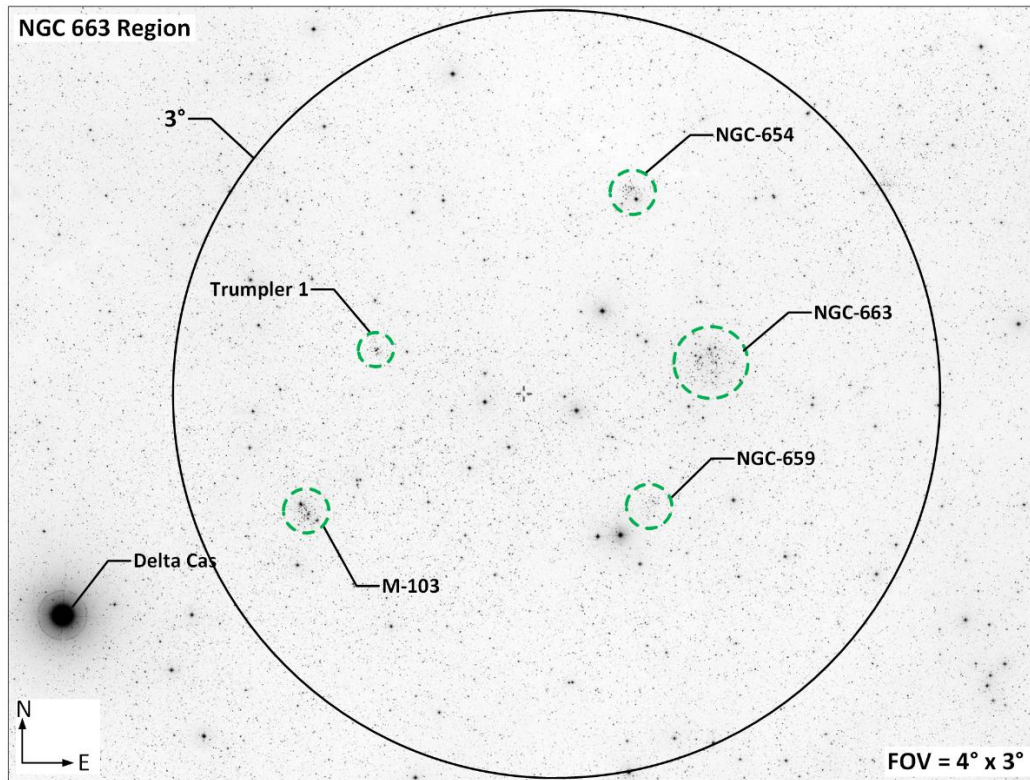
Constellation Guide

STAR 13 (AS || Size=220'x160' | Ref Star: HD9812; SAO-22441; HIP 7559 |) The stars in Queen's Kite, including Chi Cas, form a rough pentagon shape. The stars are of magnitude 6 and 7. Because of the size of the Queen's Kite ($3.7^\circ \times 2.7^\circ$), it is a nice target for binoculars.



Constellation Guide

Cassiopeia OB8 Association



Cas OB8 is a group of young clusters and scattered supergiants in the Perseus Arm, centered on NGC 663, its largest cluster. In 1964 McCuskey and Houk studied the five clusters in this association (Trumpler 1, NGC 581 = M103, NGC 654, NGC 659 and NGC 663). Their distance estimates ranged from 1.8 to 2.3 kpc, and they concluded that within the uncertainties all five are at the same distance in the Perseus Arm.

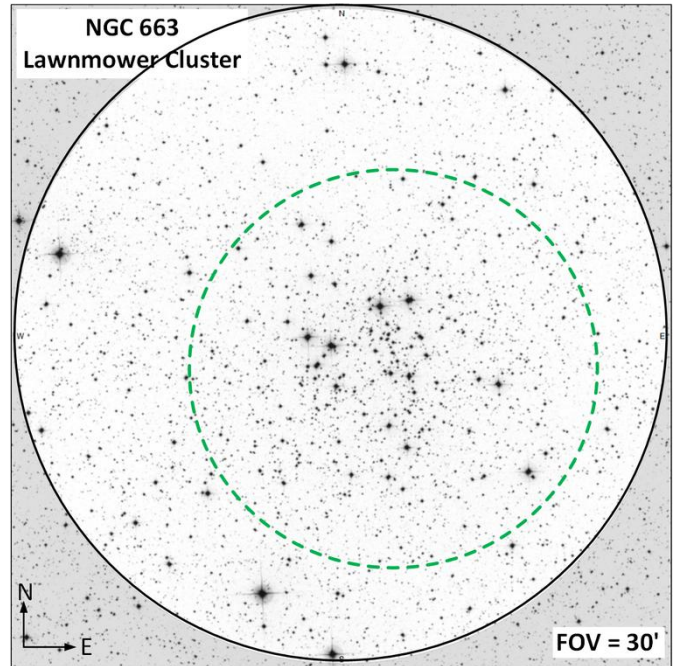
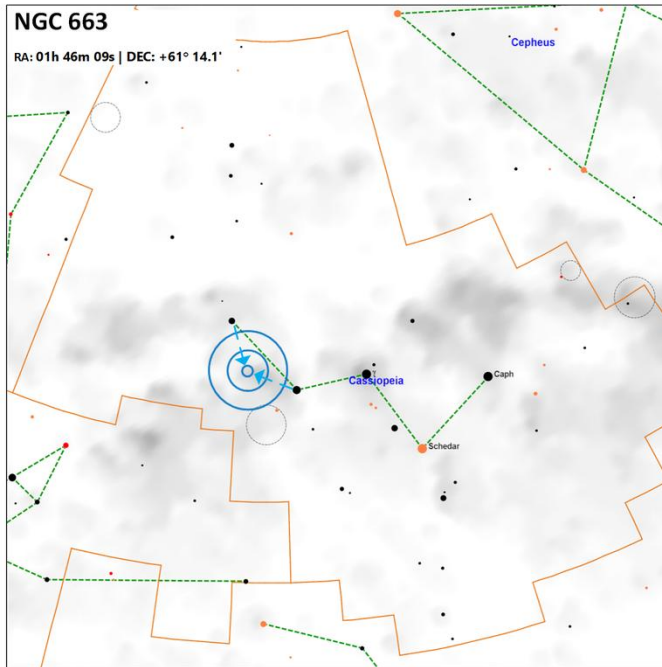
A 2025 study of NGC 663 (Marco et al.) describes how the pieces fit: NGC 654 lies about 30 parsecs north of NGC 663 and contains one blue and one yellow supergiant; the smaller NGC 659 lies about 25 parsecs to the southwest with no supergiants; and NGC 581 (M103) lies about 65 parsecs to the west with a blue and a red supergiant. NGC 663 itself has many supergiants and Be stars. The same study used Gaia data to identify 18 member clusters.

For the observer, this is a rare chance to sweep through a whole OB association in one low-power field: NGC 663, NGC 654 and NGC 659 fit within about a degree, with M103 and Trumpler 1 a short hop to the southwest.

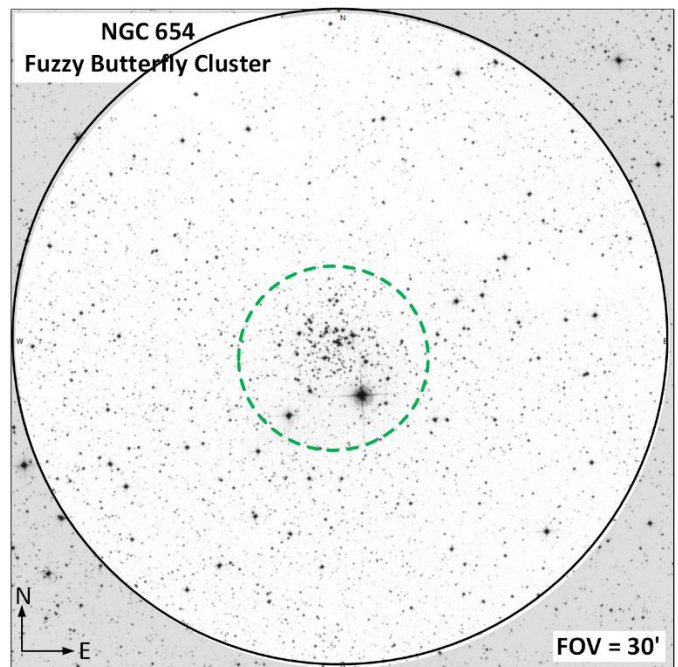
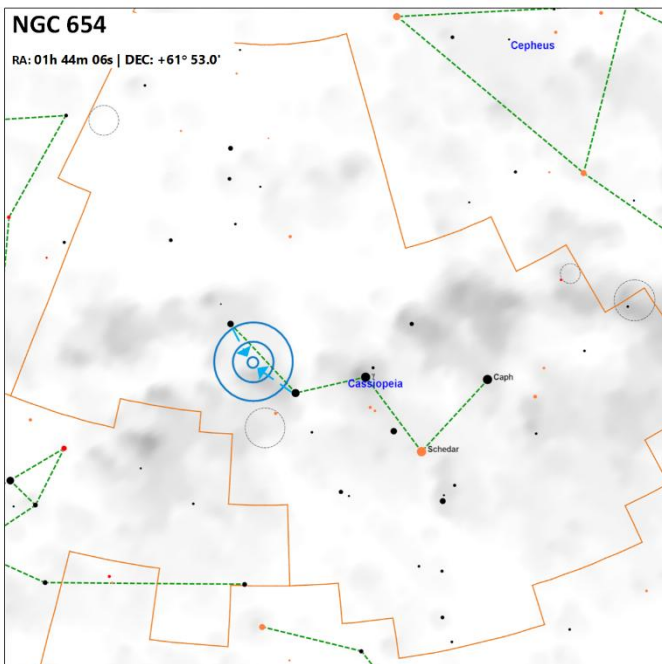
Object	Role	Type	RA (J2000)	Dec (J2000)	Mag	Size
NGC 663	Primary	OC	01h 46m 09s	+61° 14' 06"	7.1	16
NGC 654	Member	OC	01h 44m 04s	+61° 53' 26"	6.5	5'
NGC 659	Member	OC	01h 44m 24s	+60° 40' 26"	7.9	5'
M 103	Member	OC	01h 33m 27s	+60° 39' 13"	7.4	5'
Tr 1	Member	OC	01h 35m 44s	+61° 17' 16"	8.1	4'

Constellation Guide

NGC 663 (OC || Mag=7.1 | Size=16' | SB=21.7 | mBortle=9 | mApt=80mm | MC=II3r |) The Lawnmower Cluster (Caldwell 10) is on the SAC Best 110 NGC objects list and is a fine cluster. Located 7,900 light years away with a Trumpler class of II-Detached with little central concentration, 3-Composed of bright and faint stars, r-Rich cluster with over 100 stars.

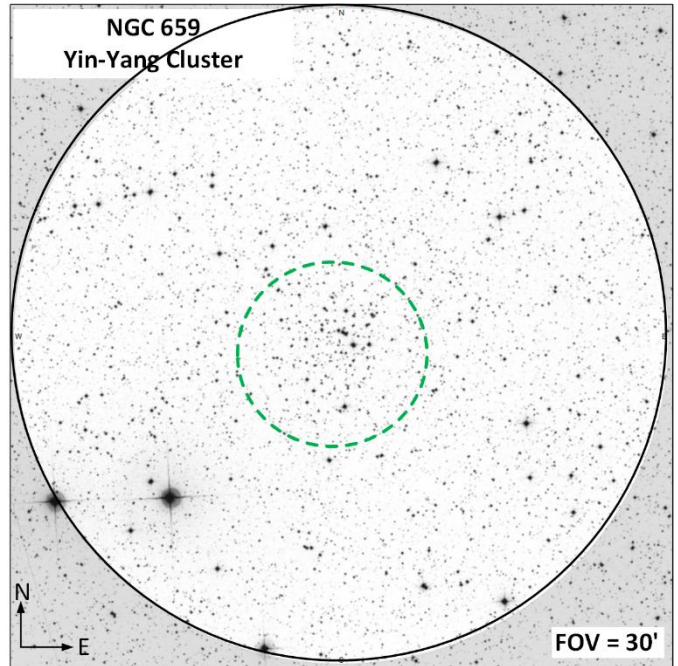
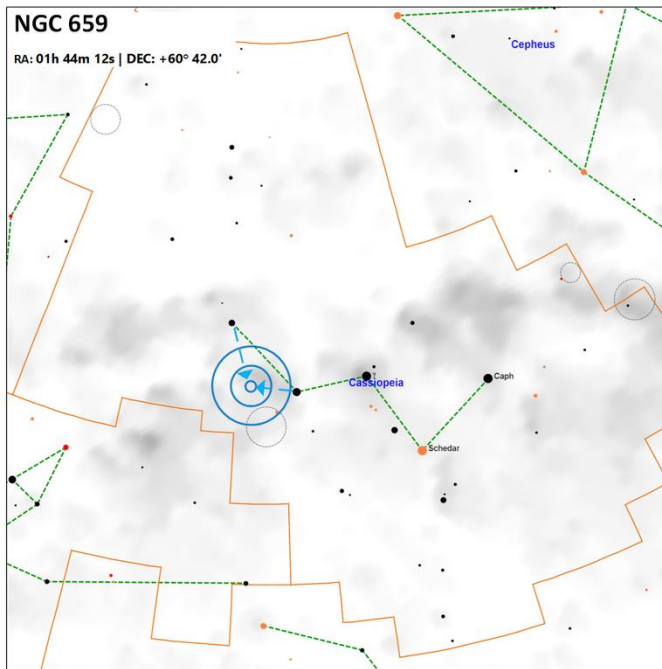


NGC 654 (OC || Mag=6.5 | Size=5' | SB=18.6 | mBortle=9 | mApt=60mm | MC=II2r |) An open cluster located 7,900 light years away and is considered a young cluster at 15 – 40 million years old. Trumpler classification is II-Detached with little central concentration, 2-Medium range of brightness between stars in the cluster, r-Rich cluster with over 100 stars.

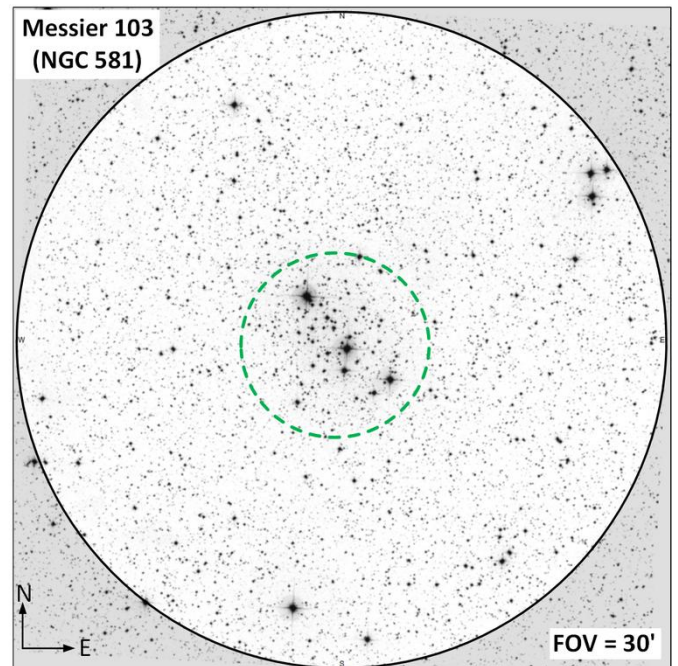
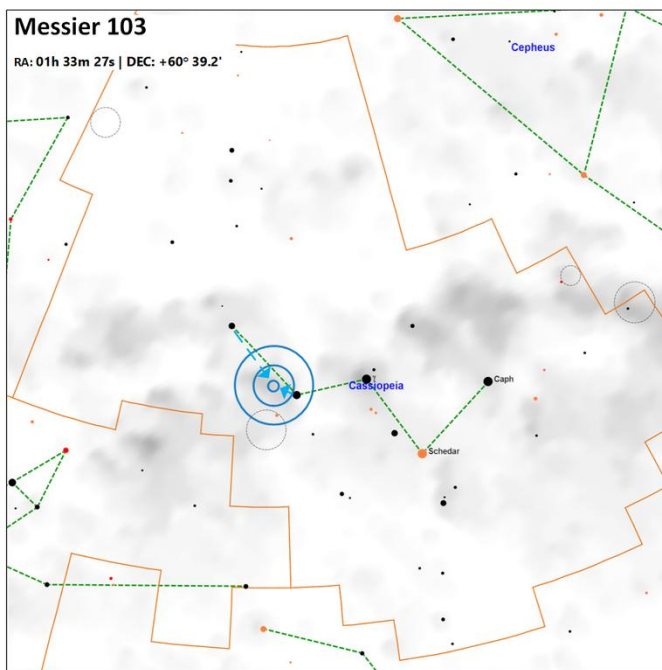


Constellation Guide

NGC 659 (OC || Mag=7.9 | Size=5' | SB=20.0 | mBortle=9 | mApt=114mm | MC=I2m |) Located 6,300 light years away. Trumpler classification is I-Detached cluster with strong central concentration, 2-Medium range of brightness between stars in cluster, m-Medium rich cluster with 50 – 100 stars.

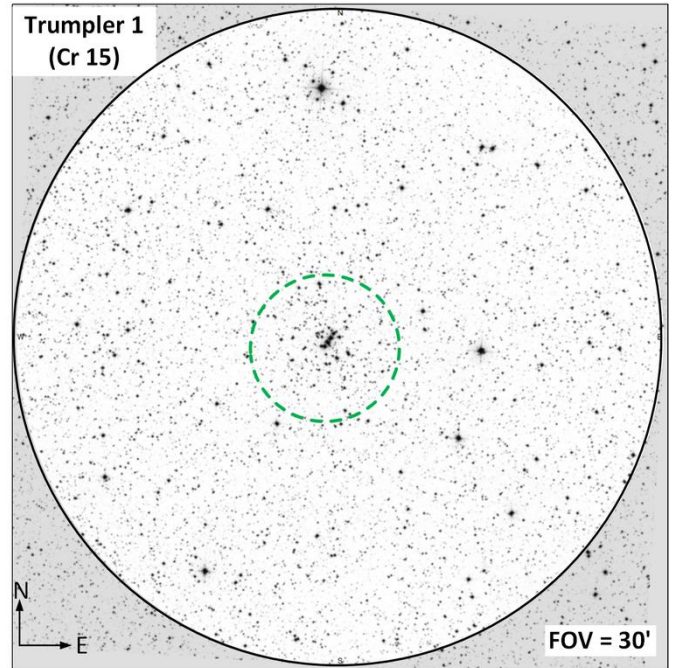
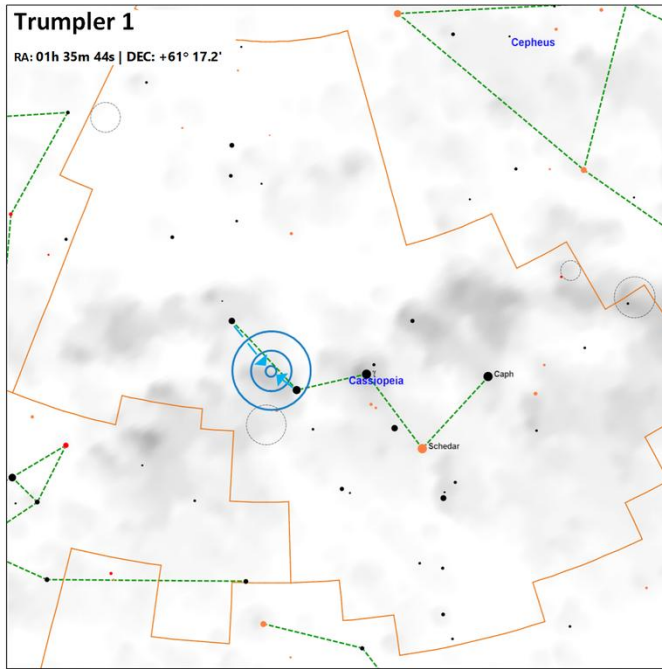


M 103 (OC || Mag=7.4 | Size=5' | SB=19.5 | mBortle=9 | mApt=102mm | MC=II2m |) Located 9,400 light years away with a physical diameter of 15 light years, this cluster has a magnitude 10.8 red giant near the center of the cluster. Trumpler class is II-Detached with little central concentration, 2-Medium range of brightness between stars, m-Medium rich cluster with 50-100 stars.

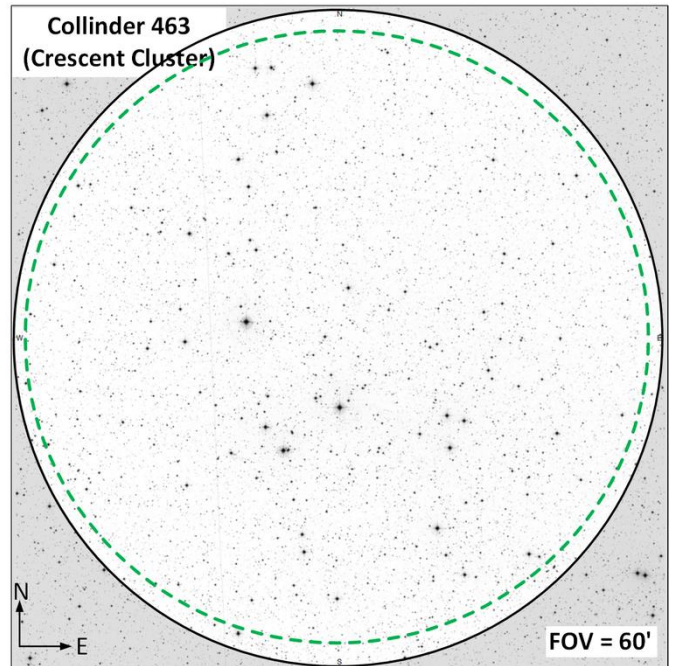
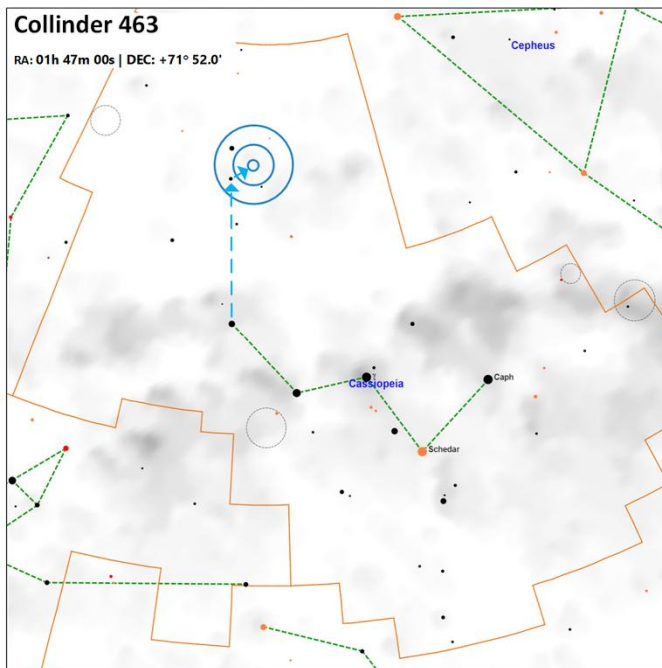


Constellation Guide

Trumpler 1 (OC || Mag=8.1 | Size=4' | SB=19.7 | mBortle=7 | mApt=114mm | MC=II2p |) Located 8,053 light years away with a Trumpler classification of II-Detached with little central concentration, 2-Medium range of brightness between stars, p-Poor cluster with fewer than 50 stars.

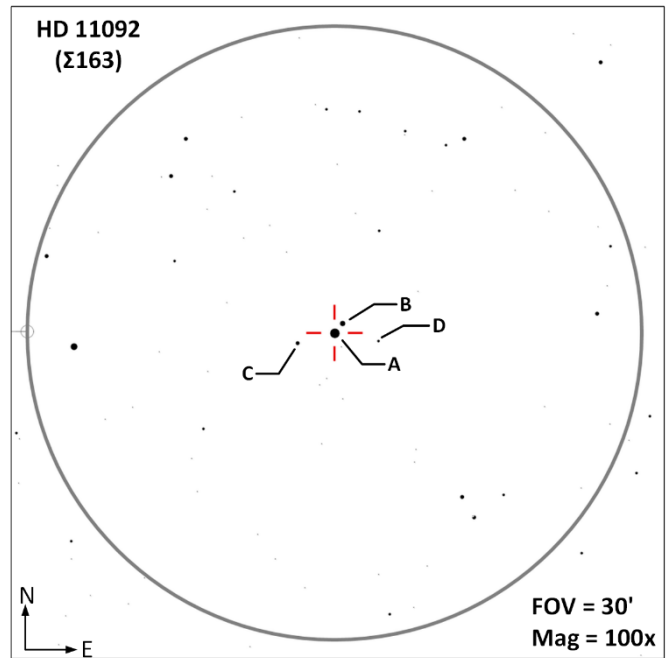
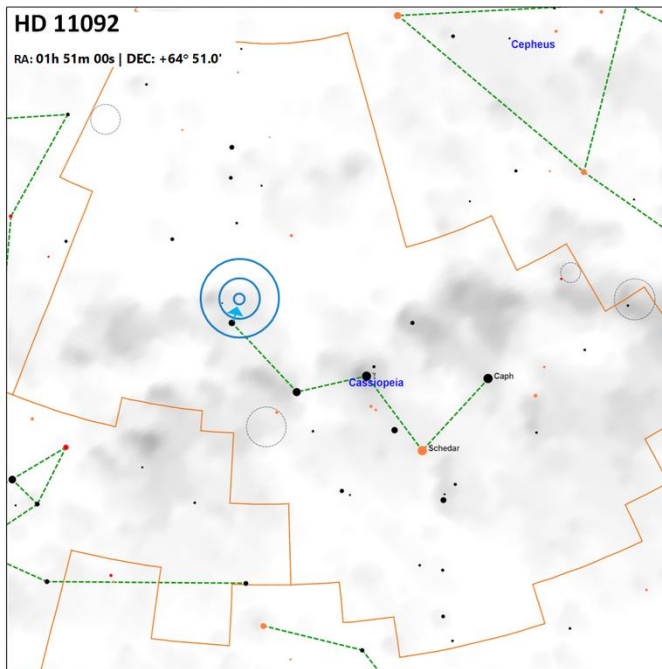


Collinder 463 (OC || Mag=5.6 | Size=57' | SB=17.4 | mBortle=9 | mApt=50mm | MC=III2m |) Open cluster located 2,300 light years away with a physical diameter of 38 light years. Trumpler class is III-Detached cluster with no noticeable concentration, 2-Medium range of brightness between stars in the cluster, m-Medium rich cluster with 50-100 stars. This is a large cluster best viewed with binoculars.

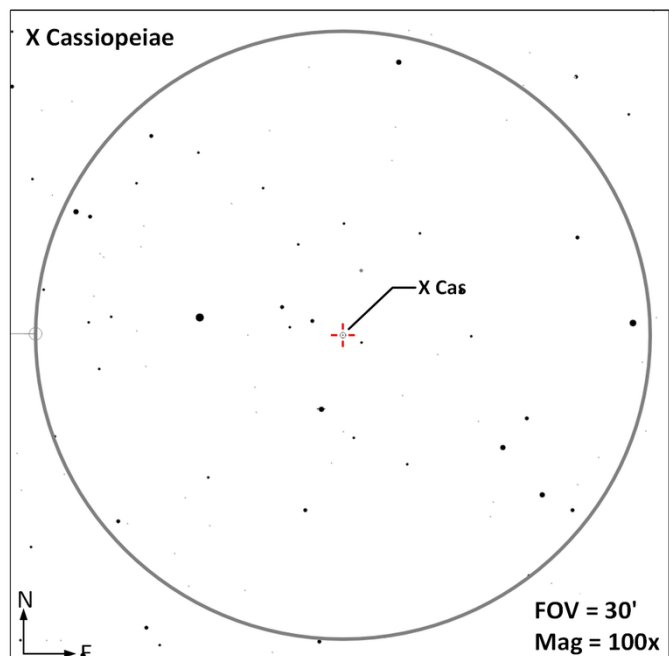
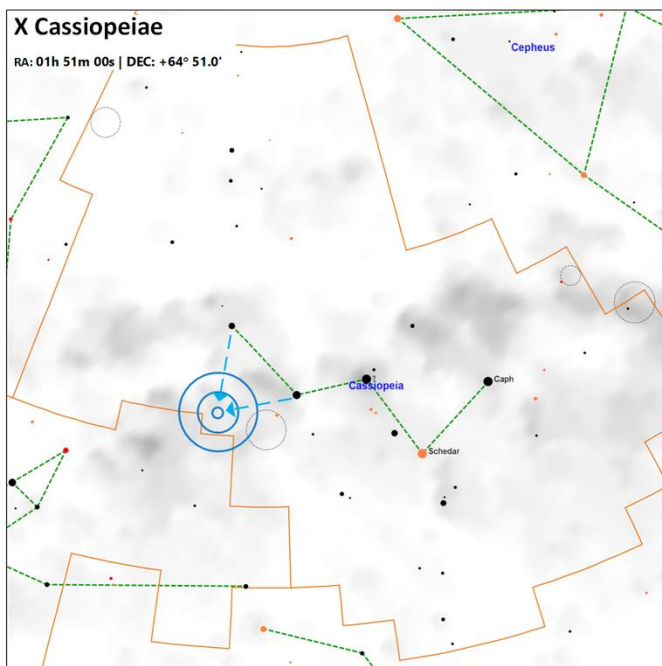


Constellation Guide

HD 11092 (DS || AB | Mag=6.8,9.1 | Sep=34.5" | PA=37° | mBortle=9 | mApt=50mm | Spec=K4Ib-IIa, ? | Color=orange, blue) Classified as a quadruple star system, but none of the components are physically associated with each other. This system is on the RASC Color Stars list and is noted as having orange and blue components.

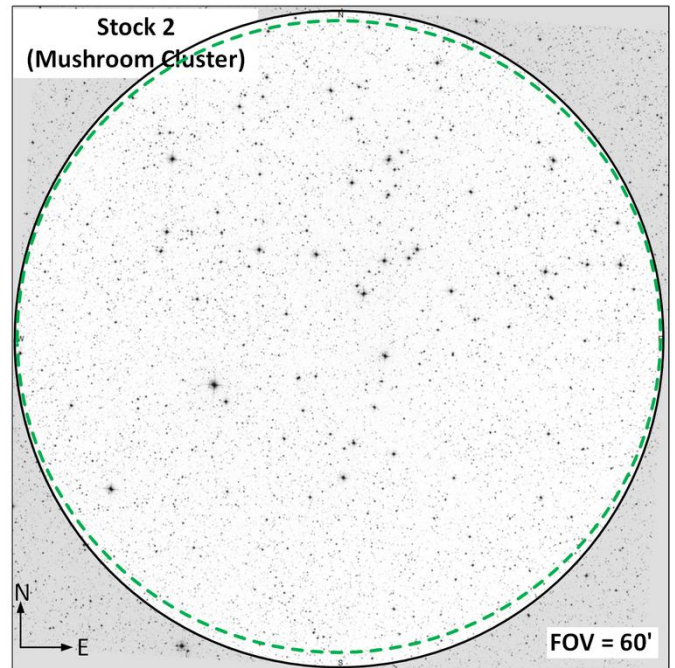
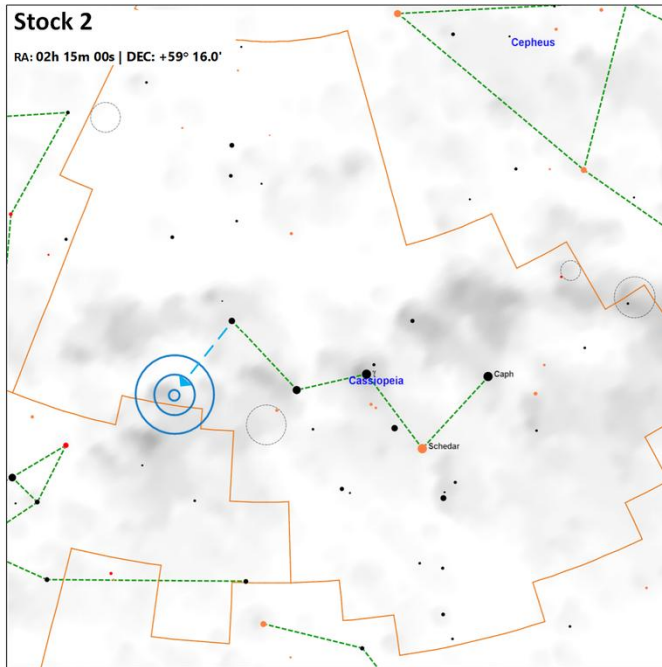


X Cas (VS || Mag=9.4 | Mag Range = 9.2 to 12.8 | Period= 1.2 y | BV=+2.11 | mBortle=9 | mApt=50mm | MC=C0ev) This variable star is located 943 light years away and is a Mira-type variable with a period of 438 days.

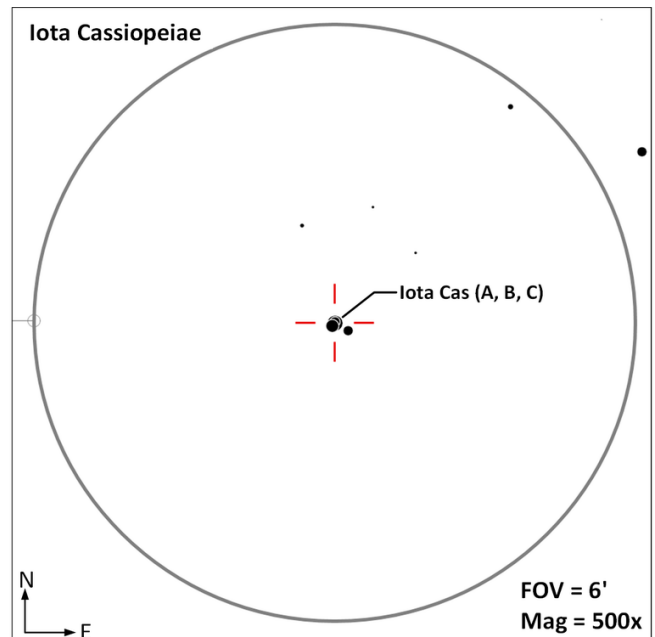
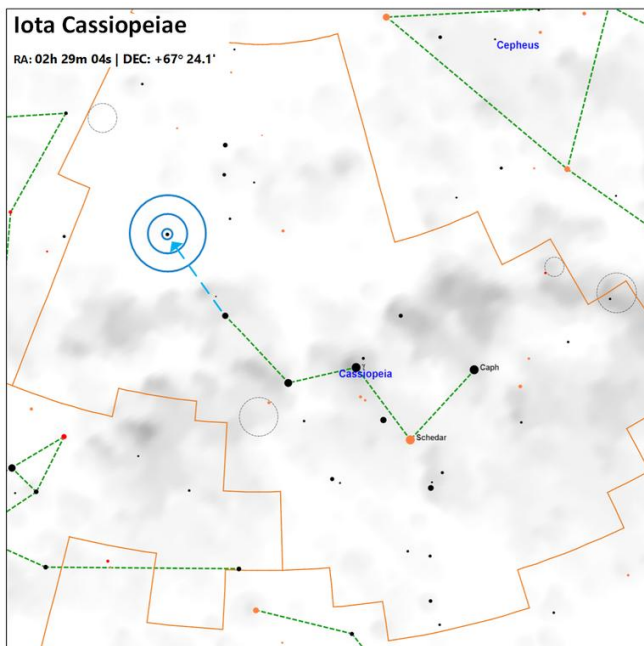


Constellation Guide

Stock 2 (OC || Mag=4.4 | Size=60' | SB=21.9 | mBortle=9 | mApt=50mm | MC=I2m |) A large open cluster located 990 light years away with a physical diameter of 17 light years. Trumpler class I-Detached with strong central concentration, 2-Medium range of brightness between stars, m-Medium rich cluster with 50-100 stars. This object is best viewed with binoculars.

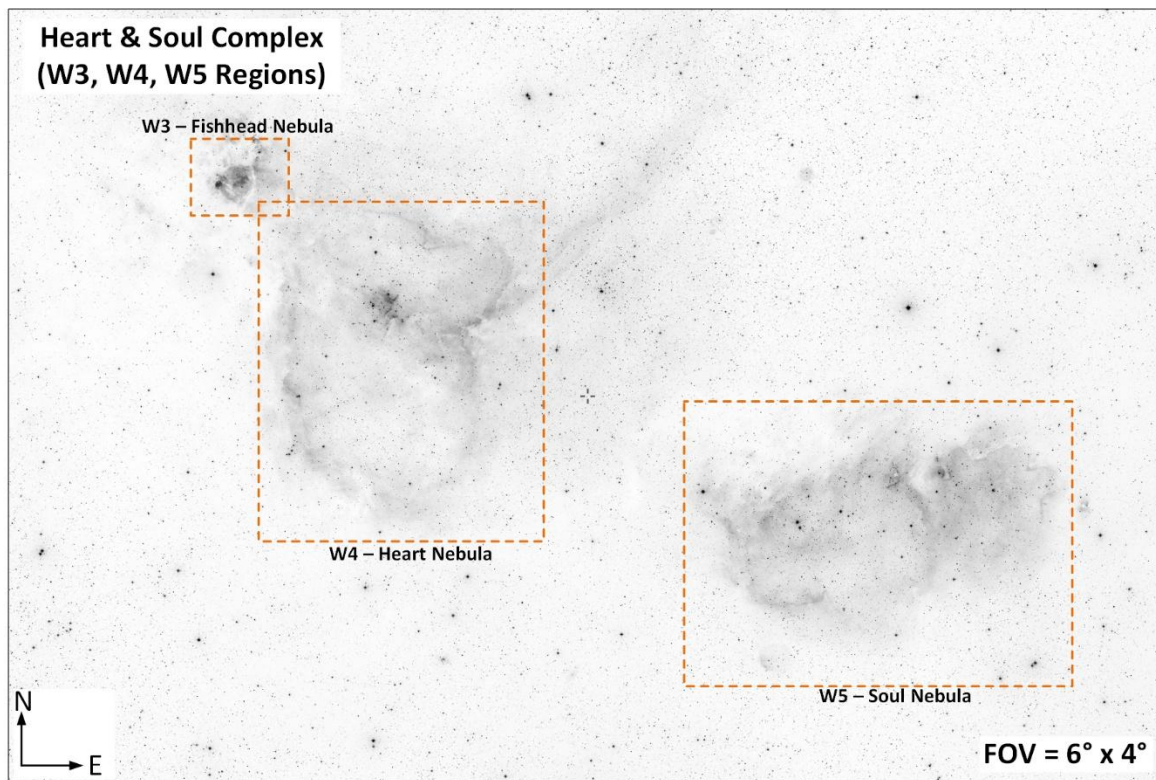


iota Cas (MS-3 || AB | Mag=4.7,6.9 | Sep=3" | PA=231° | mBortle=9 | mApt=60mm | Spec=A5p, F5V | Color=white, yellow-white || BC | Mag=6.9,9.1 | Sep=8.5" | PA=99° | mBortle=9 | mApt=50mm | Spec=F5V, G5 | Color=yellow-white, yellow || AC | Mag=4.7,9.1 | Sep=6.9" | PA=117° | mBortle=9 | mApt=50mm | Spec=A5p, G5 | Color=white, yellow |) A celebrated triple star system consisting of a brilliant white primary star with yellow and blue companions.



Constellation Guide

The Heart and Soul Complex (W3/W4/W5) – The Cassiopeia OB6 Association



The Heart and Soul nebulae are parts of one physical complex, known to astronomers as the W3/W4/W5 complex after the radio sources catalogued by Westerhout. **W3** is the Fishhead Nebula (IC 1795 / NGC 896), **W4** is the Heart Nebula (IC 1805), and **W5** is the Soul Nebula (IC 1848). Together they form the **Cassiopeia OB6 association**. The Heart and Soul lie about 2.5° apart in the sky and are connected by a bridge of gas. The complex lies in the Perseus Arm of the Milky Way and is estimated to span 300 to 580 light years.

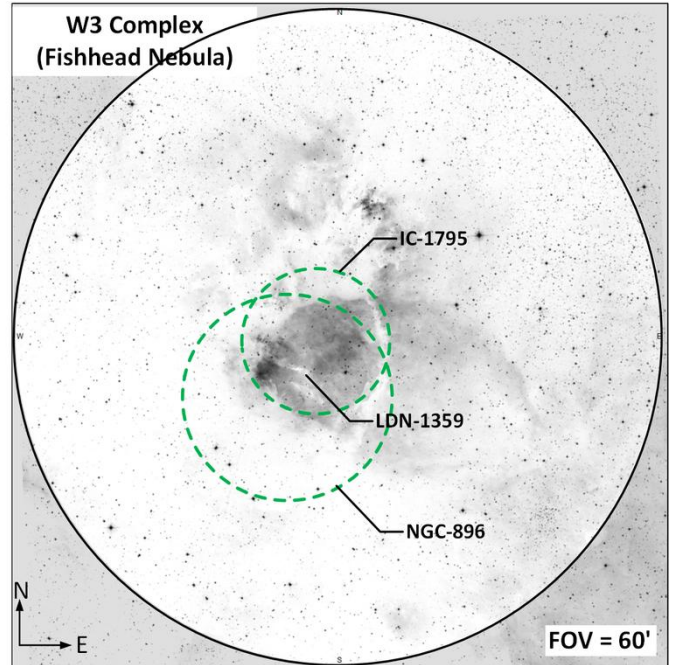
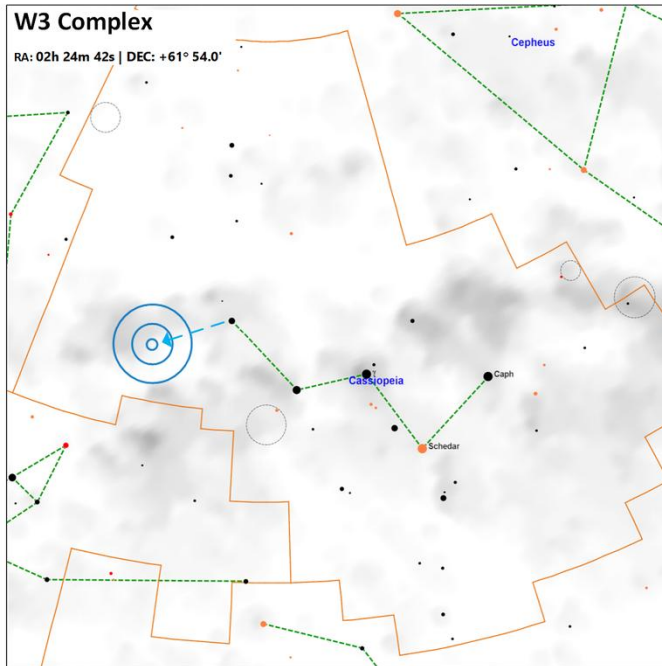
Three generations of star formation

Oey et al. (2005) argued that the W3/W4 region shows three generations of triggered star formation. The oldest generation created giant shells, 6–20 million years old, whose expansion triggered the formation of IC 1795 in W3. IC 1795, 3–5 million years old, then blew its own bubble, which in turn triggered the extremely young embedded regions W3 North, W3 Main and W3(OH), only 10,000–100,000 years old. The authors presented this age sequence as some of the first convincing evidence that superbubbles really do trigger new star formation. The Soul shows the same process.

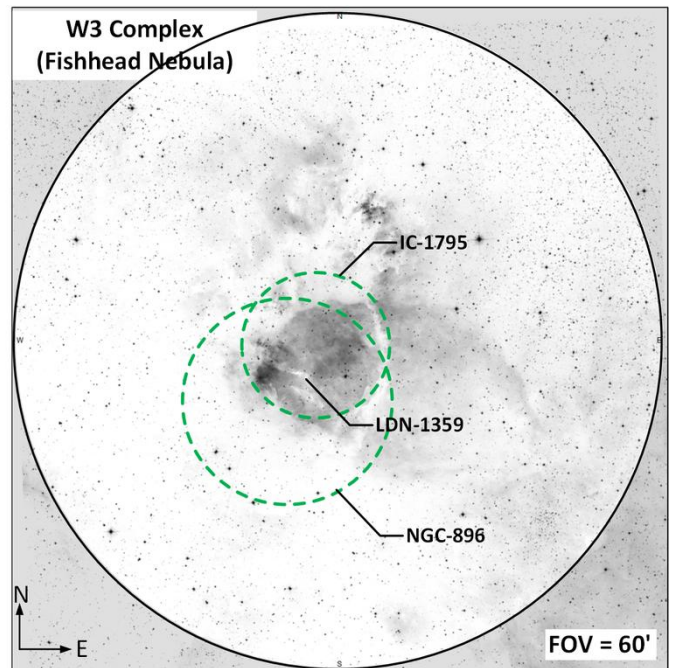
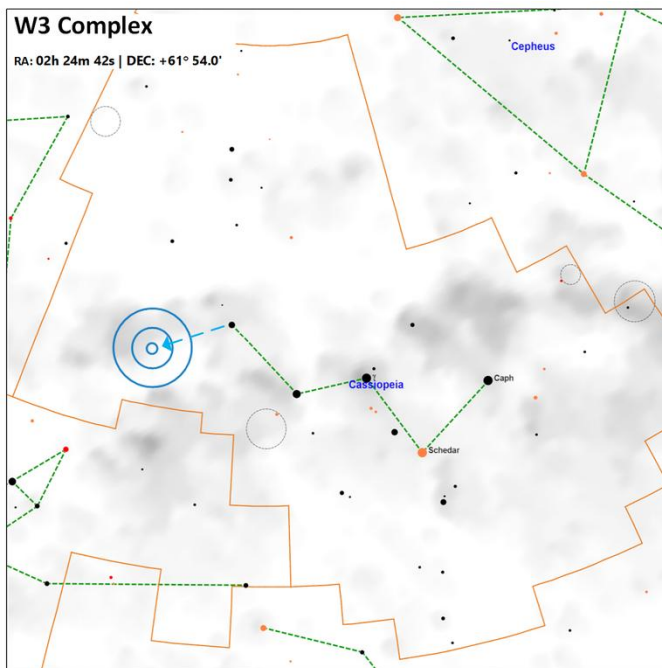
Like Orion and Carina, W5 contains large cavities carved by radiation and winds from its most massive stars, and studies find the stars getting progressively younger with distance from the cavity centers. In the eastern Soul, thin elephant-trunk structures all point toward the O star HD 18326, and some have young stars at their tips.

Constellation Guide

NGC 896 (EN || Mag=10 | Size=27'x13' | SB=25.0 | mApt=200mm |) The Fishhead Nebula is the brightest part of the W3 complex and was the first part of the nebula to be discovered.

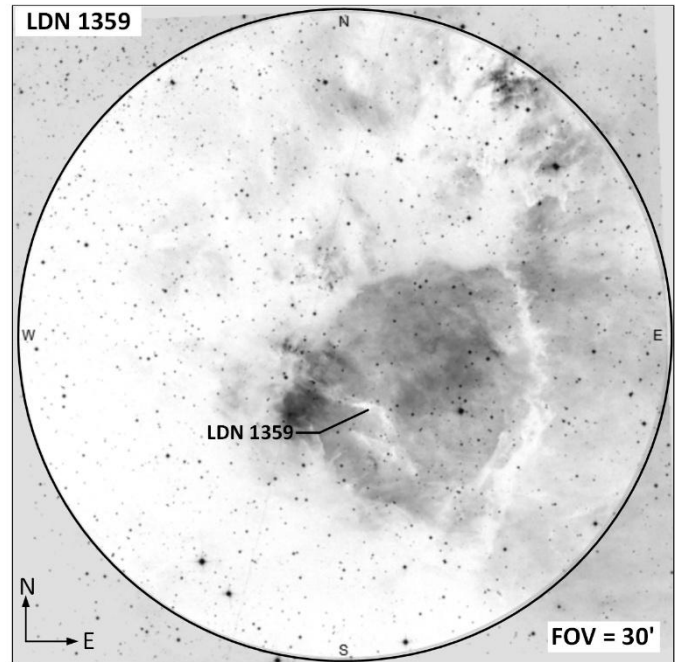
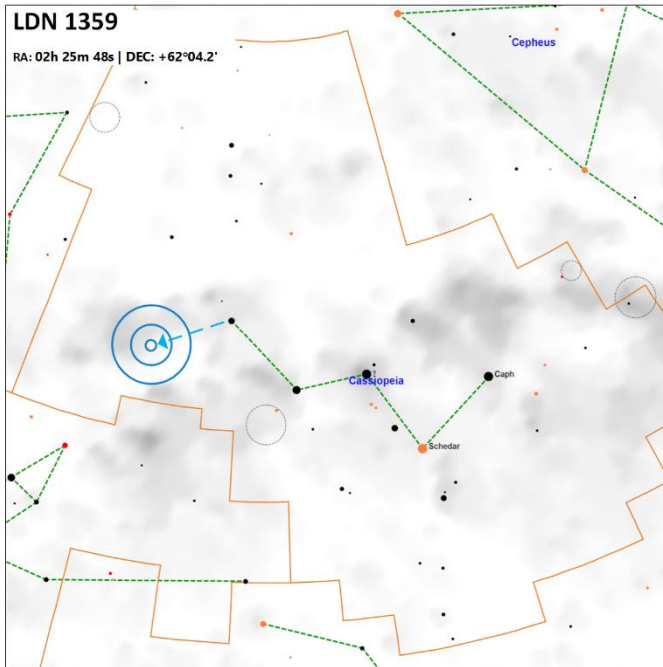


IC 1795 (EN || Mag=10 | Size=20' | SB=25.1 |) Part of the W3 cloud, one of the most intensively studied star-forming regions after Orion. The W3 molecular ridge formed from gas swept along the western edge of the expanding Heart Nebula.

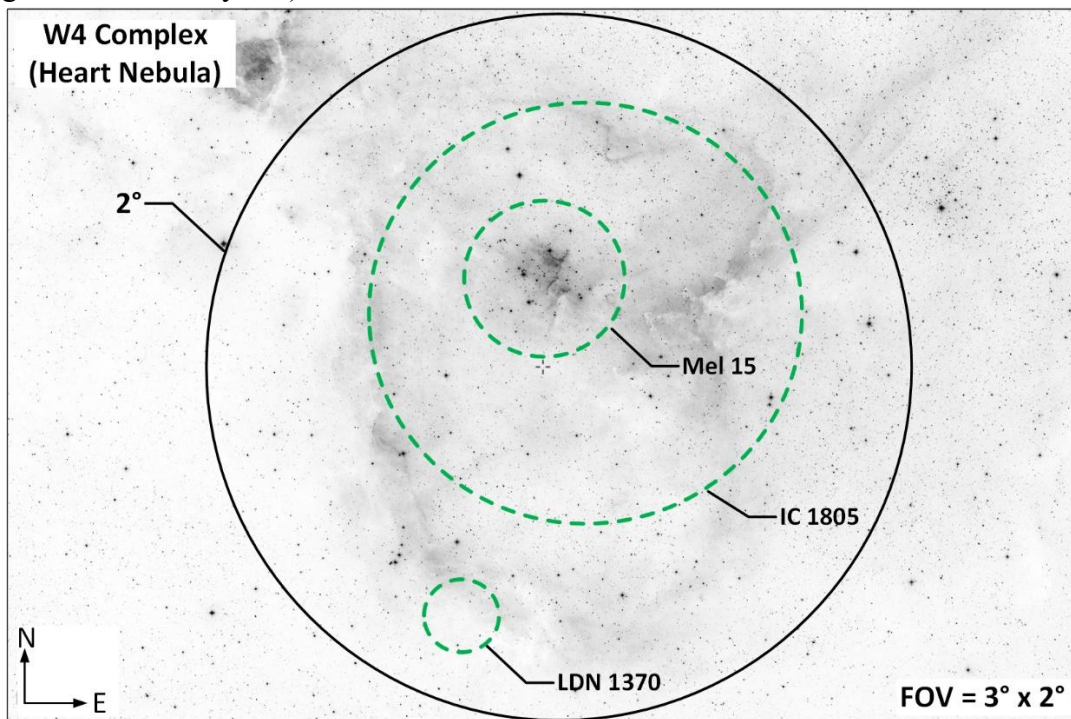


Constellation Guide

LDN 1359 (DN || Size=8.4' | mBortle=4 | mApt=50mm | Opacity=5 |) Part of the W3 cloud, dark nebula located inside the Fishhead Nebula (NGC 896).

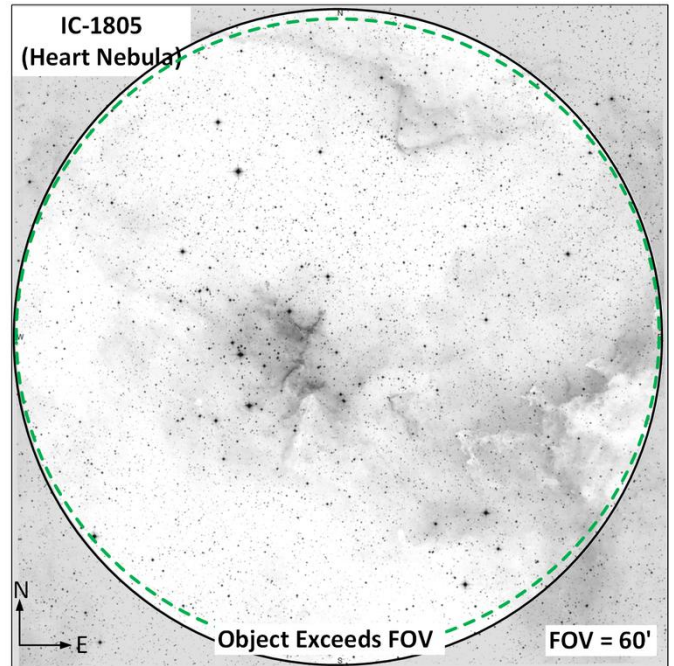
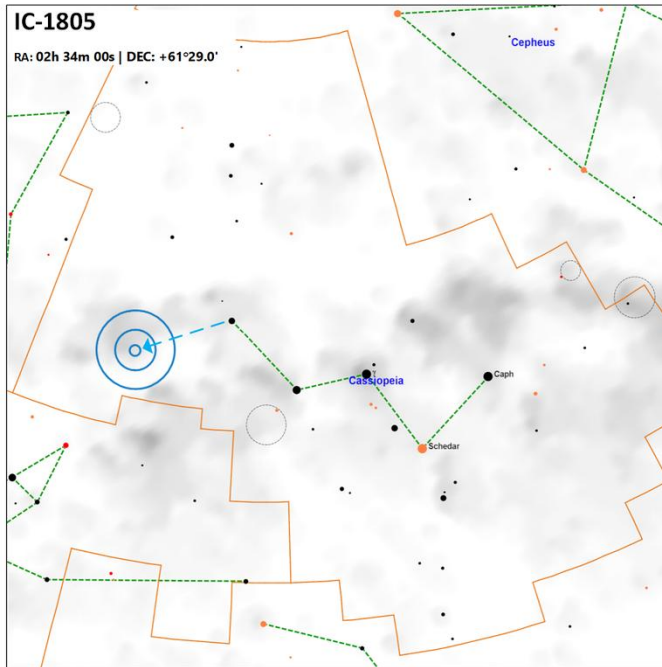


W4 Complex – The W4 Complex is known as the Heart Nebula and consists of the deep sky objects IC 1805, a combination of open cluster, nebula and dark nebula. The Heart Nebula itself is a cavity carved out by the open cluster, which contains nine known O stars. The cluster's main-sequence turnoff age is about 3.5 million years (other studies give 1–3 million years), and its total mass is about 2,700 solar masses.

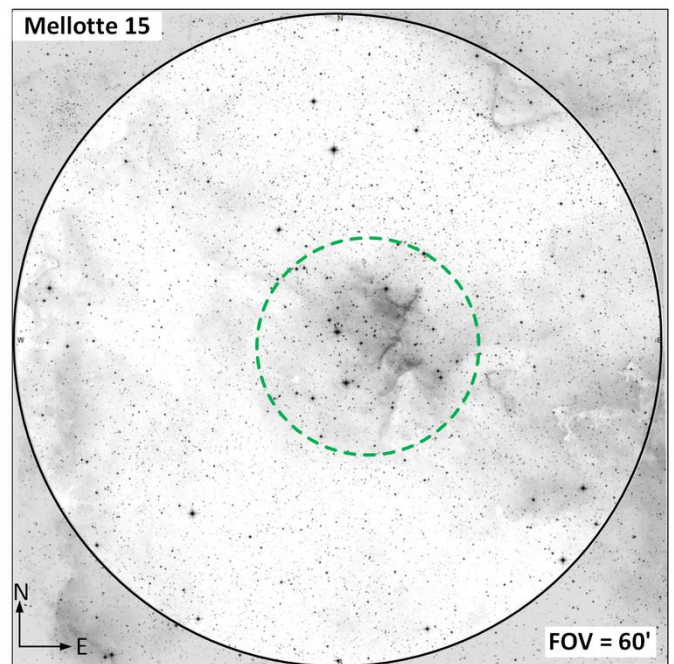
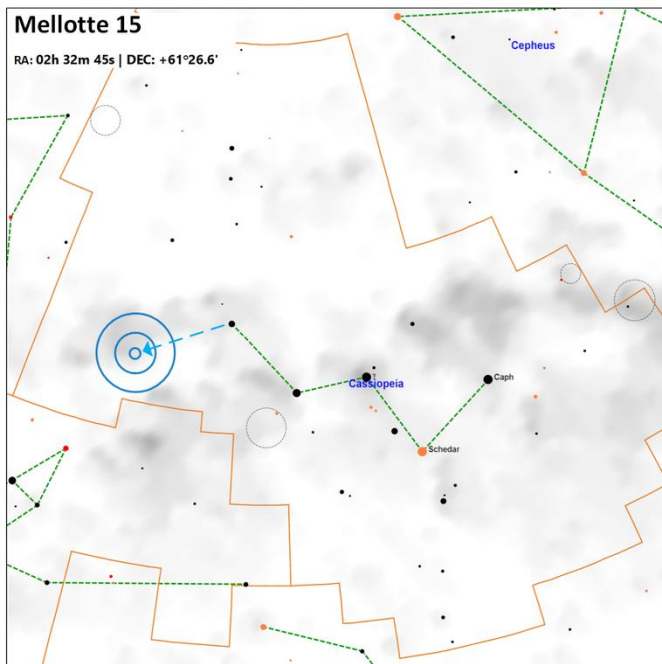


Constellation Guide

IC 1805 (OC, EN || Mag=6.5 | Size=45' | SB=23.4 | mBortle=9 | mApt=60mm |) Part of the W4 complex, the Heart Nebula is a large complex of faint nebulosity. Probably the best chance of seeing this object is with a large pair of binoculars.

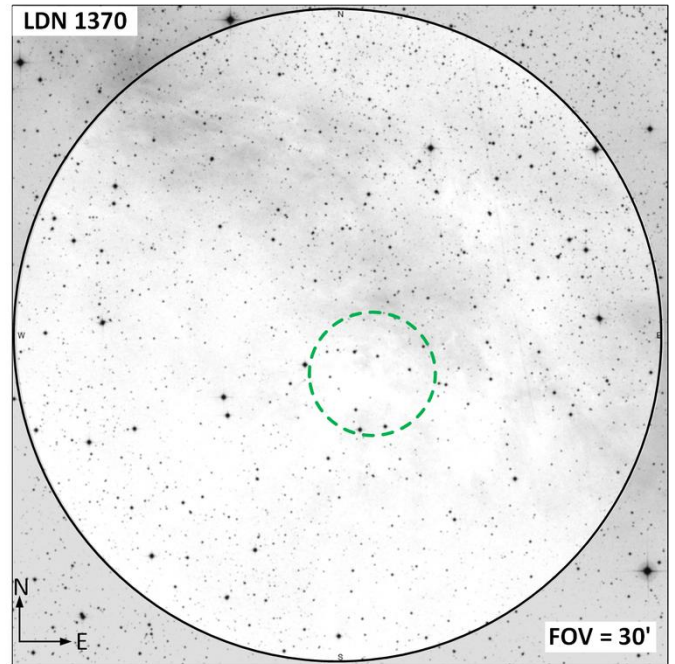
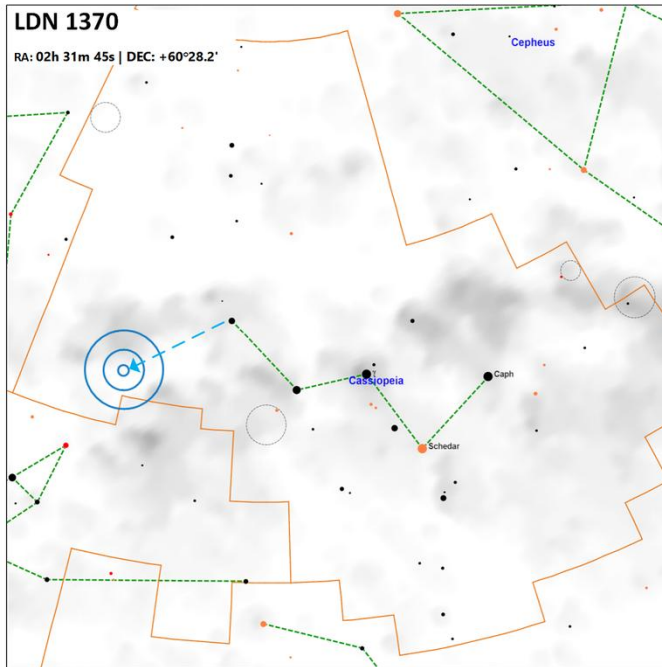


Melotte 15 (OC || Mag=6.6 | Size=21' | SB=21.8 | mBortle=9 | mApt=60mm | MC=II3m n |) Part of the W4 complex, this is an open cluster at the center of the Heart Nebula with a Trumpler class of II-Detached cluster with little central concentration, 3-Composed of bright and faint stars, m-Medium rich cluster with 50 – 100 stars, n-Nebulosity associated with cluster.

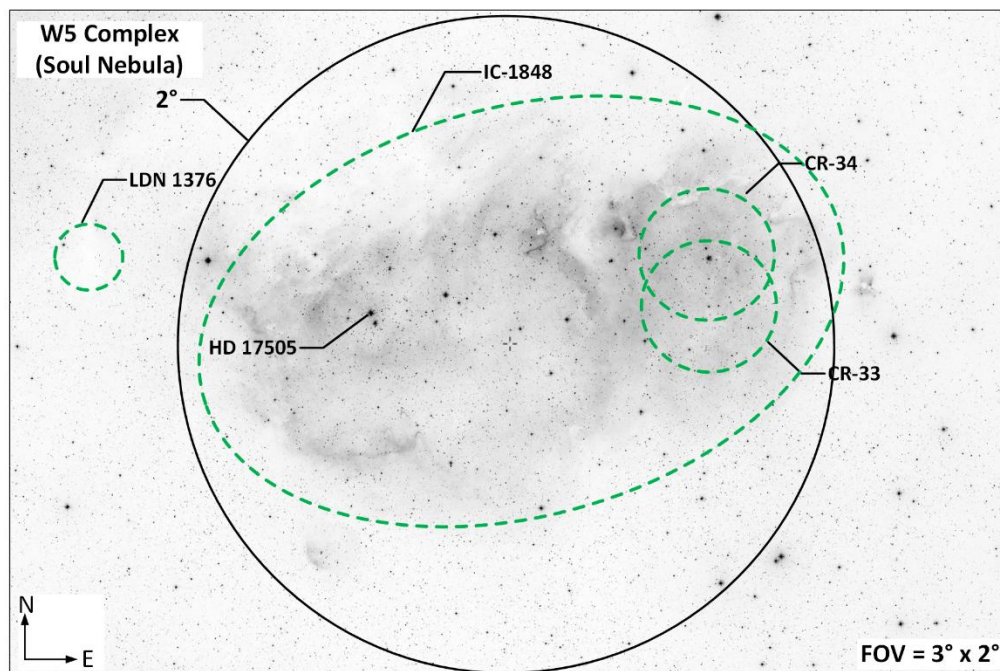


Constellation Guide

LDN 1370 (DN || Size=6.3' | mBortle=4 | mApt=50mm | Opacity=5 ||) Part of the W4 complex, this is a small dark nebula at the edge of the Heart Nebula.

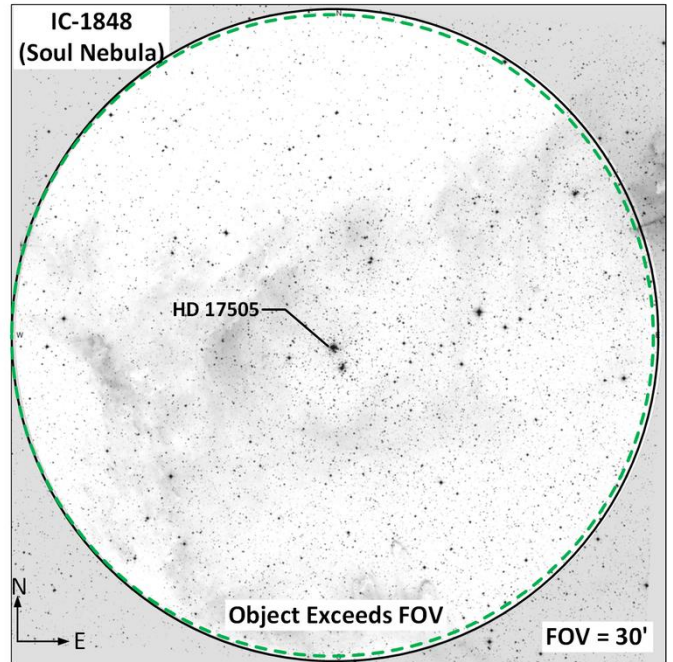
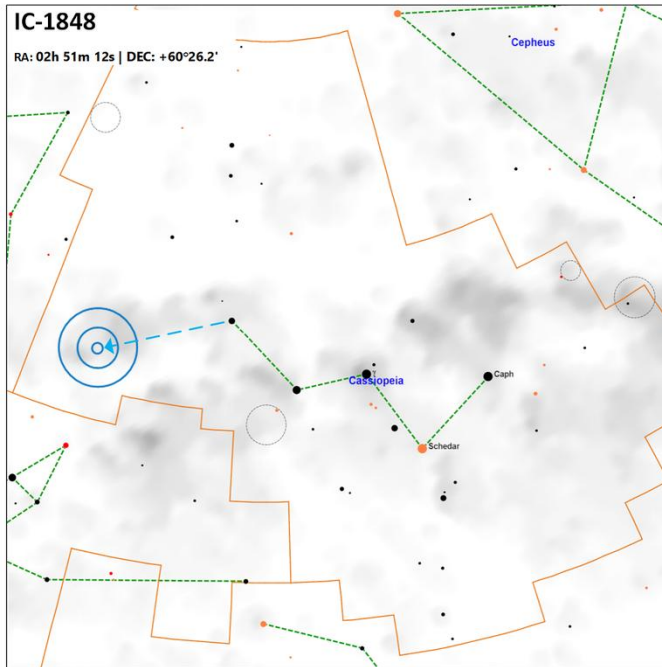


W5 Complex – The W5 Complex is known as the Soul Nebula and consists of the deep sky objects IC 1848, the star HD 17505, open clusters Collinder 33, Collinder 34, and dark nebula LDN 1376. The Soul has two lobes. The western lobe (W5 West), home of the IC 1848 cluster (also OCL 364 and Collinder 32), is ionized mainly by HD 17505 and HD 17520; its cluster is only about 1 million years old. The eastern lobe (W5 East) is ionized by the O7 dwarf HD 18326.

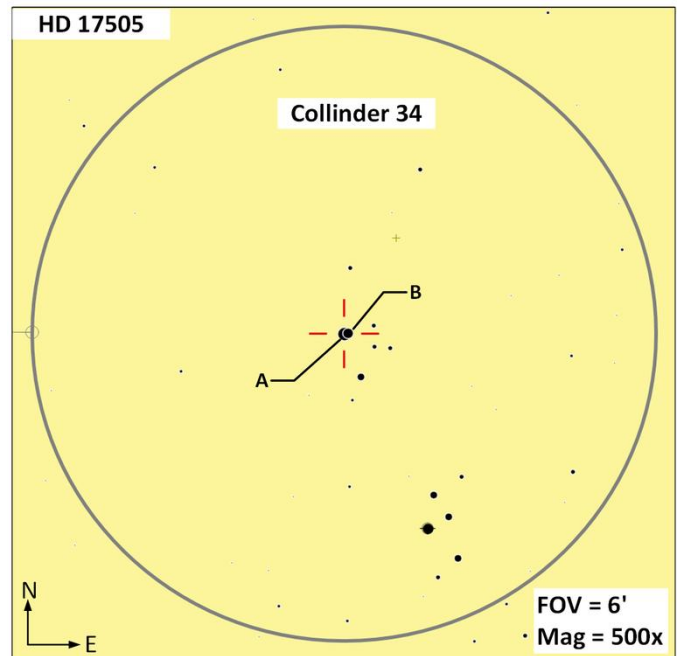
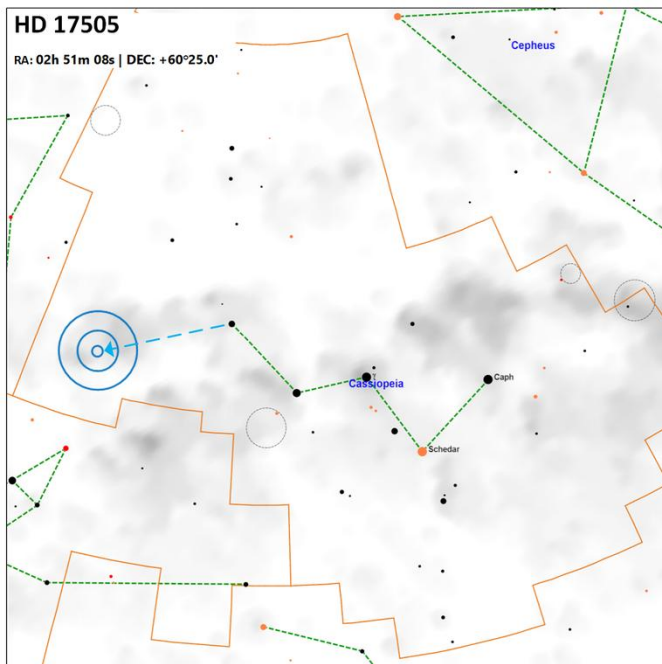


Constellation Guide

IC 1848 (EN || Mag=6.5 | Size=60'x30' | SB=23.3 |) Part of the W5 complex, the Soul Nebula is an emission nebula that is located about 6,500 light years away with a physical diameter of 150 – 250 light years with approximately 100,000 solar masses for the nebula portion.

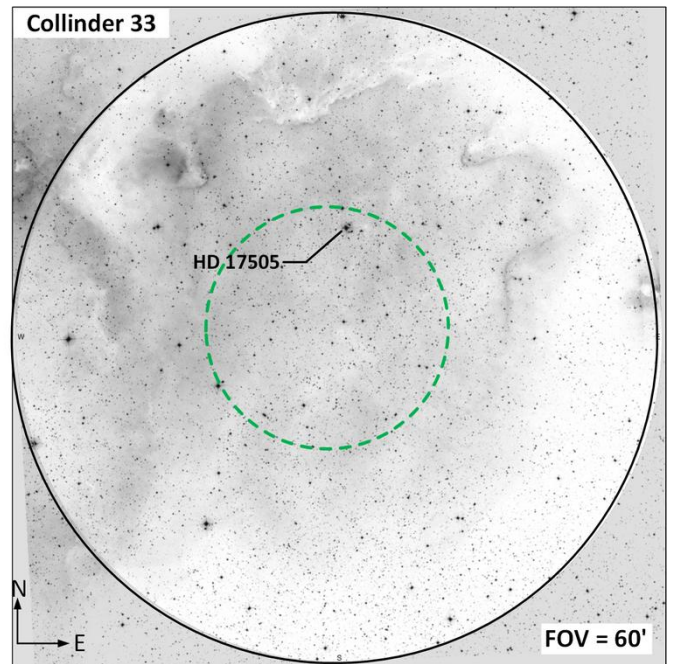
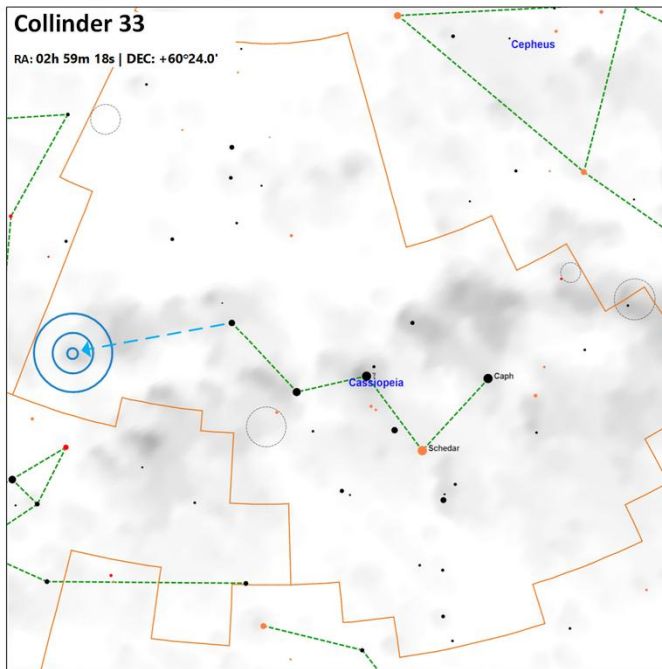


HD 17505 (DS || AB | Mag=7.4,9.09 | Sep=2.2" | PA=93° | mBortle=9 | mApt=70mm | Spec=O6.5III, O8 | Color=blue, blue |) Part of the W5 complex, this is a multiple star system with two resolvable stars. This system is the primary star system responsible for ionizing the Soul nebula and consists of an O giant and three dwarf stars (not visible).

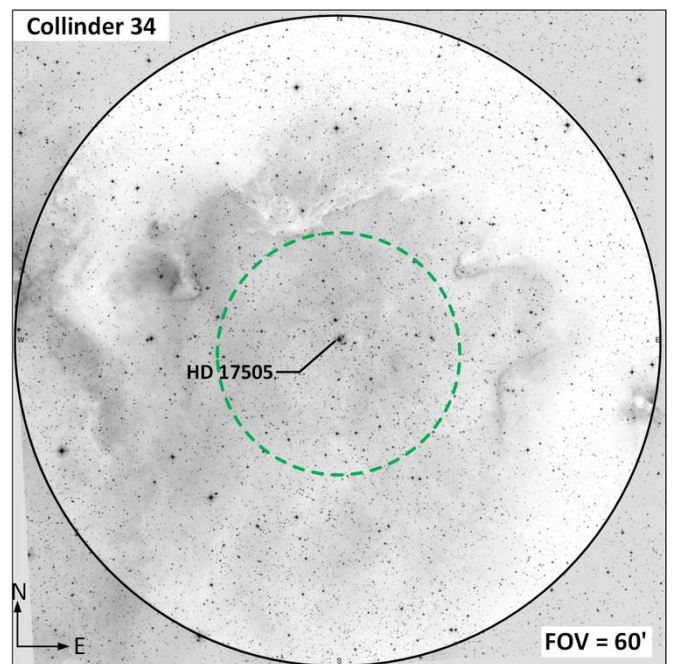
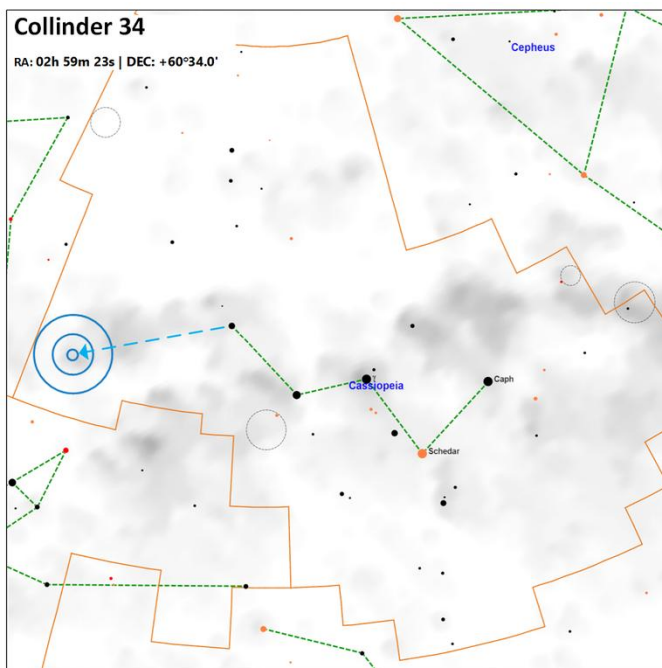


Constellation Guide

Collinder 33 (OC || Mag=5.9 | Size=25' | SB=21.5 | mBortle=9 | mApt=50mm |) Part of the W5 complex? This star cluster may not actually be a member of the W5 complex but a foreground object. CR 33 is calculated to be 3,600 light years away; closer than the W5 complex.

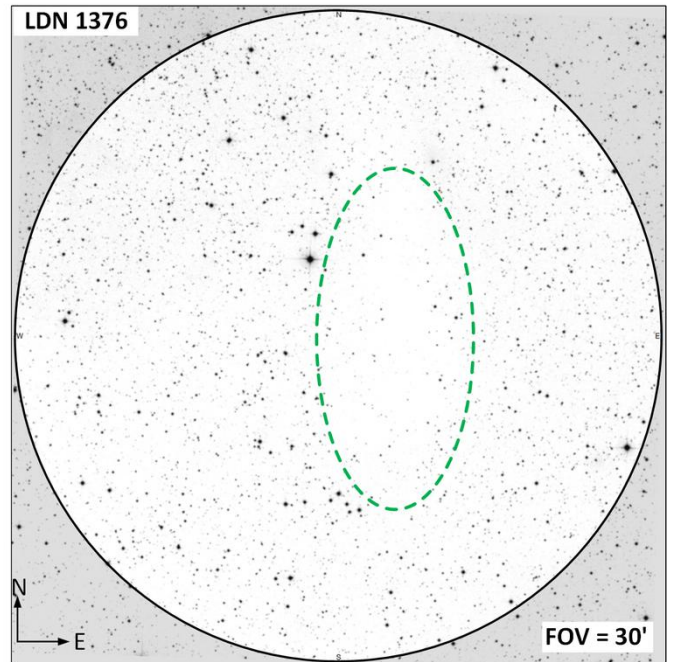
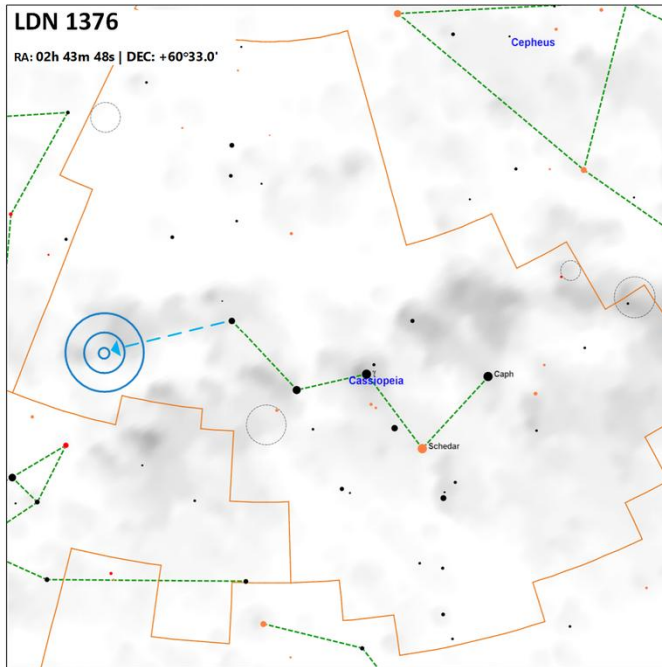


Collinder 34 (OC || Mag=6.8 | Size=25' | SB=22.4 | mBortle=9 | mApt=70mm | MC=I3p |) Part of the W5 complex, this open cluster has a Trumpler classification of I-Detached with strong central concentration, 3-Composed of bright and faint stars, p-Poor cluster with fewer than 50 stars. Since CR33 and CR34 are in the same line of sight it is difficult to visually distinguish one from another.

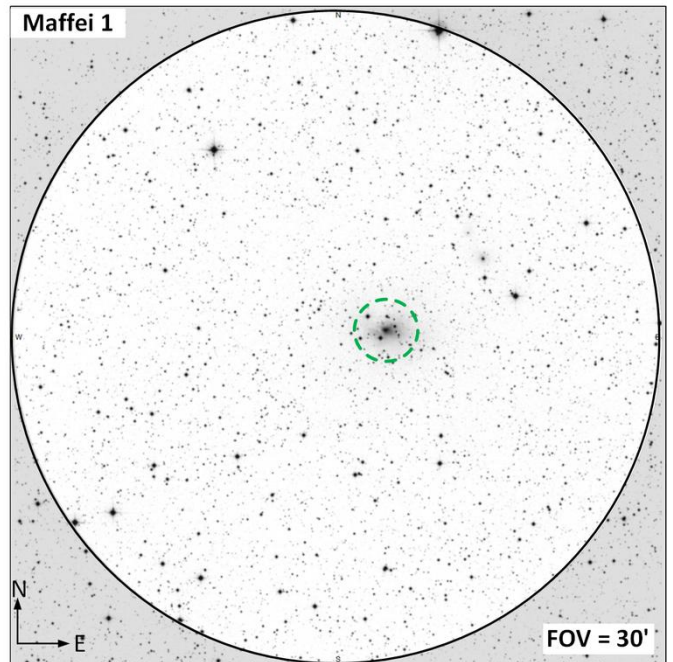
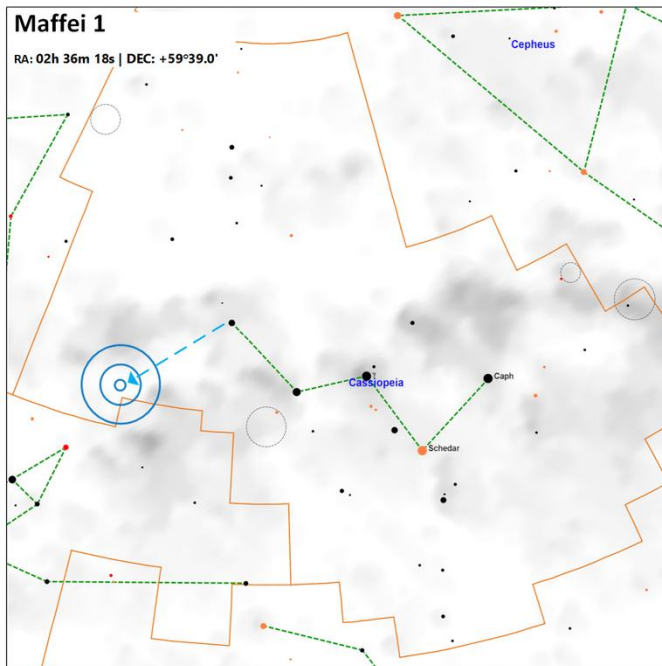


Constellation Guide

LDN 1376 (DN || Size=4.7' | mBortle=4 | mApt=50mm | Opacity=5 |) Part of the W5 complex, this is a small dark nebula located at the far edge of the Soul Nebula.

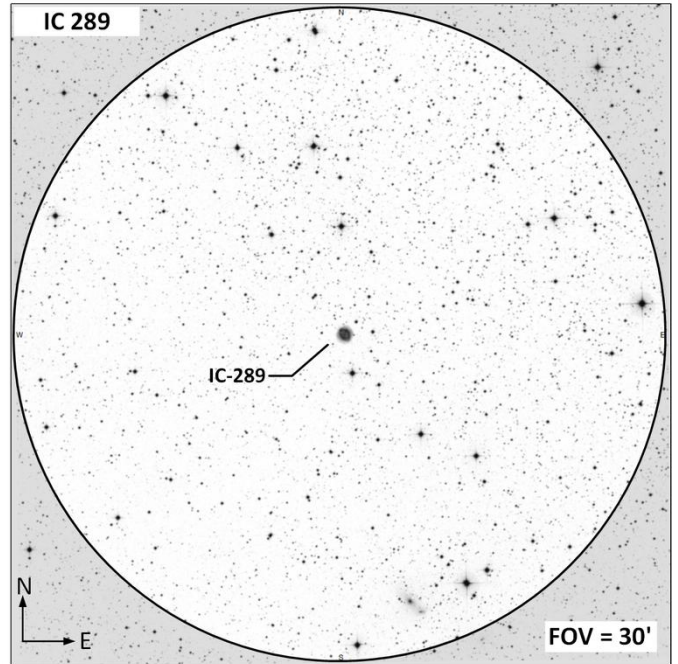
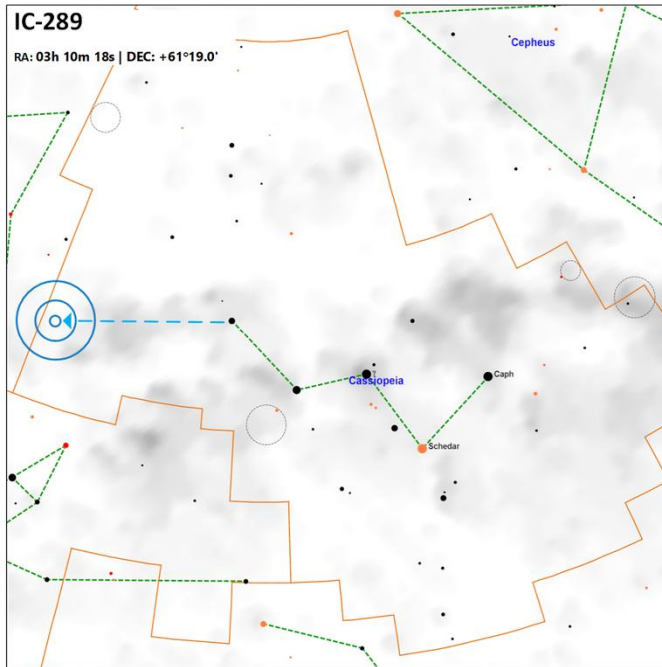


Maffei 1 (G || Mag=14 | Size=5'x3' | SB=25.6 | MC=E3 |) A massive yet dim elliptical galaxy located 9.8 million light years away that resides in the [Zone of Avoidance](#), a heavily obscured area in the sky where the Milky Way's stars and dust obscure extra-galactic objects. This object is on the RASC Deep Sky Challenge list.

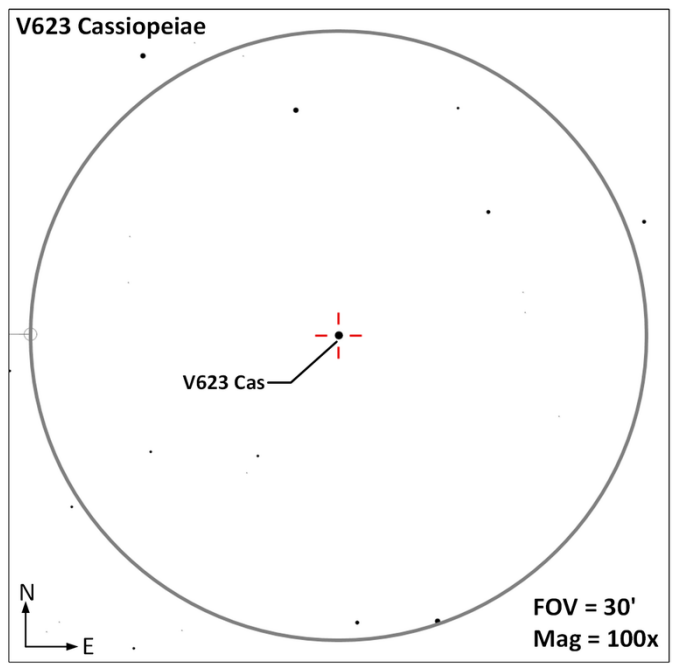
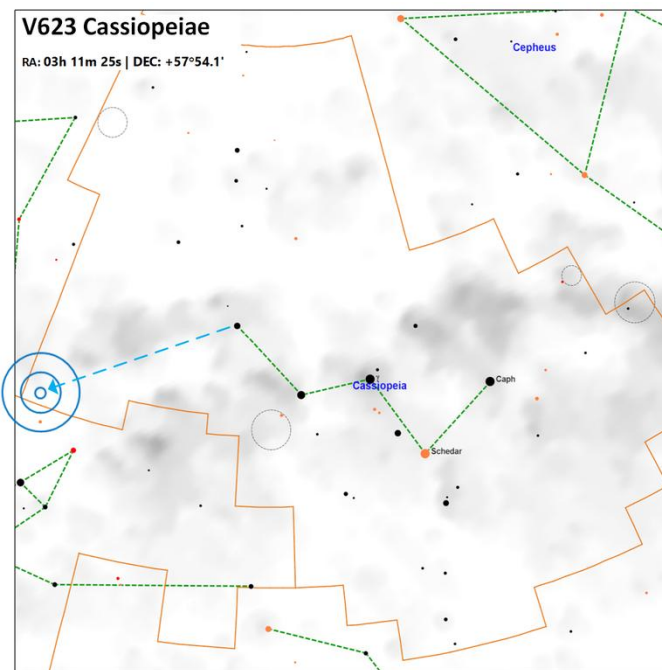


Constellation Guide

IC 289 (PN || Mag=13.3 | Size=0.6' | SB=20.8 | mApt=200mm | MC=Elliptical |) A planetary nebula located 9,500 light years away with a physical diameter of about 2 light years. As with most planetary nebulae, an OIII filter will help identify this object from background stars.

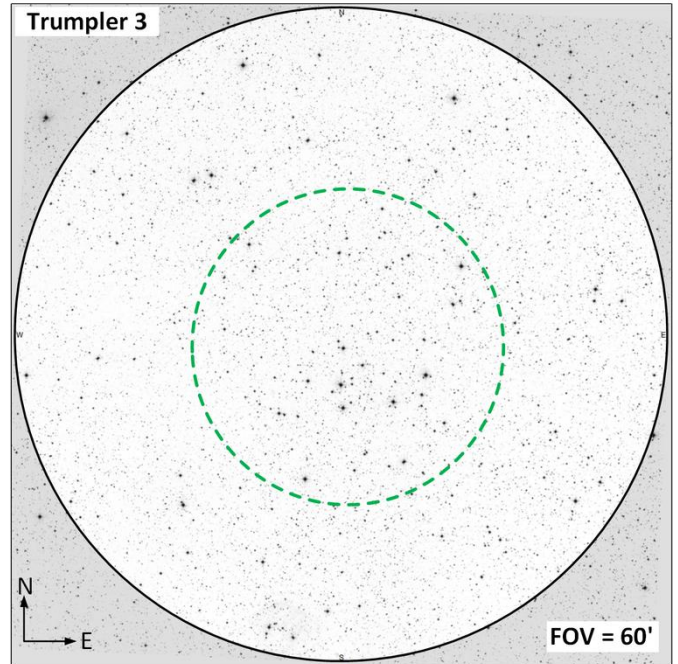
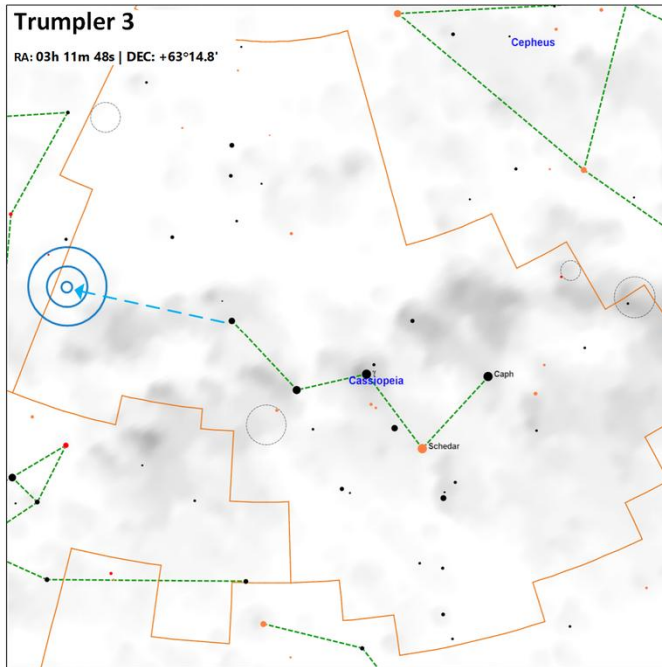


V623 Cas (VS || Mag=7.6 | Mag Range = 7.3 to 7.7 | Period=Unknown | BV=+2.3 | Color = red | mBortle=9 | mApt=50mm | MC=C4,5J |) A variable star located 1,600 light years away. This star appears on a number of carbon star lists, including RASC Carbon Stars, SAC Red Stars, and 100 Carbon Stars.

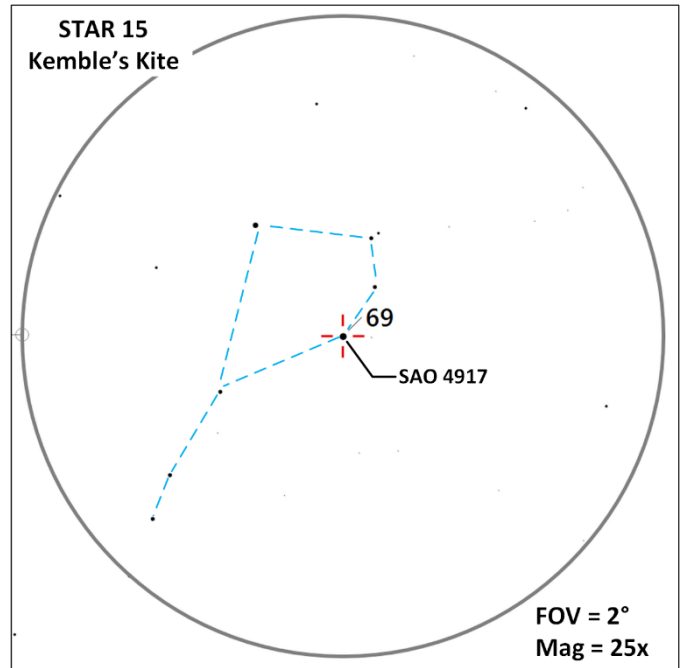
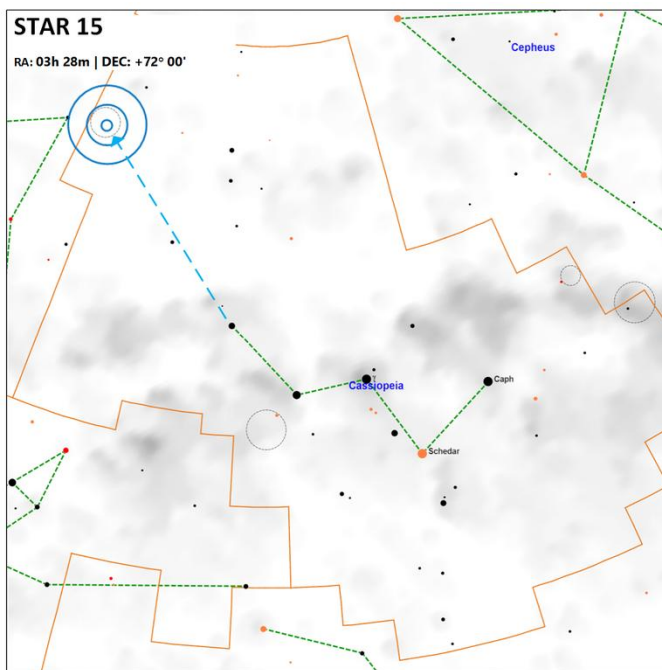


Constellation Guide

Trumpler 3 (OC || Mag=7 | Size=12' | SB=21.0 | mBortle=9 | mApt=70mm | MC=III2m |) Open cluster located 1,500 light years away with a physical diameter of 5 light years. Trumpler classification is III-Detached with no noticeable concentration, 2-Medium range of brightness between stars, m-Medium rich cluster with 50 – 100 stars.

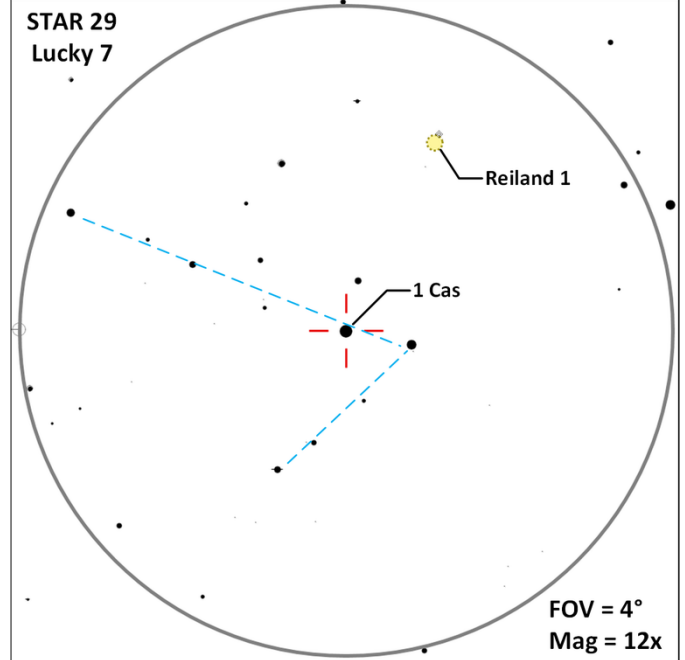
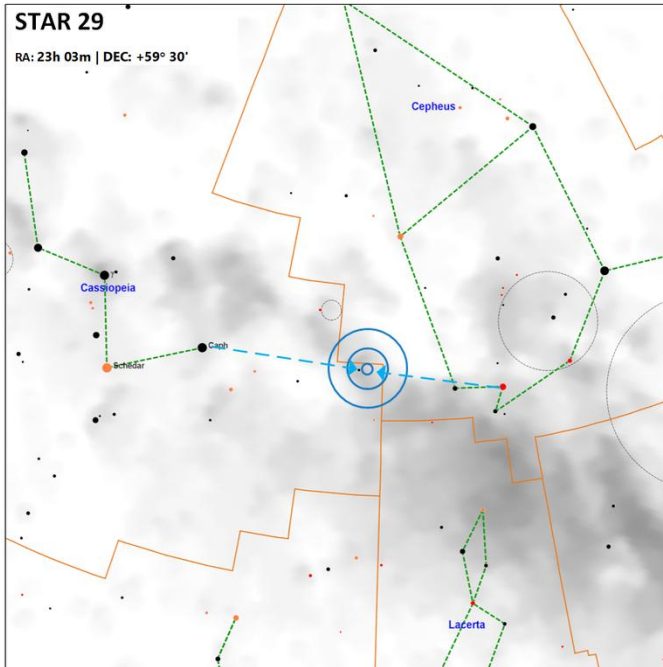


STAR 15 (AS || Size=90'x30' | Stars=7 | Centering Star: V805 Cas; SAO-004917; HIP-16319 |) Kemble's Kite is a diamond-shaped kite with a tail. Appears in the Kemble's Fifty-to-the-Pole list.

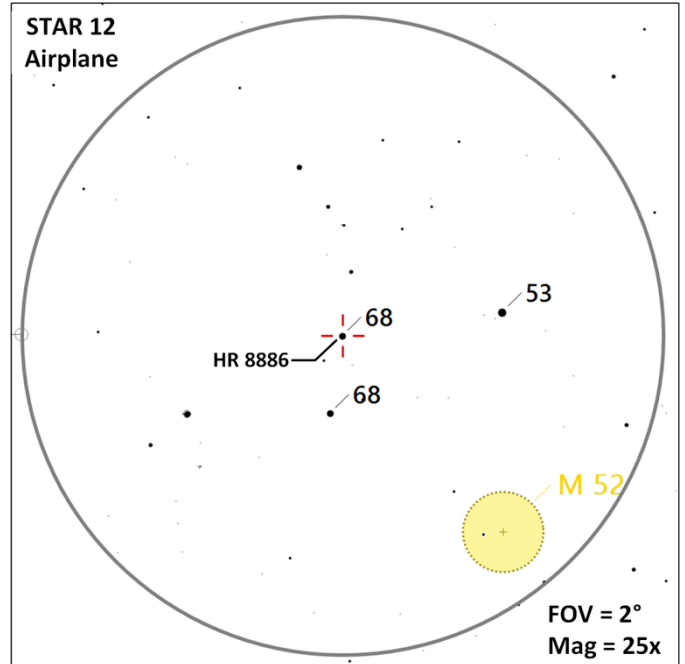
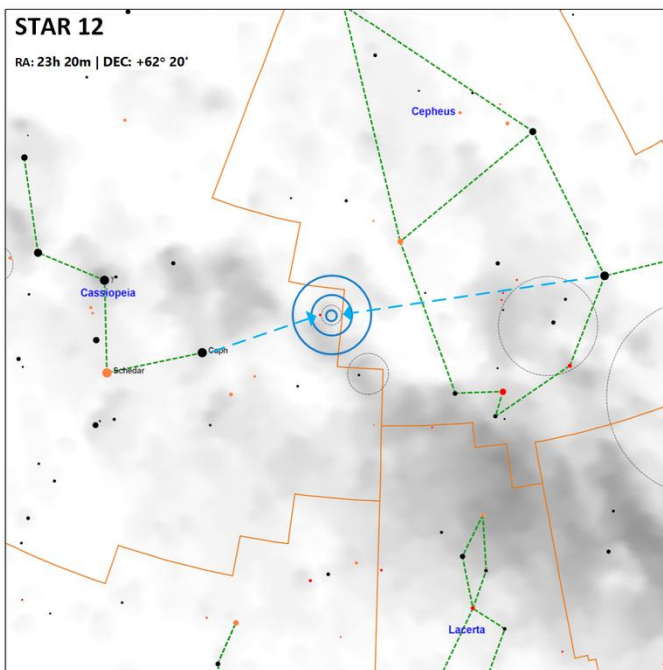


Constellation Guide

STAR 29 (AS || Size=70'x125' | Stars = 13 | Centering Star: 1 Cas; SAO-035147; HIP 114104 |) "Lucky 7" is a large and bright asterism consisting of 13 stars forming the shape of the number '7'.

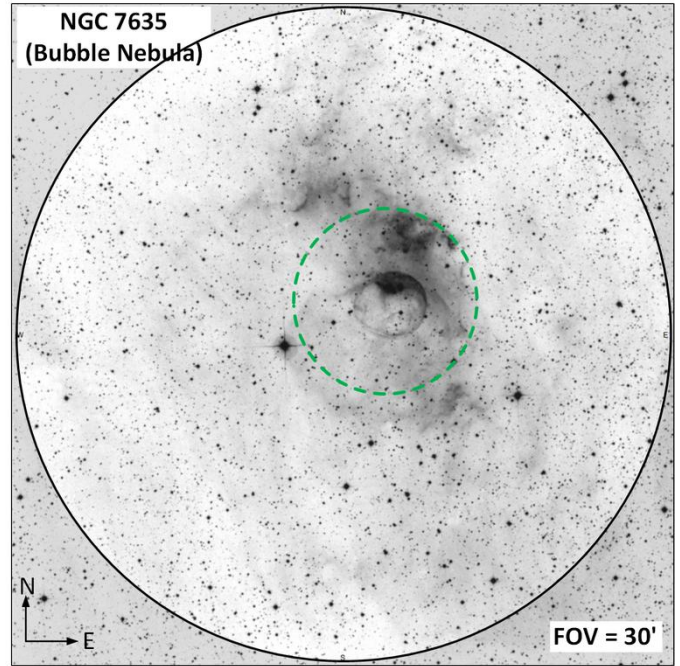
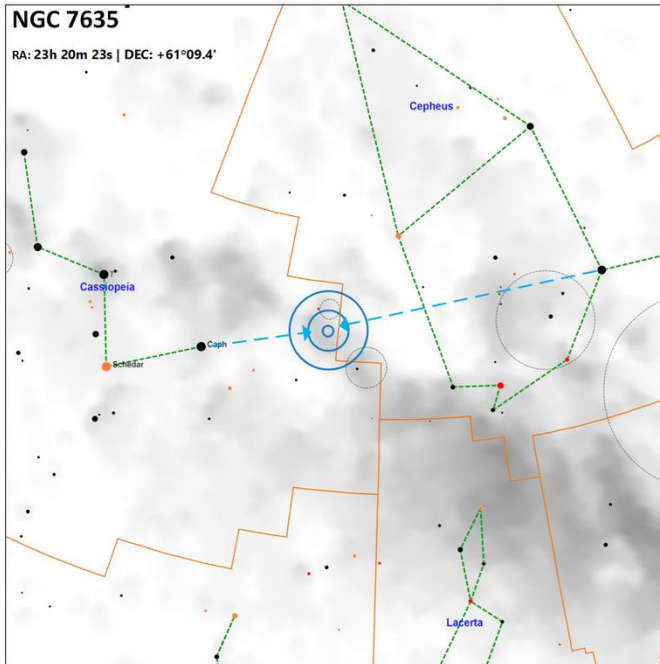


STAR 12 (AS || Size=60' | Stars=14 | Centering Star: HR 8886; SAO-20572; HIP-115245 |) This asterism reportedly looks like an airplane where the front of the plane is shaped by 5 stars, its tail by 9 stars. The pattern is not apparent in the chart provided below.

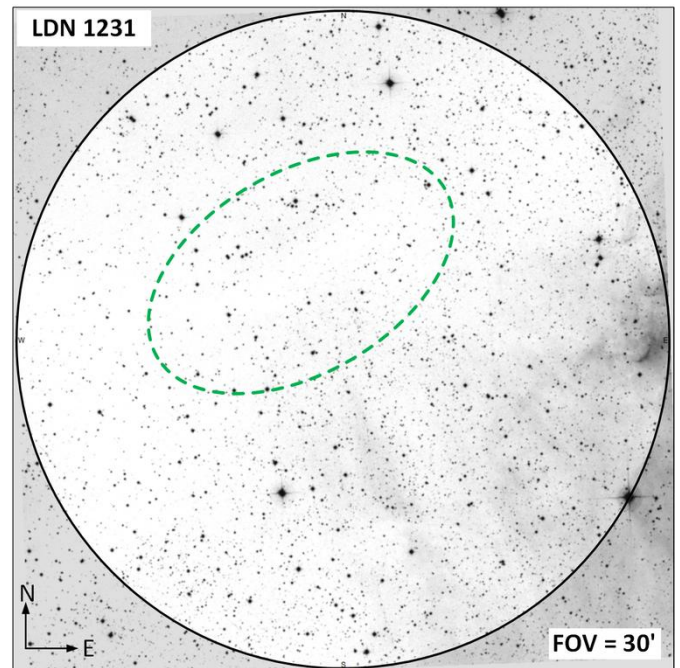
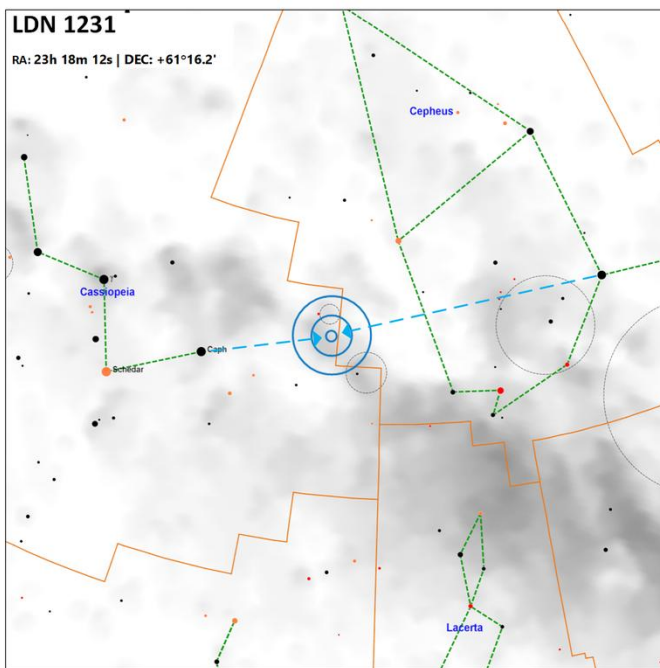


Constellation Guide

NGC 7635 (EN || Mag=10 | Size=8' | SB=23.1 ||) The Bubble Nebula is located about 7,100 to 11,000 light years away and may be visible as an extremely faint, large shell around the star SAO-20575, an 8.7 magnitude star. A telescope with an aperture of 8 to 10 inches will be required to observe this nebula (with averted vision). A 16- to 18-inch telescope is required to see more details on the nebula. The dark nebula LDN 1231 (See below) is on the edge of this nebula.

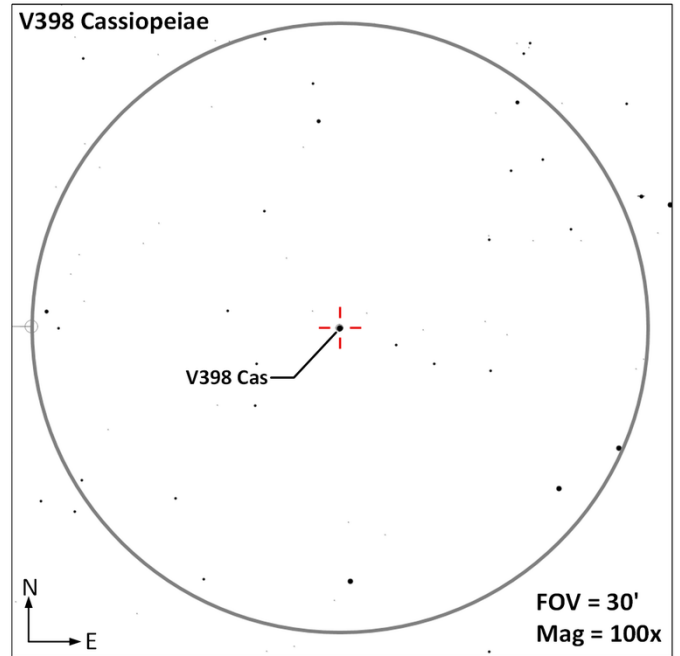
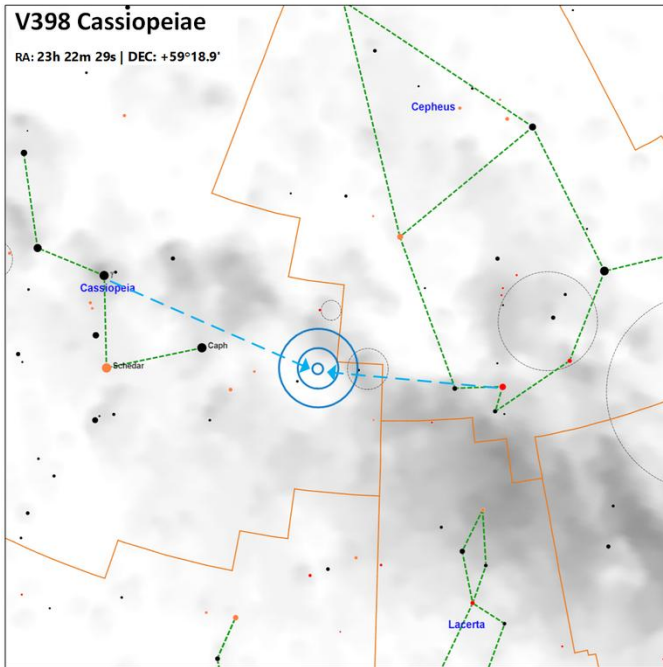


LDN 1231 (DN || Size=3.9' | mBortle=4 | mApt=60mm | Opacity=5 ||) A small dark nebula located on the outer edge of the Bubble Nebula (NGC 7635).

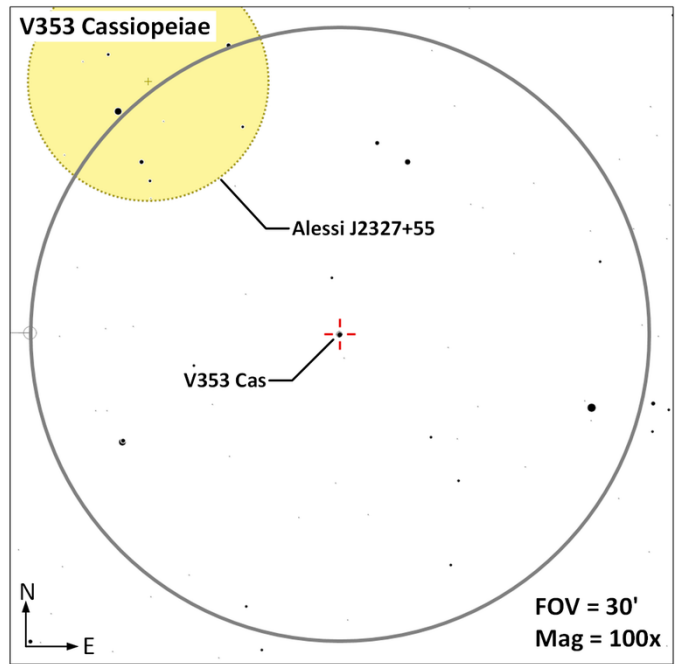
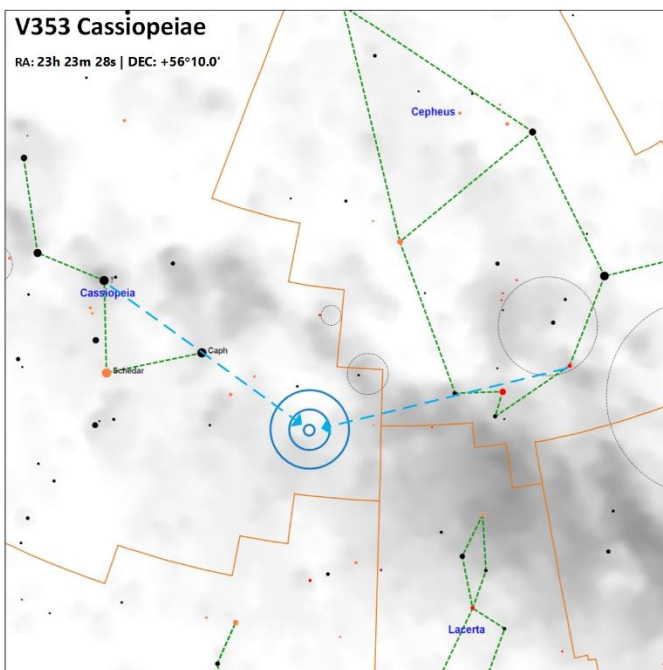


Constellation Guide

V398 Cas (CS || Mag=8.7 | Mag Range(p)= 11.2 to 12.1 | Period=Unknown | BV=+2.89 | Color=red |) A variable star with an unknown period and a BV index of +2.89. It is on the SAC Red Stars list.

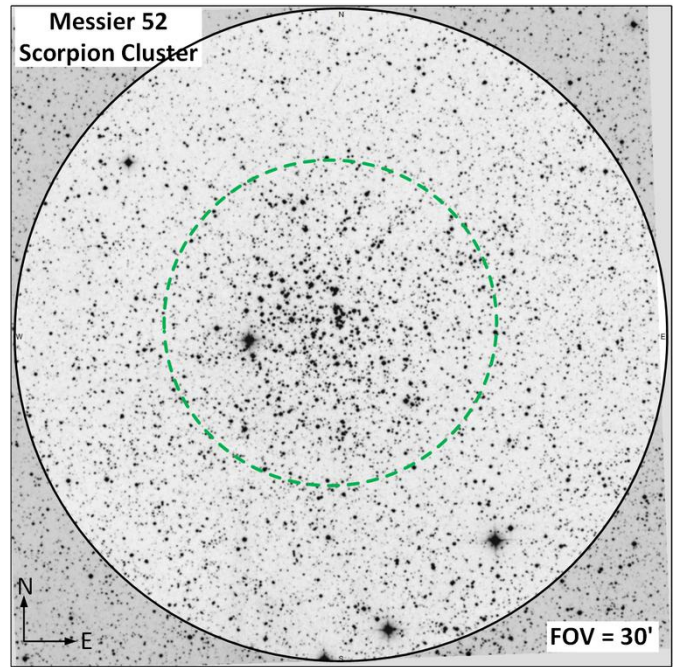
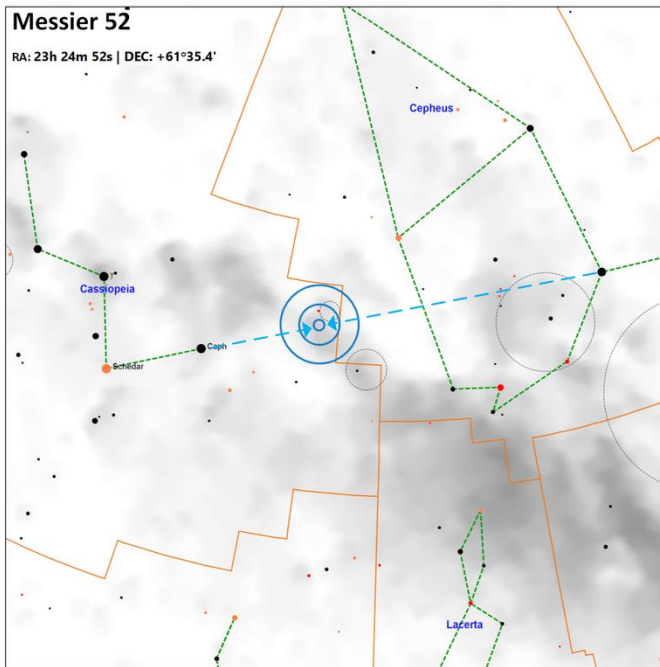


V353 Cas (CS || Mag=9.7 | Mag Range(p)= 13.5 to 15 | Period=1y | Spec=R8 | BV=+3.47 | Color=deep red |) This variable star has a BV index of +3.47 so may appear quite red. On the SAC Red Stars list. Also close to the open cluster Alessi J2327+55.

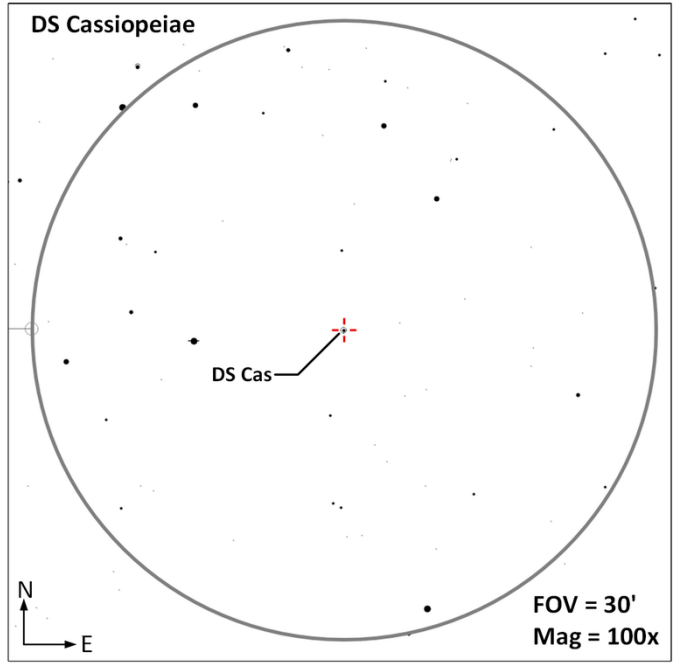
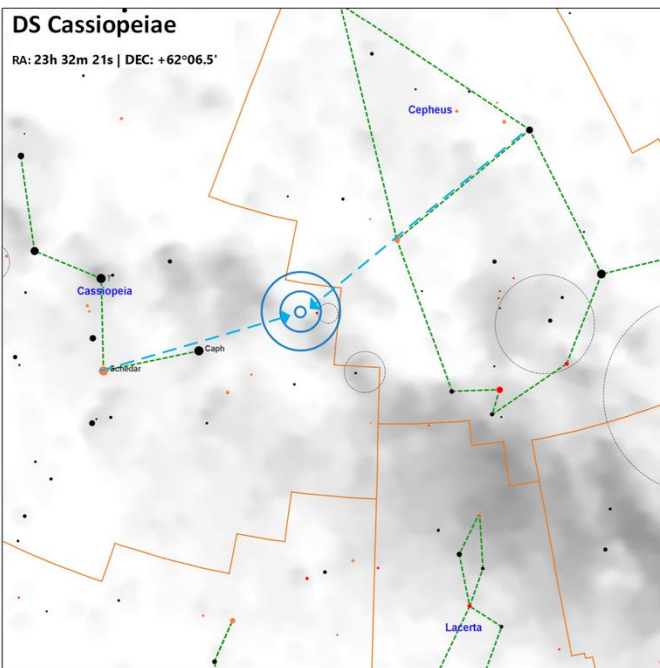


Constellation Guide

M 52 (OC || Mag=6.9 | Size=13' | SB=21.1 | mBortle=9 | mApt=70mm | MC=II2r |) The Scorpion Cluster is a rich cluster that is a good target for small telescopes. The distance to the cluster is not well known but is estimated to be 3,900 to 5,000 light years away. Trumpler classification is II-Detached with little central concentration, 2-Medium range of brightness between stars in the cluster, r-Rich cluster with over 100 stars.

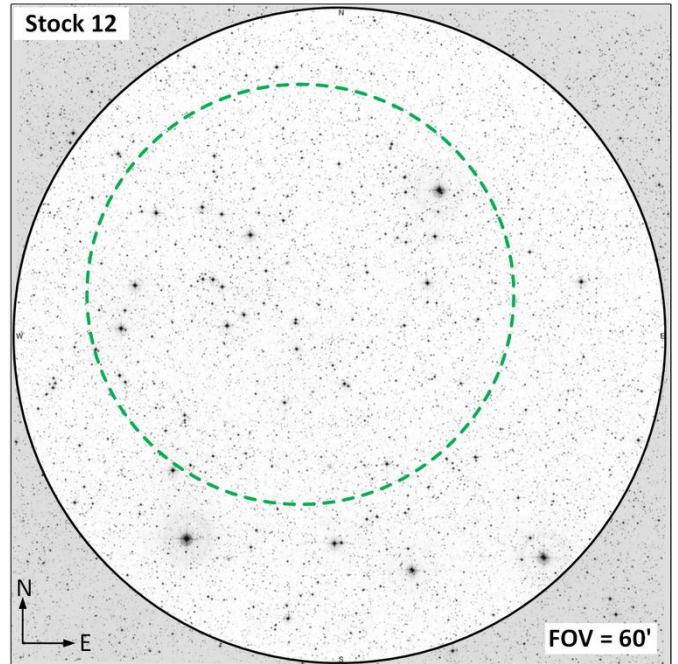
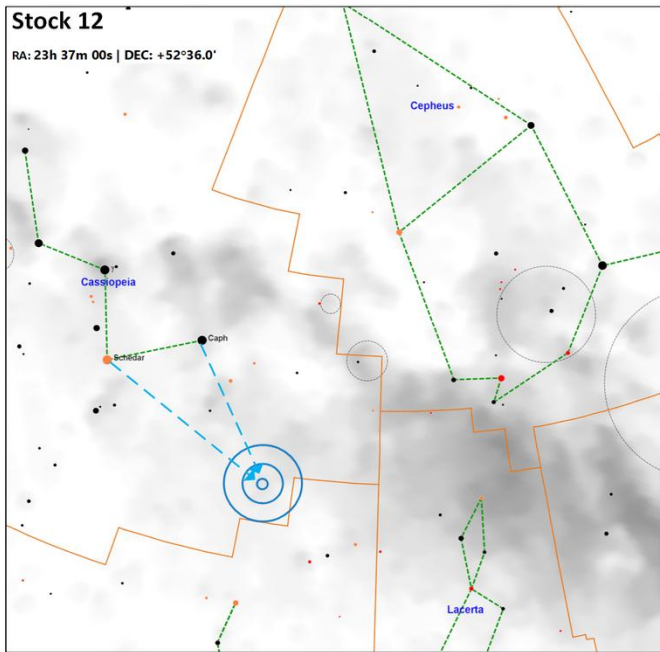


DS Cas (VS || Mag=10.7 | Mag Range(p)= 13.8 to 16.2 | Period=340 d | BV=+2.9 | mBortle=9 | mApt=60mm | MC=C5+,3 |) A pulsating semi-regular variable star of type SRB with a period of 340 days.

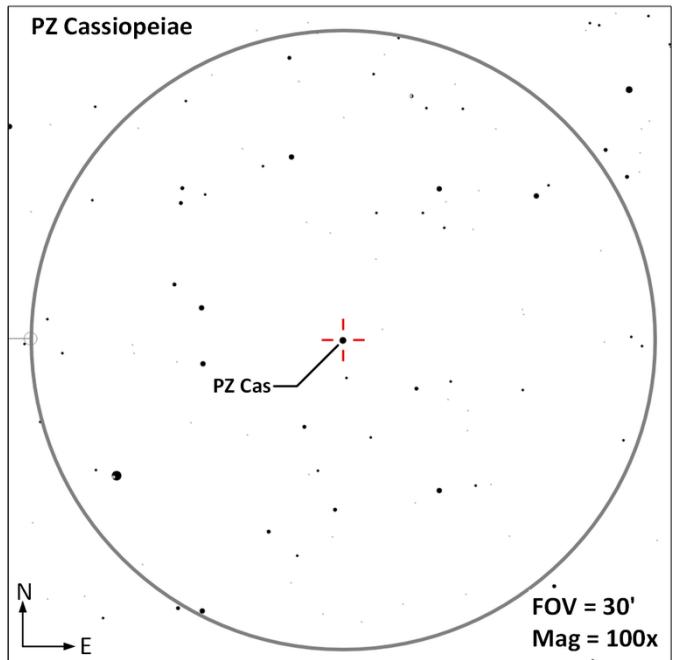
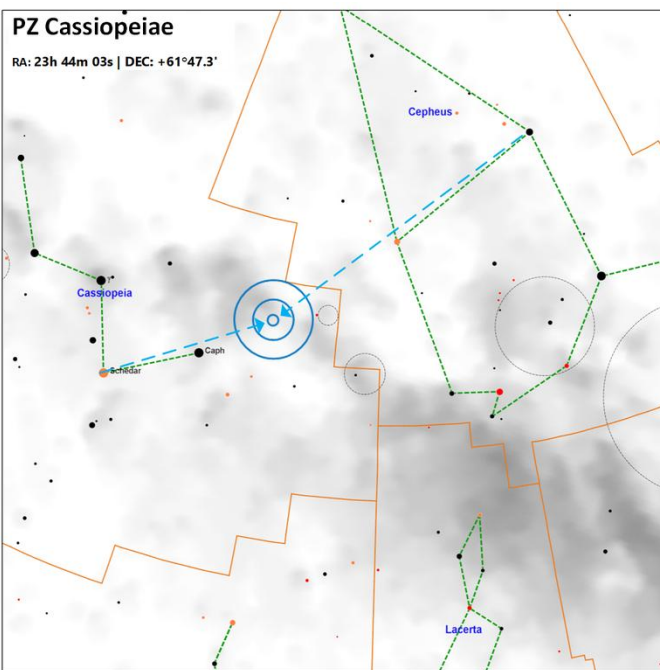


Constellation Guide

Stock 12 (OC || Size=40' | SB=16.6 | MC=IV2p |) A large loose open cluster located 1,600 light years away containing a number of star chains. Trumpler classification is IV-Not well detached, but strong field concentration, 2-Medium range of brightness between stars in the cluster, p-Poor cluster with fewer than 50 stars.

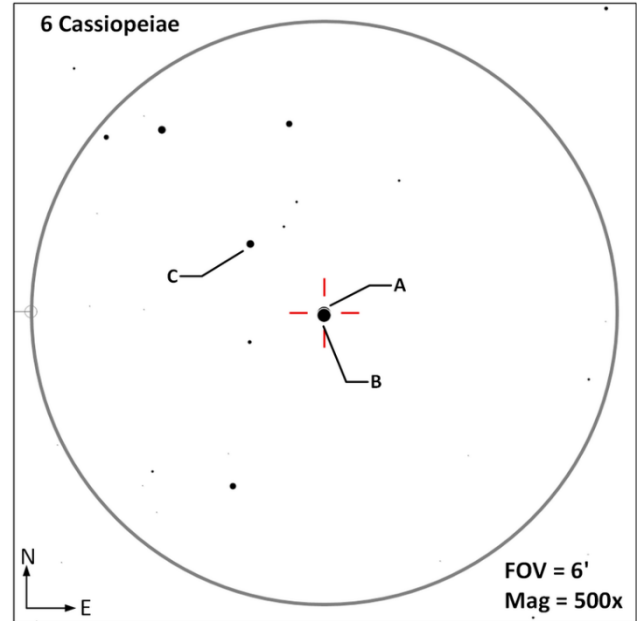
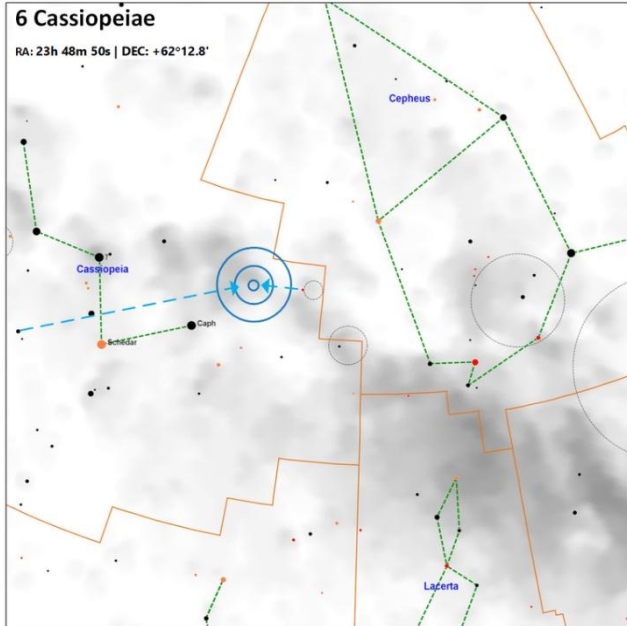


PZ Cas (VS || Mag=8.7 | Mag Range= 8.2 to 10.2 | Period=850 d | BV=+2.6 | mBortle=9 | mApt=50mm | MC=M3Iab |) A variable star with a BV index of +2.6 and a period of 850 days where the star magnitude varies from 8.2 to 10.2. On the SAC Red Stars list.

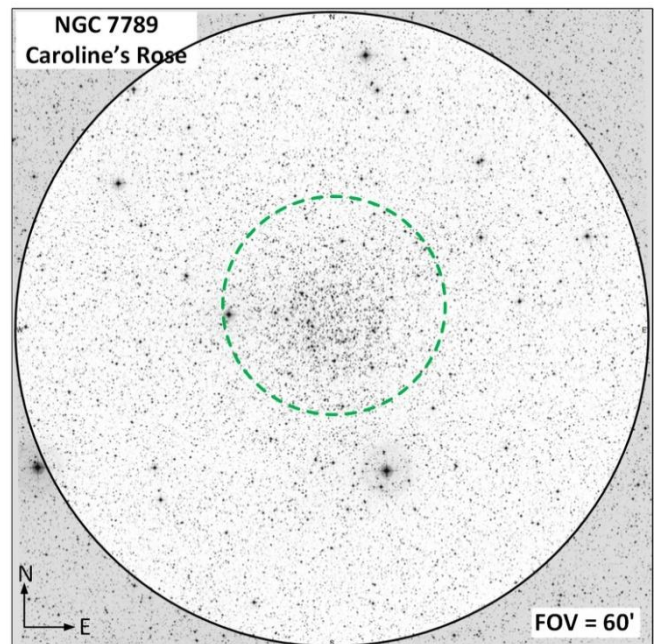
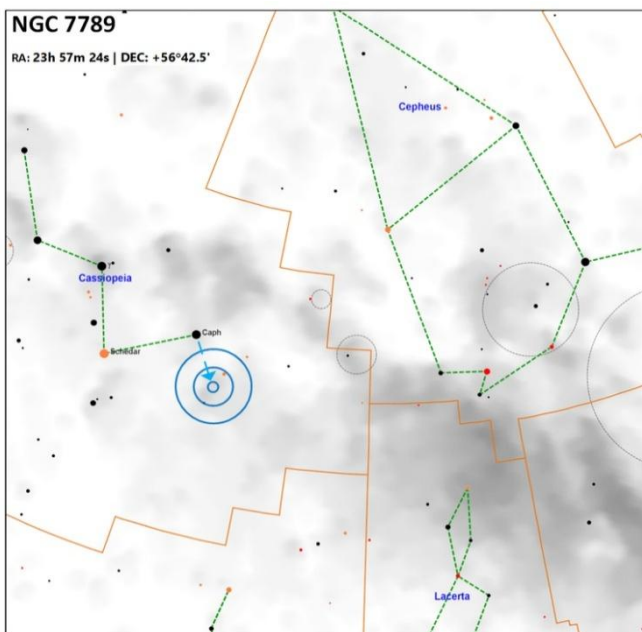


Constellation Guide

6 Cas (MS-3 || AB | Mag=5.7,8 | Sep=1.5" | PA=194° | mBortle=9 | mApt=114mm | Spec=A3Ia+, O9.75 | Color=white, blue || AC | Mag=5.7,10.2 | Sep=63" | PA=311° | mBortle=9 | mApt=50mm | Spec=A3Ia+, ? | Color=white, ?) 6 Cas is a hypergiant, a rare type of star with extremely high luminosity, mass, size and mass loss. It is 25 times as massive as the Sun and 200,000 times as luminous. Companion stars are either not physically associated, or their association is uncertain.

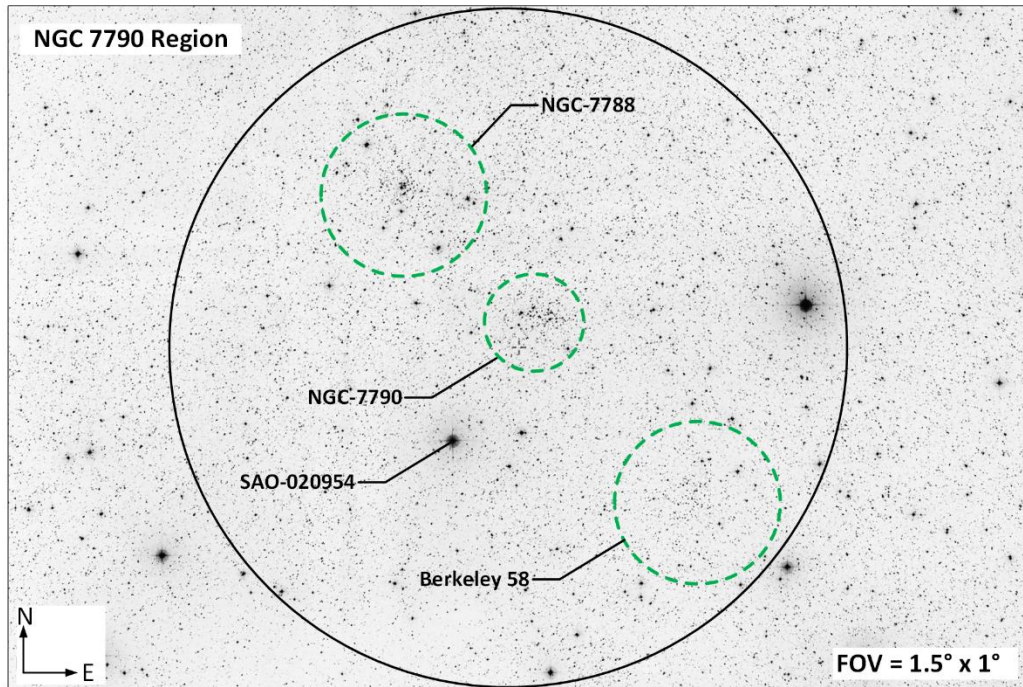


NGC 7789 (OC || Mag=6.7 | Size=16' | SB=21.3 | mBortle=9 | mApt=60mm | MC=II2r) Caroline's Rose is located about 7,600 light years away and has a mass of about 6,600 solar masses. The estimated age of the cluster ranges from 1.4 to 1.7 billion years. Trumpler class is II-Detached cluster with little central concentration, 2-Medium range of star brightness between stars in the cluster, r-Rich cluster with over 100 stars. This should be a nice binocular or telescope target for viewing.

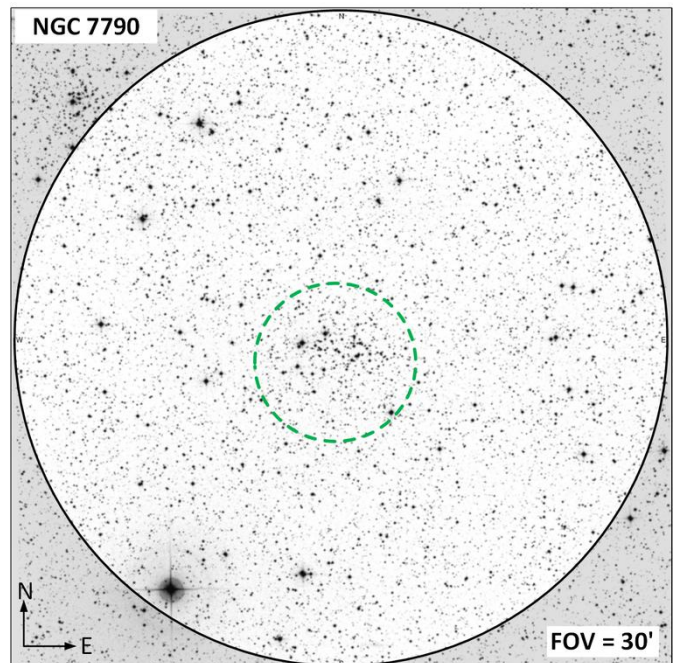
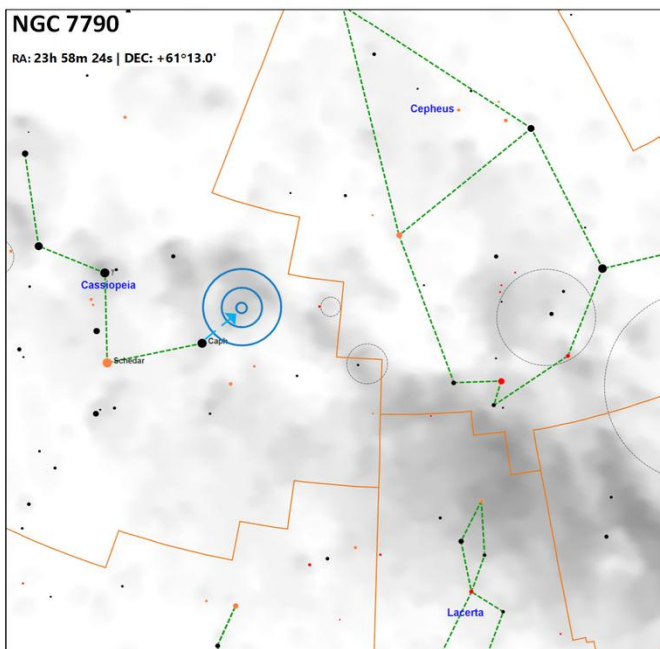


Constellation Guide

NGC 7790 Region – Three open clusters appear in close proximity and are interesting targets for observation. NGC 7790 and Berkeley 58 appear to be twin open clusters with almost the exact same proper motion, parallax and age (roughly 70-110 million years old) making a cluster pair. However, NGC 7788 is estimated to be only 10-15 million years old so not associated with the other two clusters.

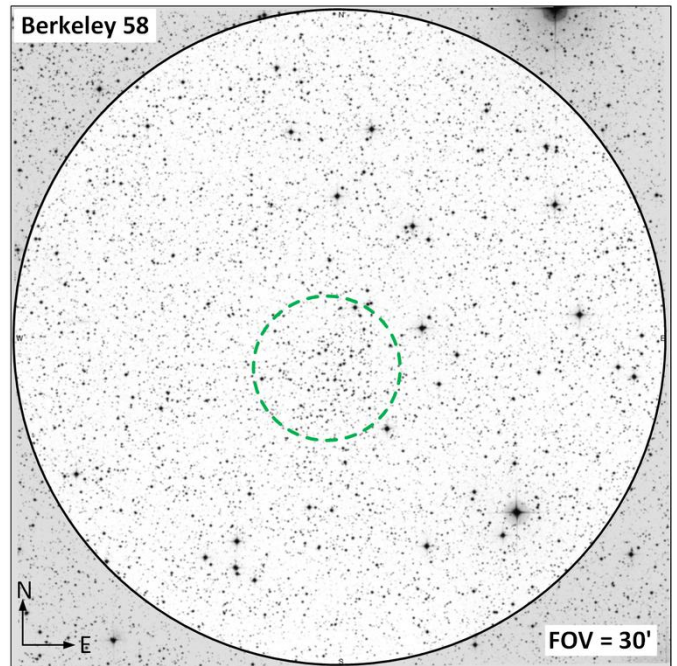
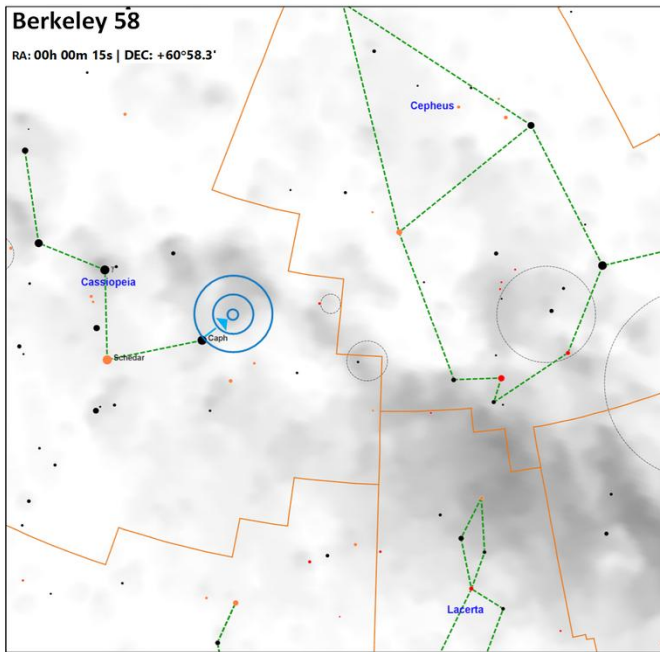


NGC 7790 (OC || Mag=7.1 | Size=4.5' | SB=19.0 | mBortle=9 | mApt=80mm | MC=II2m |) Located 10,800 light years away, this cluster along with the cluster Berkeley 58 make a cluster pair with shared origins. Trumpler class is II-Detached with little central concentration, 2-Medium range of brightness in the cluster, m-Medium rich cluster with 50 – 100 stars.

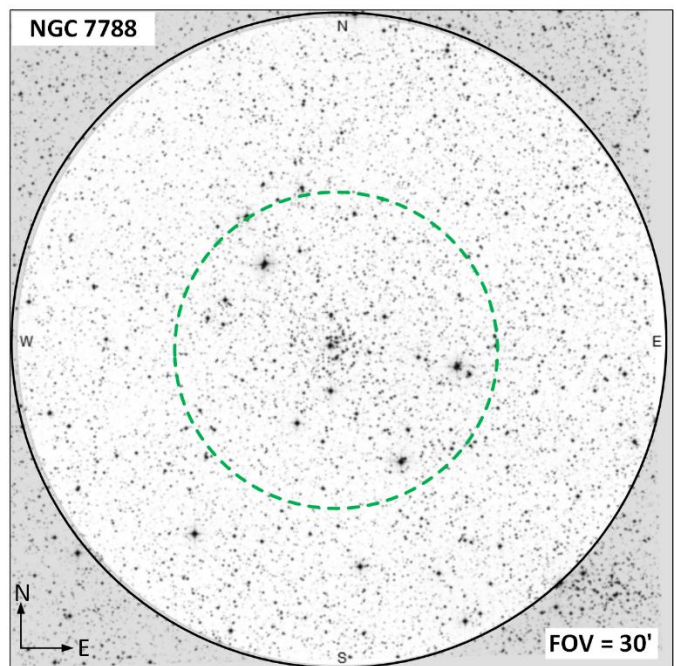
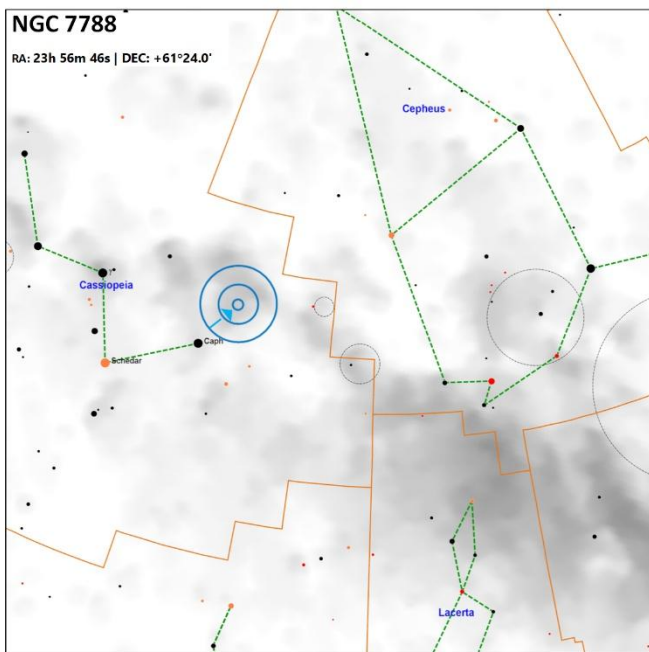


Constellation Guide

Berkeley 58 (OC || Mag=9.7 | Size=11' | SB=23.5 | mApt=250mm | MC=II1m) This cluster along with the cluster NGC 7790 make a cluster pair with shared origins. Trumpler class is II-Detached with little central concentration, 1-Most of the stars in the cluster have the same apparent brightness, m-Medium rich cluster with 50 – 100 stars.

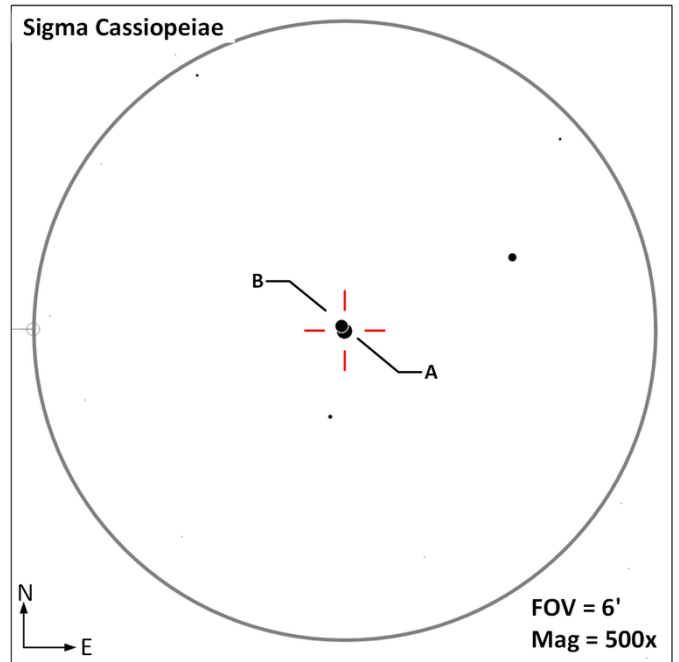
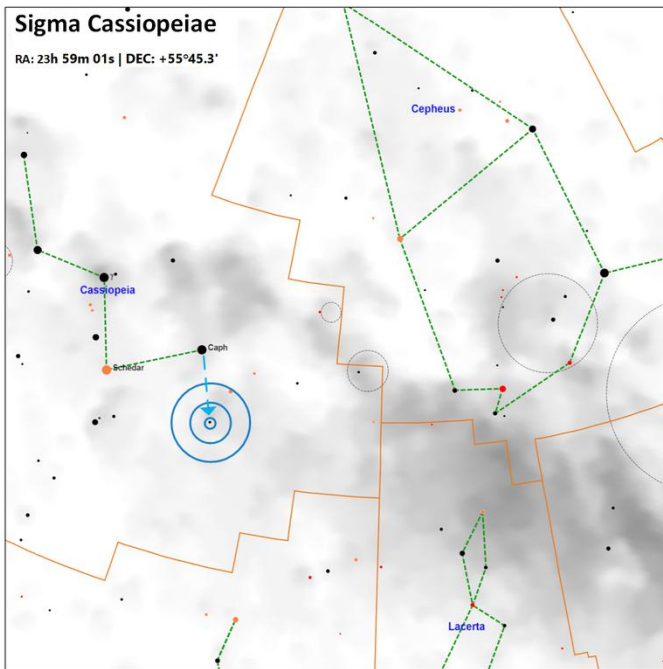


NGC 7788 (OC || Mag=9.4 | Size=4.0' | SB=21.0 | MC=I2p) Not physically associated with the open cluster pair NGC 7790 and Berkeley 58, this open cluster lies along nearly the same line of sight as these two clusters. Trumpler class is I-Detached with strong central concentration, 2-Medium range of brightness between stars in the cluster, p-Poor cluster with fewer than 50 stars.



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Sigma Cas (DS || AB | Mag=5,7.2 | Sep=3.1" | PA=326° | mBortle=9 | mApt=60mm | Spec=B1V, B3V | Color=blue-white, blue-white |) Located 1,500 light years away, it is uncertain if the secondary star is physically associated with the primary. Description of colors of this system is bluish-white and yellow. Reported to reside in a "glorious" star field.



Constellation Guide
Observation Log: Cassiopeia (Cas)

Equipment Config A: _____ Config B: _____

Notes: _____

Date	Time	Config	Target	Notes

Date	Time	Config	Target	Notes

Constellation Guide
Observation Log: Cassiopeia (Cas)

Equipment Config A: _____ Config B: _____

Notes: _____

Date	Time	Config	Target	Notes

Date	Time	Config	Target	Notes

References, Resources and Tools used to create this document

Constellation Guide

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: Brent Archinal, Steve Hynes
 - Double Stars for Small Telescopes: Sissy Haas
 - [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: Demelza Ramakers
 - [Pattern Asterisms](#): John Chiravalle
 - Milwaukee Astronomical Society: [Binocular Asterisms](#)
 - Deep-Sky.co.uk: [Observing Asterisms](#) (David Ratledge)
- [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](#)
 - [Claude AI](#) – Some Stats for targets
 - [Aladin Lite](#) – Source for a number of deep-sky images

Applications

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