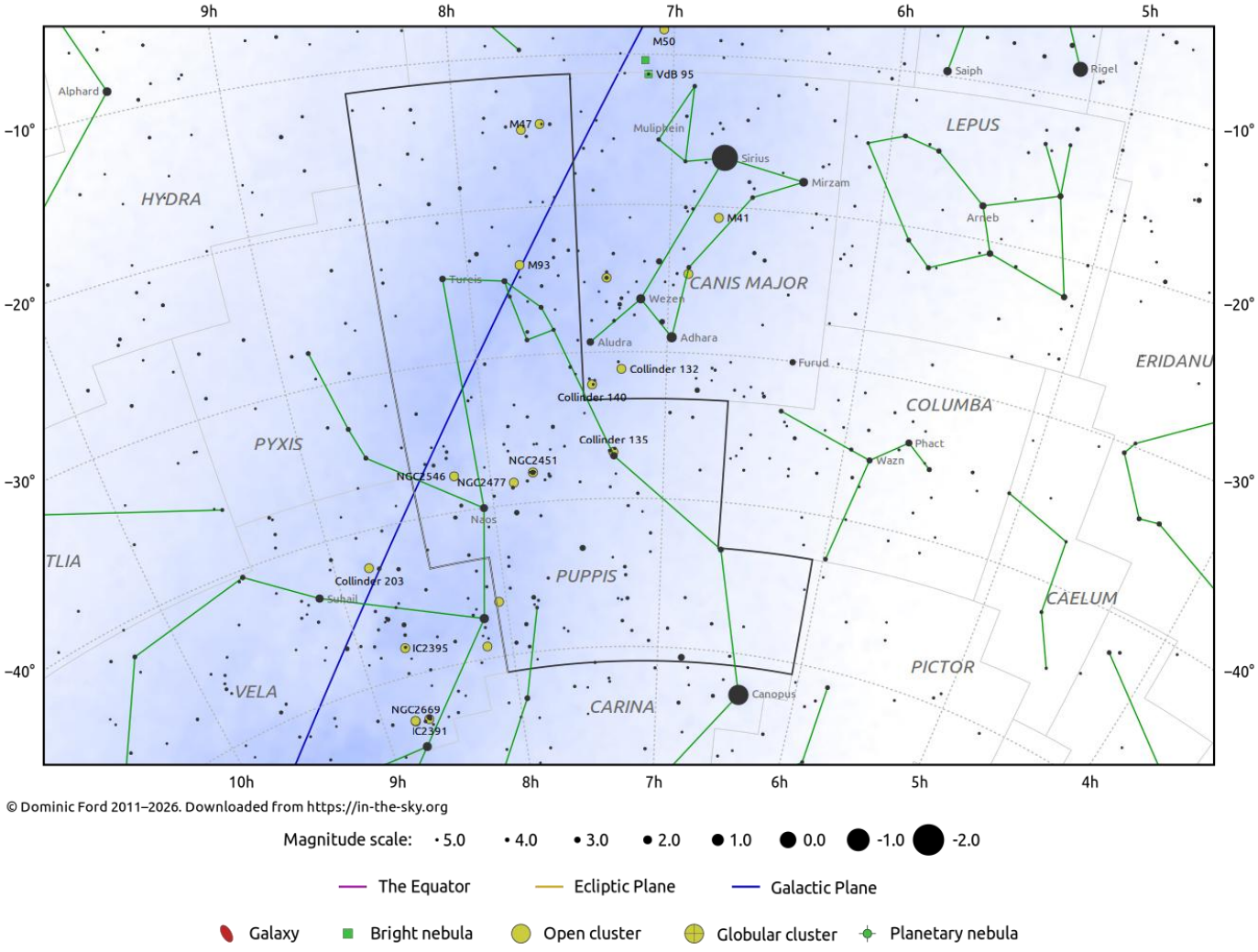
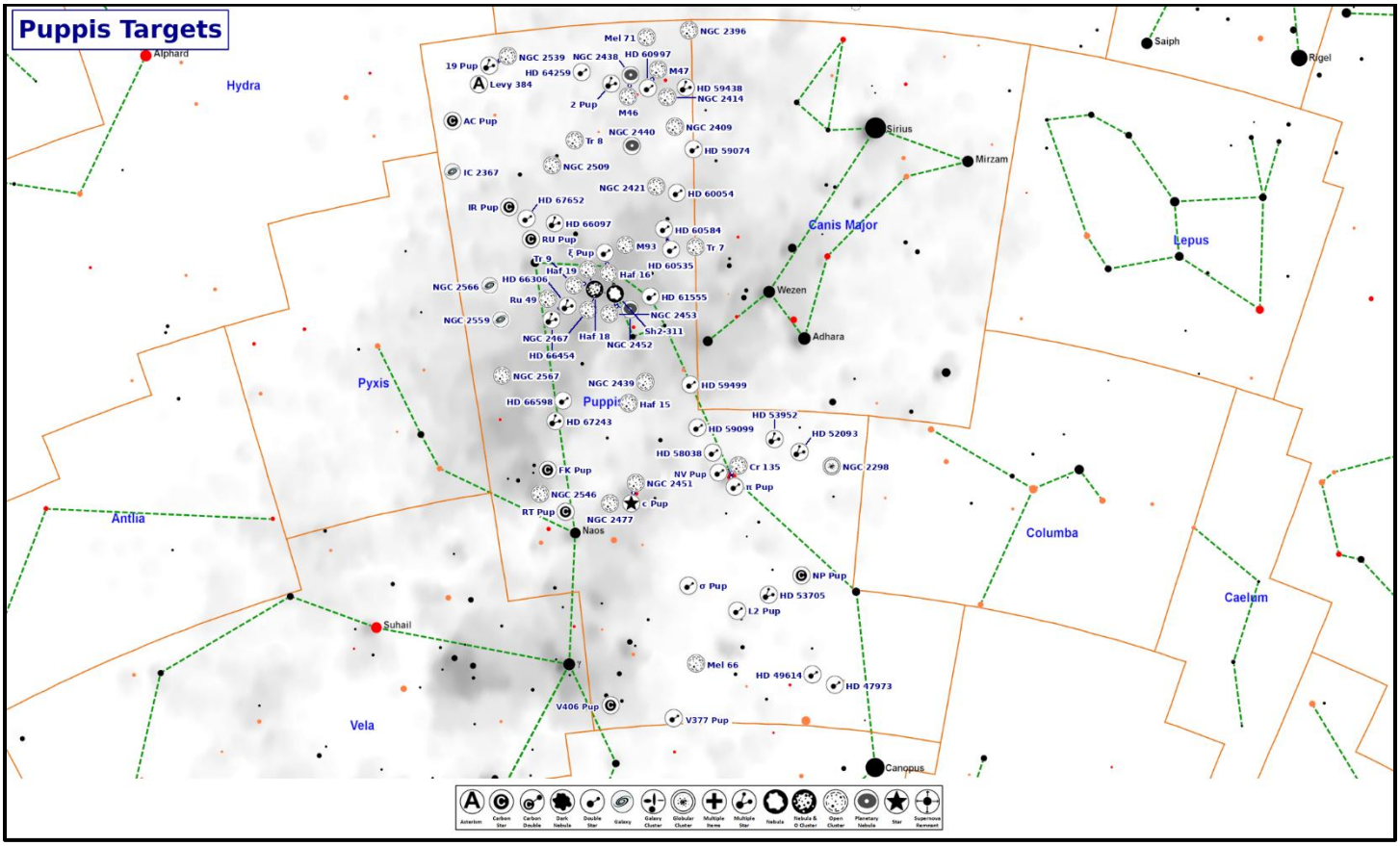
Constellation: Puppis (Pup)

Evening Visibility: **December – February**
Opposition: **January**
Latitude Visibility: **+40° to -90°**
Online Information: | In-The-Sky.org | Constellation-guide.com |

In-The-Sky.org Constellation Map





Constellation Targets

HD 47973, HD 49614, NGC 2298, NP Puppis, HD 52093, HD 53705, HD 53952, L2 Puppis, Collinder 135, Pi Puppis, NV Puppis, NGC 2451, c Puppis, HD 58038, Melotte 66, HD 59099, Trumpler 7, HD 59074, NGC 2396, HD 59499, Sigma Puppis, HD 59438, NGC 2409, HD 60054, NGC 2414, HD 60535, V377 Puppis, HD 60584, NGC 2421, Messier 47, HD 60997, Melotte 71, HD 61555, NGC 2439, Messier 46, NGC 2438, NGC 2440, Messier 93, 2 Puppis, Haffner 15, NGC 2452, NGC 2453, Xi Puppis, Haffner 16, NGC 2477, HD 64259, Sharpless 2-311, NGC 2467, Haffner 18, Haffner 19, Trumpler 8, Trumpler 9, V406 Puppis, NGC 2509, HD 66097, HD 66306, HD 66454, HD 66598, Ruprecht 49, RT Puppis, HD 67243, RU Puppis, HD 67652, FK Puppis, NGC 2539, 19 Puppis, IR Puppis, NGC 2546, Levy 384, NGC 2567, NGC 2559, NGC 2566, IC 2367, AC Puppis

Mythology/Back Story

Puppis, “the Poop Deck” or stern, began as part of Argo Navis, the great ship of Jason and the Argonauts from Greek myth. Argo Navis was one of the 48 constellations Ptolemy cataloged in the Almagest in the 2nd century AD. Because the figure was so large and unwieldy, the French astronomer Nicolas-Louis de Lacaille divided it into three parts after his 1751–52 survey of the southern sky from the Cape of Good Hope: Carina (the Keel),

Vela (the Sails), and Puppis (the Stern). He published the split in his star catalogs of the 1750s and 1760s. Lacaille kept a single run of Greek-letter designations across all three parts. That is why Puppis has no Alpha or Beta star, and Zeta Puppis (Naos) is its brightest star. Over the next century and a half astronomers increasingly treated the three parts as separate constellations. The International Astronomical Union made this official when it adopted its list of 88 constellations in 1922, and Eugène Delporte set Puppis's formal boundaries in 1930.

Constellation Highlights

The Puppis constellation has many objects but is located low on the southern horizon for astronomers in the northern latitudes, so there are a number of identified objects here that may not be visible for northern viewers.

- **HD 47973 (DS) – Showcase pair**
- **Messier 47 (OC) - A nice open cluster**
- **Messier 93 (OC) - A nice open cluster**
- **NGC 2477 (OC) - A nice open cluster**
- **FK Puppis (CS) - BV index of +4.52**
- **HD 53705 (MS-4) – Showcase Multiple star system.**
- **Messier 46 (OC) & NGC 2438 (PN) – Open cluster with planetary nebula in foreground.**
- **Xi Puppis (DS) - Yellow and orange pair.**
- **RU Puppis (CS) – Popular carbon star.**
- **Levy 384 (AS) – Small asterism**

Constellation Targets Summary and Stats

Object (Type)	Links	Gear	Aliases	Stats
HD 47973 (DS)	1	T	SAO-218093; HIP-31765; HR 2462; CD-48 2417; Δ31; WDS06386-4813; CPD -48 907; TYC 8108-2224-1; DUN31	**AB** | Mag=5.14 / 7.38 | Sep=12.9" | PA=321° | mBortle=9 | mApt=50mm | Spec=G8III | Color=yellow |
HD 49614 (DS)	1	B, T	SAO-218190; HIP-32481; HJ 3895; WDS06467-4748; CoD -47 2574; CPD -47 948; TYC 8121-1642-1	**AB** | Mag=7.1 / 10.9 | Sep=25.5" | PA=65° | mBortle=9 | mApt=70mm | Spec=K3III | Color=orange |
NGC 2298 (GC)	1	T	NGC-2298; Melotte 53; Mel-53; ESO 366-SC22; GCl 11	| Mag=9.3 | Size=4' | SB=20.9 | mBortle=9 | mApt=50mm | MC=VI |
NP Puppis (CS)		T	SAO-218296; HIP-33189; HR 2591; HD 51208; NP Pup; CoD -42 2818; CPD -42 1122; TYC 7636-1316-1	| Magnitude Range= 6.2 to 6.5 | Spec=C-R3 | BV=+2.50 | Color=red |
HD 52093 (MS-3)	1	T	SAO-197424; HIP-33544; HD 52093; WDS06583-3525; I66; CoD -35 3243; TYC 7097-2517-1; HJ 3905	**AB** | Mag=7.8 / 9.3 | Sep=1.9" | PA=253° | mBortle=9 | mApt=80mm | Spec=ApSi | Color=white | **AC** | Mag=7.83 / 9.71 | Sep=14.7" | PA=270° | mBortle=9 | mApt=50mm | Spec=ApSi | Color=white |
HD 53705 (MS-4)	1, 2	B, T	SAO-218421; HIP-34065; HR 2667; HD 53705; CD-43 2906; Δ38; WDS07040-4337; WRH 38	**AB** | Mag=5.61 / 6.68 | Sep=21.3" | PA=125° | mBortle=9 | mApt=50mm | Spec=G3V / K0V | Color=yellow / orange |

Object (Type)	Links	Gear	Aliases	Stats
				AC | Mag=5.61 / 8.83 | Sep=184.7" | PA=335° | mBortle=9 | mApt=50mm | Spec=G3V | Color=yellow | **AD** | Mag=5.61 / 11.2 | Sep=32.1" | PA=258° | mBortle=9 | mApt=80mm | Spec=G3V | Color=yellow |
HD 53952 (MS-4)	1	B, T	SAO-197557; HIP-34200; HR 2677; HD 53952; HJ 3928; CD-34 3327; WDS07055-3447; CPD -34 1137; TYC 7098-2541-2	**AB** | Mag=6.47 / 7.81 | Sep=2.4" | PA=142° | mBortle=9 | mApt=60mm | Spec=F2V | Color=yellow-white | **AC** | Mag=6.5 / 9.7 | Sep=37.6" | PA=290° | mBortle=9 | mApt=50mm | Spec=F2V | Color=yellow-white | **AD** | Mag=6.47 / 11.3 | Sep=43.9" | PA=126° | mBortle=9 | mApt=80mm | Spec=F2V | Color=yellow-white |
L2 Puppis (DS)	1, 2	B, T	SAO-218549; HIP-34922; HR 2748; HD 56096; L2 Pup; HJ 3943; GC 9604; CoD -44 3227; CPD -44 1352; WDS 07135-4438; TYC 7642-1461-1	**AB** | Mag=4.77 / 11.69 | Sep=97.6" | PA=210° | mBortle=9 | mApt=102mm | Spec=M5IIIe | Color=red |
Collinder 135 Family (Cr-135)				
Collinder 135 (OC)	1	B, T	Pi Puppis Cluster; Lund 312; OCL 700; C 0715-367; Cr-135	| Mag=2.1 | Size=50' | SB=19.2 | mBortle=9 | mApt=50mm | MC=IV2p |
Pi Puppis (DS)	1, 2	B, T	SAO-197795; HIP-35264; Ahadi; HR 2773; HD 56855; π Pup; CD-36 3489; DUN43; FK5 278; Δ43; WDS07171-3706; CPD -36 1211; TYC 7115-3019-1	**AB** | Mag=2.89 / 7.94 | Sep=69" | PA=213° | mBortle=9 | mApt=50mm | Spec=K3Ib | Color=orange |
NV Puppis (MS-3)	1	B, T	SAO-197824; HIP-35363; HR 2787; HD 57150; CD-36 3512; WDS07183-3644; JC10; NV Pup	**AB** | Mag=4.7 / 5.1 | Sep=241.6" | PA=102° | mBortle=9 | mApt=50mm | Spec=B2V / B3IV | Color=blue-white / blue-white | **BC** | Mag=5.1 / 8.7 | Sep=118.9" | PA=215° | mBortle=9 | mApt=50mm | Spec=B3IV / A0V | Color=blue-white / white |
NGC 2451 (OC)	1	B, T	NGC-2451; NGC-2451A; NGC-2451B; Collinder 161; ESO 311-SC8; ESO 311-SC008; Lund 380; OCl 716; vdB-Ha 9; C 0743-378	| Mag=3 | Size=45' | SB=19.9 | mBortle=9 | mApt=50mm | MC=II2m |
c Puppis (VS)	1	T	SAO-198398; HIP-37819; HR 3017; HD 63032; CoD -37 3863; CPD -37 1558; TYC 7645-3246-1; NSV 3723	| Magnitude Range= 3.58 to 3.62 | Spec=K2.5Ib-IIa | BV=+1.73 | Color=orange |
HD 58038 (DS)	1	T	SAO-197907; HIP-35733; HJ 3957; WDS07223-3555; CoD -35 3551; CPD -35 1214; TYC 7116-2066-1	**AB** | Mag=7.1 / 7.9 | Sep=7.4" | PA=191° | mBortle=9 | mApt=50mm | Spec=F8 | Color=yellow-white |

Constellation Guide

Object (Type)	Links	Gear	Aliases	Stats
Melotte 66 (OC)		T	Mel-66	| Mag=7.8 | Size=10' | SB=21.4 | mBortle=9 | mApt=102mm | MC=II1r |
HD 59099 (DS)	1	B, T	HIP-36165; HJ 3969; WDS07270-3419	**AB** | Mag=7.08 / 8.06 | Sep=17.7" | PA=227° | mBortle=9 | mApt=50mm | Spec=F6/7V / F8 | Color=yellow-white / yellow |
Trumpler 7 (OC)		T	Tr-07; Collinder 146; Lund 340; OCl 635; C 0725-239	| Mag=7.9 | Size=5' | SB=20.0 | mBortle=9 | mApt=114mm | MC=II3mn |
HD 59074 (DS)	1	B, T	SAO-152905; HIP-36225; WDS07276-1830; S550; BD -18 1846; TYC 5970-2760-1	**AB** | Mag=6.9 / 7.6 | Sep=39.6" | PA=115° | mBortle=9 | mApt=50mm | Spec=A0 / B8I | Color=white / blue-white |
NGC 2396 (OC)		T	NGC-2396; OCl 579	| Mag=7.4 | Size=10' | SB=21.0 | mBortle=9 | mApt=102mm | MC=IV1m |
HD 59499 (DS)	1	T	SAO-198038; HIP-36345; HR 2870; CD-31 4590; Δ49; WDS07289-3151; DUN49	**AB** | Mag=6.3 / 7 | Sep=8.9" | PA=54° | mBortle=9 | mApt=50mm | Spec=B3V / B4V | Color=blue-white / blue-white |
Sigma Puppis (DS)	1, 2	B, T	SAO-218755; HIP-36377; HR 2878; HD 59717; σ Pup; Sigma Puppis; CD-43 3260; DUN51; FK5 1194; Δ51; WDS07292-4318; CPD -43 1499; TYC 7655-2687-1	**AB** | Mag=3.25 / 8.81 | Sep=22.1" | PA=74° | mBortle=9 | mApt=50mm | Spec=K5III | Color=orange |
HD 59438 (MS-3)	1	B, T	SAO-152943; HIP-36395; HR 2868; Σ-1104; STF 1104; ADS 6126; BD-14 1925; WDS07294-1500; TYC 5408-0631-1	**AB** | Mag=6.4 / 7.6 | Sep=1.7" | PA=43° | mBortle=9 | mApt=102mm | Period=686y | Spec=F7V | Color=yellow-white | **AC** | Mag=6.39 / 11.8 | Sep=21" | PA=185° | mBortle=9 | mApt=102mm | Spec=F7V | Color=yellow-white |
NGC 2409 (OC)		T	NGC-2409; Boc 4; Lund 1128; C 0728-168	| Mag=7.3 | Size=2.5' | SB=17.9 | mBortle=9 | mApt=80mm | MC=II3mn |
HD 60054 (DS)	1	T	HJ 3973; WDS07319-2056; BD -20 1999; ADS 6159; TYC 5991-2024-1	**AB** | Mag=7.88 / 9.9 | Sep=9.1" | PA=38° | mBortle=9 | mApt=50mm | Spec=B6III/IV | Color=blue-white |
NGC 2414 (OC)		T	NGC-2414; Collinder 150; Lund 352; OCl 598; C 0731-153	| Mag=7.9 | Size=5' | SB=20.0 | mBortle=9 | mApt=114mm | MC=I3m |
HD 60535 (DS)	1	T	WDS07340-2342; HWE18; CoD -23 5698; ADS 6184; TYC 6539-0559-1	**AB** | Mag=8.05 / 8.94 | Sep=1.9" | PA=204° | mBortle=9 | mApt=80mm | Spec=B6/8III: | Color=blue-white |
V377 Puppis (DS)	1	B, T	SAO-235303; HIP-36802; HJ 3986; WDS07341-5050; V377 Pup; CoD -50 2841; CPD -50 1298; TYC 8145-0110-1	**AB** | Mag=7.76 / 9.32 | Sep=48.5" | PA=220° | mBortle=9 | mApt=50mm | Spec=M3/4III | Color=red |
HD 60584 (DS)	1, 2	T	SAO-174019; HIP-36817; HR 2909; ADS 6190; CD-23 5709; WDS07343-2328; HN19	**AB** | Mag=5.82 / 5.85 | Sep=9.9" | PA=118° | mBortle=9 | mApt=50mm | Spec=F5/7V | Color=yellow-white |
NGC 2421 (OC)		T	NGC-2421; OCl 626	| Mag=8.3 | Size=6' | SB=20.8 | mBortle=6 | mApt=130mm | MC=I2r |
Messier 47 (OC)	1	B, T	M-47; NGC-2422; NGC-2478; Collinder 152; Raab 55	| Mag=4.3 | Size=30' | SB=20.3 | mBortle=9 | mApt=50mm | MC=I3m |

Object (Type)	Links	Gear	Aliases	Stats
HD 60997 (DS)		T	SAO-153142; Σ-1121; STF 1121; WDS07366-1429; BD -14 2020; ADS 6216; TYC 5409-4230-1	**AB** | Mag=6.92 / 7.3 | Sep=7.4" | PA=305° | mBortle=9 | mApt=50mm | Spec=B6V / B6V | Color=blue-white / blue-white |
Melotte 71 (OC)		T	Mel-71; Collinder 155; Lund362; OCL587	| Mag=7.1 | Size=9' | SB=20.5 | mBortle=9 | mApt=80mm | MC=II2r |
HD 61555 (DS)	1, 2	T	SAO-174198; SAO-174199; HIP-37229; Markab k; HR 2949; HR 2948; HD 61556; Kap Pup; KAPPA PUP; k Puppis; H 3 27; H III 27; WDS07388-2648; BU 1061; ADS 6255; SACDBL3752; CoD -26 4707; TYC 6547-2627-1; ALDS 37; TYC 6547-2626-1	**AB** | Mag=4.4 / 4.62 | Sep=9.9" | PA=318° | mBortle=9 | mApt=50mm | Spec=B6V / B6V | Color=blue-white / blue-white |
NGC 2439 (OC)	1	T	NGC-2439; Melotte 74; Mel-74; Collinder 158; Lund 370; OCl 688; Raab 61; vdB-Ha 6; C 0738-315	| Mag=6.9 | Size=8' | SB=20.0 | mBortle=9 | mApt=70mm | MC=II3r |
Messier 46 (OC)	1	B, T	M-46; NGC-2437; Melotte 75; Mel-75; Collinder 159; Raab 62; Lund 373; OCl 601; C 0739-147	| Mag=6.1 | Size=20' | SB=21.2 | mBortle=9 | mApt=50mm | MC=II2r |
NGC 2438 (PN)	1	T	NGC-2438; FC 87; ARO-46; Sa 2-13; VV 43; PK 231+4.2; PN G231.8+04.1	| Mag=10.8 | Size=1.1' | SB=19.6 | mBortle=9 | mApt=50mm | MC=Round (multiple-shell) |
NGC 2440 (PN)	1	T	NGC-2440; Bow Nebula; ARO 47; Sa 2-14; VV 45; PK 234+02.1; PN G234.8+02.4; ESO 560-9	| Mag=9.4 | Size=1.2'x0.7' | SB=17.8 | mBortle=9 | mApt=50mm | MC=Butterfly (bipolar) |
Messier 93 (OC)	1	T	M-93; NGC-2447; Critter Cluster; Collinder 160; OCl 649.0	| Mag=6 | Size=10' | SB=19.6 | mBortle=9 | mApt=50mm | MC=I3r |
2 Puppis (MS-3)	1	B, T	SAO-153363; SAO-153362; HIP-37843; HIP-37842; HR 3010; HR 3009; HD 62864; HD 62863; 2 Pup; Σ-1138; STF 1138; ADS 6348; BD-14 2194; WDS07455-1441; PV Pup; BD -14 2193; TYC 5422-3294-1	**AB** | Mag=6 / 6.7 | Sep=16.7" | PA=340° | mBortle=9 | mApt=50mm | Spec=A2V / A8V | Color=white / white | **AC** | Mag=6 / 10.57 | Sep=100" | PA=229° | mBortle=9 | mApt=60mm | Spec=A2V | Color=white |
Haffner 15 (OC)		T	Haf 15; Lund 351; OCl 696; vdB-Ha 8; C 0743-326	| Mag=9.4 | Size=4' | SB=21.0 | mApt=250mm | MC=II2m |
NGC 2452 (PN)	1	T	NGC-2452; Wray 15-85; ARO 93; He 2-4; RCW 17; Sa 2-16; PK 243-01.1; PN G243.3-01.0; ESO 493-11; VV 46	| Mag=12 | Size=0.3' | SB=18.0 | mBortle=9 | mApt=80mm | MC=Elliptical (annular) |
NGC 2453 (OC)		T	NGC-2453; OCl 670	| Mag=8.3 | Size=5' | SB=20.4 | mBortle=6 | mApt=130mm | MC=I3m |
Xi Puppis (DS)	1, 2	T	SAO-174601; HIP-38170; Asmidiske; Azmidiske; HR 3045; HD 63700; xi Pup; ξ	**AB** | Mag=3.45 / 13 | Sep=5.1" | PA=191° | mApt=180mm | Spec=G3Ib | Color=yellow |

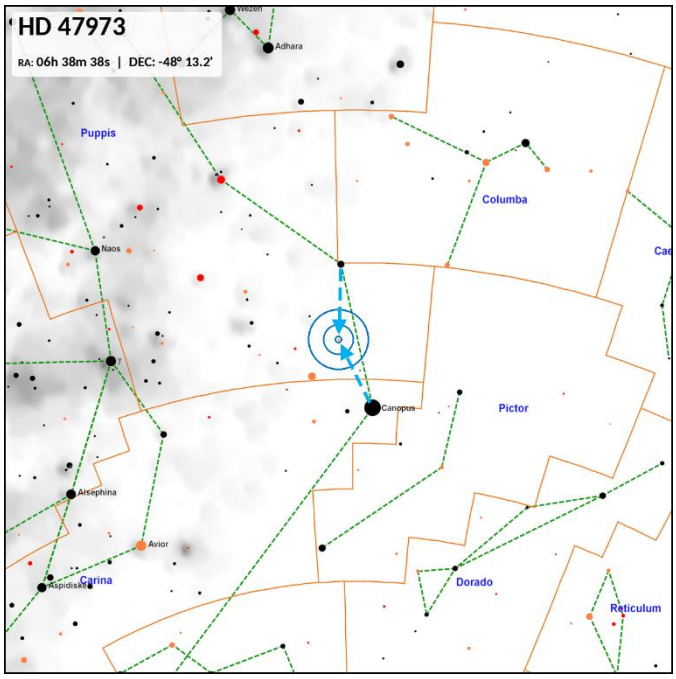
Object (Type)	Links	Gear	Aliases	Stats
			Puppis; ξ Pup; 7 Pup; BU1063; WDS07493-2452; CoD -24 6030; CPD -24 2939; ADS 6393; TYC 6557-4522-1	
Haffner 16 (OC)		T	Haf 16; Lund 390; OCl 655; C 0748-253	| Mag=10 | Size=5' | SB=22.1 | mApt=300mm | MC=I2m |
NGC 2477 (OC)	1	T	NGC-2477; Caldwell 71; C-71; Melotte 78; Mel-78; Collinder 165; Raab 65; ESO 311-SC017; OCL 720; Lund 395; vdB-Ha 13; C 0750-384	| Mag=5.8 | Size=15' | SB=20.3 | mBortle=9 | mApt=50mm | MC=I2r |
HD 64259 (DS)	1	B, T	HIP-38436; H 3 28; H III 28; WDS07525-1352	**AB** | Mag=6.61 / 10.5 | Sep=18.6" | PA=223° | mBortle=9 | mApt=60mm | Spec=K2III | Color=orange |
Skull and Crossbones Nebula (Sh2-311)				
Sharpless 2-311 (EN)		B, T	Sh2-311; LBN 1067	| Size=50'x30' |
NGC 2467 (OC)	1	B, T	NGC-2467; Sh2-311; Emission Comet; Skull and Crossbones Nebula; Collinder 164; Gum 9; ESO 493-25; LBN 1065; Lund 396; OCl 668; BRAN 80A; CTB 23; C 0750-263	| Mag=7 | Size=16' | SB=21.6 | mBortle=9 | mApt=70mm | MC=I3mn |
Haffner 18 (OC, EN)		T	Haf 18; Haf 18a; Haf 18b; Haf 18c; Haf 18ab; C 0750-262	| Mag=9.3 | Size=5' | SB=21.4 | mApt=200mm | MC=I2pn |
Haffner 19 (OC)		T	Haf 19	| Mag=9.4 | Size=2' | SB=19.5 | mApt=250mm | MC=I1mn |
Trumpler 8 (OC)		T	NGC-2479; Tr-08; OCl 623	| Mag=9.6 | Size=7' | SB=22.5 | mApt=250mm | MC=III1m |
Trumpler 9 (OC)		T	Tr-09; Collinder 168; Harvard 2; Lund 407; OCl 663; C 0753-258	| Mag=8.7 | Size=5' | SB=20.8 | mBortle=4 | mApt=150mm | MC=II2p |
V406 Puppis (CS)		T	SAO-219177; HIP-38787; J075620.80-495855.; Sky7560084; PPM312332; HD 65424; CoD -49 3201; CPD -49 1432; TYC 8143-1629-1	| Magnitude Range= 7.39 to 8.14 | Spec=C-N4IV | BV=+3.56 | Color=deep red |
NGC 2509 (OC)	1	T	NGC-2509; OCl 630	| Mag=9.3 | Size=8' | SB=22.4 | mApt=200mm | MC=I1r |
HD 66097 (MS-3)	1	B, T	SAO-174989; HIP-39217; HD 66097; β333; WDS08013-2220; BD -21 2220; CoD -22 5528; ADS 6524; TYC 6007-3451-1	**AB** | Mag=7.15 / 9.2 | Sep=1.7" | PA=43° | mBortle=9 | mApt=102mm | Spec=A1V | Color=white | **AC** | Mag=7.15 / 7.62 | Sep=43" | PA=70° | mBortle=9 | mApt=50mm | Spec=A1V / G0 | Color=white / yellow |
HD 66306 (MS-3)	1	B, T	SAO-175018; HIP-39282; HD 66306; β202; WDS08020-2713; CoD -26 5395; ADS 6535; TYC 6562-0062-1	**AB** | Mag=6.8 / 9.9 | Sep=7.6" | PA=161° | mBortle=9 | mApt=50mm | Spec=B7II | Color=blue-white |

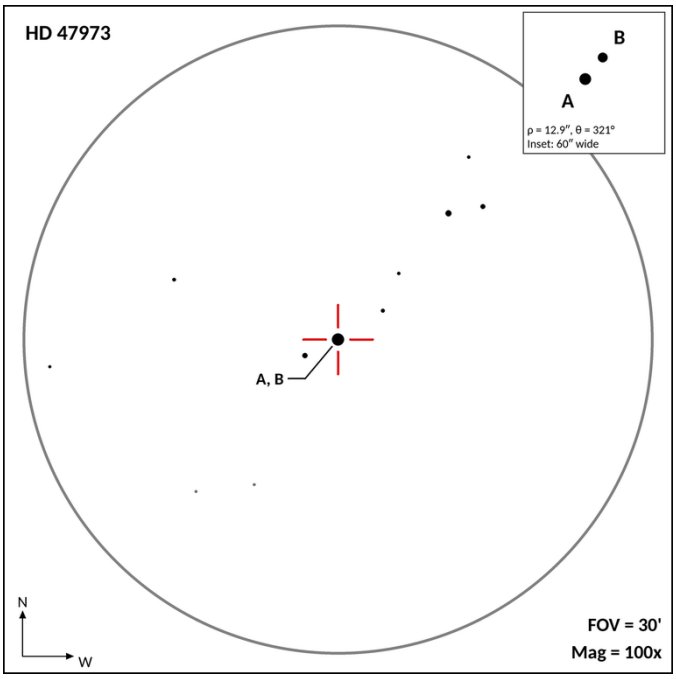
Object (Type)	Links	Gear	Aliases	Stats
				AD | Mag=6.85 / 12 | Sep=30" | PA=240° | mBortle=8 | mApt=114mm | Spec=B7II | Color=blue-white |
HD 66454 (MS-3)	1	B, T	SAO-175052; HIP-39352; HD 66454; HJ 4037; WDS08026-2733; CoD -27 4894; CPD -27 2727; ADS 6544; TYC 6562-3410-1	**AB** | Mag=7.22 / 8.41 | Sep=6.5" | PA=245° | mBortle=9 | mApt=50mm | Spec=G2IV | Color=yellow | **AC** | Mag=7.2 / 9.2 | Sep=64.5" | PA=74° | mBortle=9 | mApt=50mm | Spec=G2IV | Color=yellow |
HD 66598 (DS)	1	B, T	SAO-198743; HIP-39380; HR 3160; HJ 4035; CD-32 4766; WDS08031-3228; CPD -32 1937; TYC 7124-3752-1	**AB** | Mag=6 / 9 | Sep=35.9" | PA=134° | mBortle=9 | mApt=50mm | Spec=K2.5III | Color=orange |
Ruprecht 49 (OC)		T	Ru 49; Lund 423; OCl 676; C 0801-266	| Mag=9.6 | Size=2.5' | SB=20.2 | mApt=250mm | MC=II1p |
RT Puppis (CS)		T	SAO-198783; HIP-39583; HD 67190; RT Pup; CoD -38 4049; CPD -38 1930; TYC 7659-3115-1	| Magnitude Range= 8.2 to 9.1 | Period=0.27y | Spec=C6,2 | BV=+2.43 | Color=orange-red |
HD 67243 (MS-3)	1	B, T	SAO-198791; HIP-39617; HR 3177; HJ 4046; CD-33 4525; WDS08057-3334; CPD -33 1949; TYC 7124-3768-1	**AB** | Mag=6.26 / 8.44 | Sep=21.9" | PA=88° | mBortle=9 | mApt=50mm | Spec=G1Ib | Color=yellow | **AC** | Mag=6.26 / 11 | Sep=27.9" | PA=60° | mBortle=9 | mApt=70mm | Spec=G1Ib | Color=yellow |
RU Puppis (CS)		T	SAO-175215; HIP-39751; HD 67507; RU Pup; BD -22 2160; CoD -22 5693; CPD -22 3143; TYC 6555-0486-1	| Magnitude Range= 8.9 to 11.1 | Period=1.16y | Spec=C5,4 | BV=+3.61 | Color=deep red |
HD 67652 (DS)	1	T	HIP-39820; β334; WDS08082-2208; BD -21 2284; ADS 6614; TYC 6008-0072-1	**AB** | Mag=7.9 / 8.5 | Sep=3.3" | PA=345° | mBortle=9 | mApt=50mm | Spec=G0V | Color=yellow |
FK Puppis (CS)		T	SAO-198860; GCVS680174; FK Pup; CoD -35 4257	| Magnitude Range= 12.0 to 15.3 (photographic) | Period=1.37y | Spec=C6-,3e(N) | BV=+4.52 | Color=deep red |
NGC 2539 (OC)	1	T	NGC-2539; Melotte 183; Mel-183; Cr 176; Raab 70; OCL 611; Lund 431	| Mag=6.5 | Size=9' | SB=19.9 | mBortle=9 | mApt=60mm | MC=III2m |
19 Puppis (MS-5)	1, 2	B, T	SAO-153942; HIP-40084; HR 3211; HD 68290; 19 Pup; ADS 6647; BD-12 2385; BU1064; β1064; WDS08113-1256; TYC 5434-3731-1; SHJ 91; BU 1064; ARY 64	**AB** | Mag=4.8 / 11.2 | Sep=2.2" | PA=261° | mBortle=9 | mApt=102mm | Spec=G8III | Color=yellow | **AD** | Mag=4.82 / 11.9 | Sep=57.3" | PA=276° | mBortle=9 | mApt=114mm | Spec=G8III | Color=yellow | **AE** | Mag=4.82 / 9.37 | Sep=70" | PA=256° | mBortle=9 | mApt=50mm | Spec=G8III | Color=yellow |

Object (Type)	Links	Gear	Aliases	Stats
				AF | Mag=4.82 / 10.74 | Sep=112.4" | PA=329° | mBortle=9 | mApt=60mm | Spec=G8III | Color=yellow |
IR Puppis (CS)		T	GCVS680235; IR Pup; TYC 6008-2034-1	| Magnitude Range= 12.5 to 15.5 (photographic) | Period=0.19y | Spec=C4,3(N) | BV=+3.02 | Color=red |
NGC 2546 (OC)	1	B, T	NGC-2546; Collinder 178; ESO 369-SC007; Lund 436; OCl 726; vdB-Ha 22; C 0810-374; Heart and Dagger Cluster; Wounded Heart Cluster	| Mag=6.3 | Size=40' | SB=22.9 | mBortle=9 | mApt=50mm | MC=III2m |
Levy 384 (AS)		T	The Bookworm	| Size=2' | Stars=7 | Ref Star: TYC 5438-2084-1 |
NGC 2567 (OC)	1	T	NGC-2567; Melotte 86; Mel-86; Collinder 180; Lund 445; OCl 708; Raab 73; vdB-Ha 26; IRAS 08164-3029; C 0816-304	| Mag=7.4 | Size=10' | SB=21.0 | mBortle=9 | mApt=102mm | MC=II2m |
Puppis Wall (NGC-2559)				
NGC 2559 (G)	1	T	NGC-2559; UGCA 136; PGC 23222; ESO 494-41; VV 475; MCG -4-20-3; ESO-LV 4940410; IRAS 08150-2718; 2MASS 08170607-2727209	| Mag=10.9 | Size=4.4'x2.3' | SB=22.0 | mBortle=5 | mApt=102mm | MC=SB(s)bc pec |
NGC 2566 (G)	1	T	NGC-2566; UGCA 138; PGC 23303; MCG-4-20-8; ESO 495-3; ESO-LV 4950030; IRAS 08166-2520; 2MASS 08184560-2529582	| Mag=11 | Size=4.1'x2' | SB=21.9 | mBortle=5 | mApt=102mm | MC=(R')SB(rs)ab pec? |
IC 2367 (G)		T	Levy 256; PGC 23579; MCG -3-22-1; ESO 562-5; IRAS 08219-1836; 2MASS 08241008-1846318	| Mag=12.5 | Size=2.3'x0.5' | SB=21.3 | mBortle=4 | mApt=150mm | MC=SB(r)b |
AC Puppis (CS, DS)		T	HIP-41061; BD-15°2405; AC Pup; HDS 1194; WDS 08227-1555	| Magnitude Range= 8.9 to 10.1 | Spec=C5,4 | BV=+3.04 | Color=red |

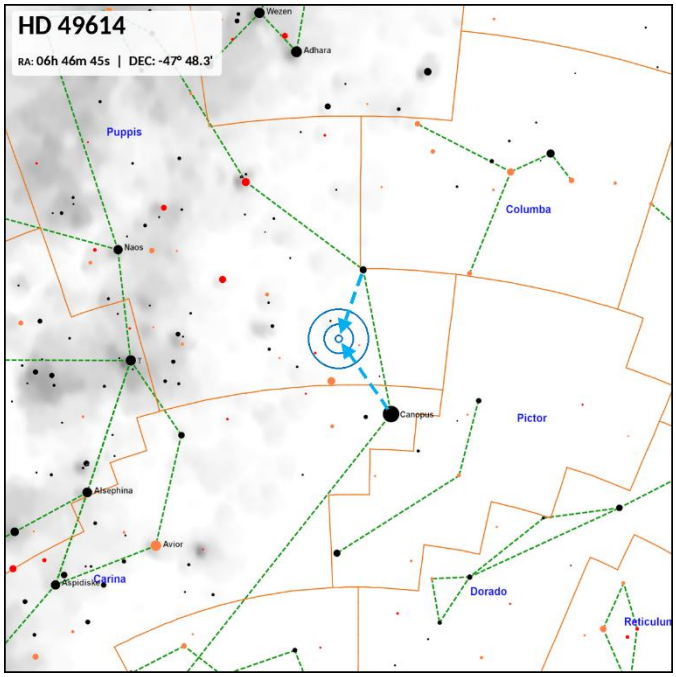
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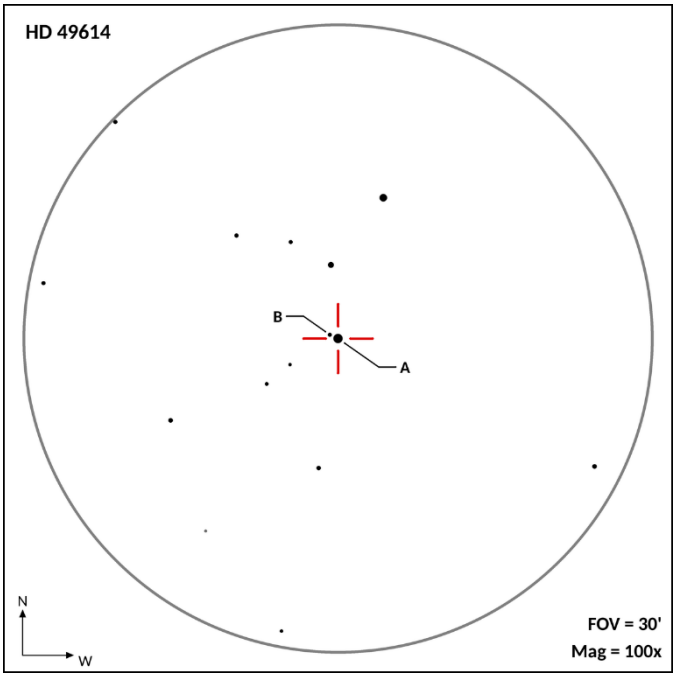
HD 47973 (DS || **AB** | Mag=5.14 / 7.38 | Sep=12.9" | PA=321° | mBortle=9 | mApt=50mm | Spec=G8III | Color=yellow |) Located 480 light years away, the primary is a yellow-orange giant. The orbital period of the pair is not known but the physical distance between the two is at least 1,974 AU. This double is physical.



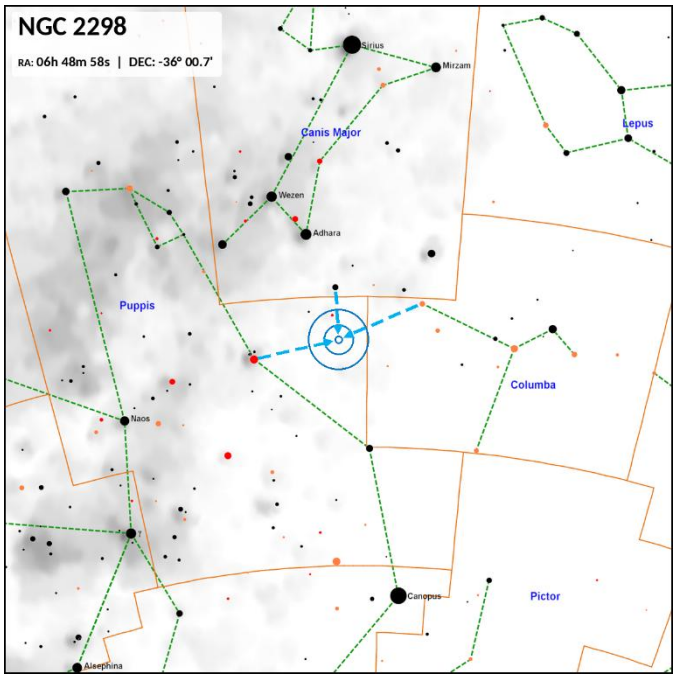


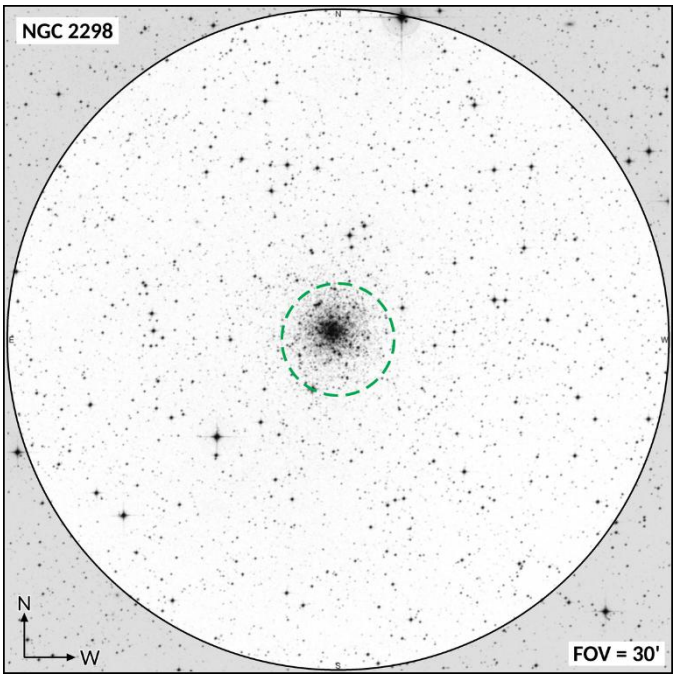
HD 49614 (DS || **AB** | Mag=7.1 / 10.9 | Sep=25.5" | PA=65° | mBortle=9 | mApt=70mm | Spec=K3III | Color=orange |) Located 1,052 light years away, this is a physical double. Orbital parameters have not been determined. Reported by Herschel as "Orange, blue".



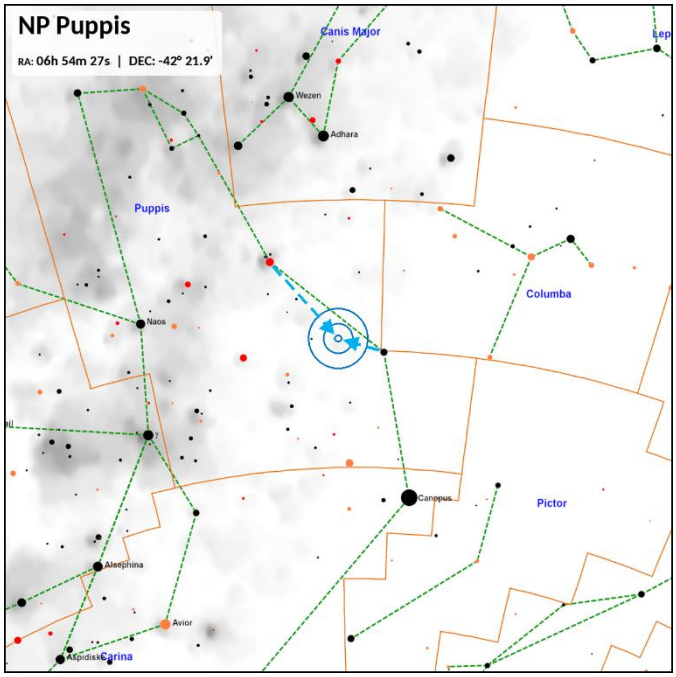


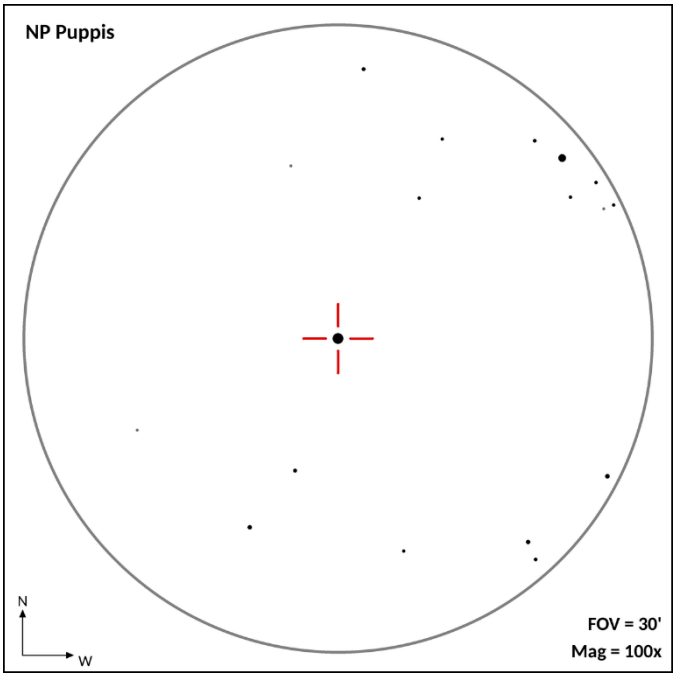
NGC 2298 (GC || Mag=9.3 | Size=4' | SB=20.9 | mBortle=9 | mApt=50mm | MC=VI |) Not much information is available for this globular cluster except that this cluster is being disrupted by the galactic tide, trailing a long tidal tail. Concentration Class for this globular is Intermediate concentration toward the center.



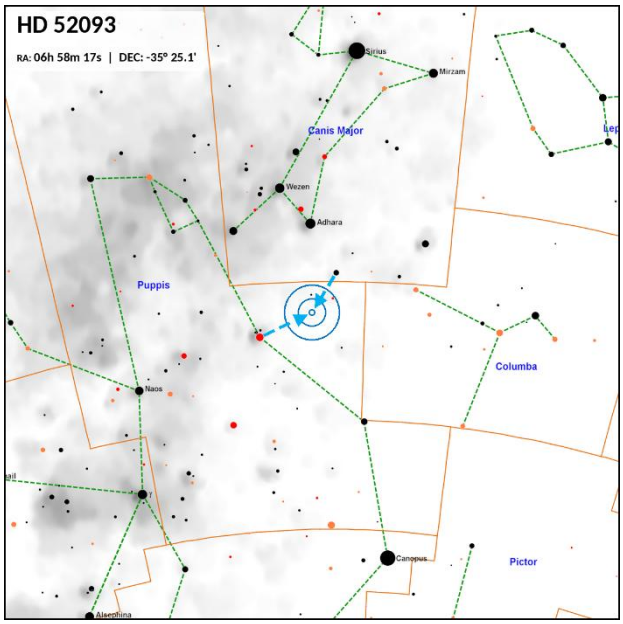


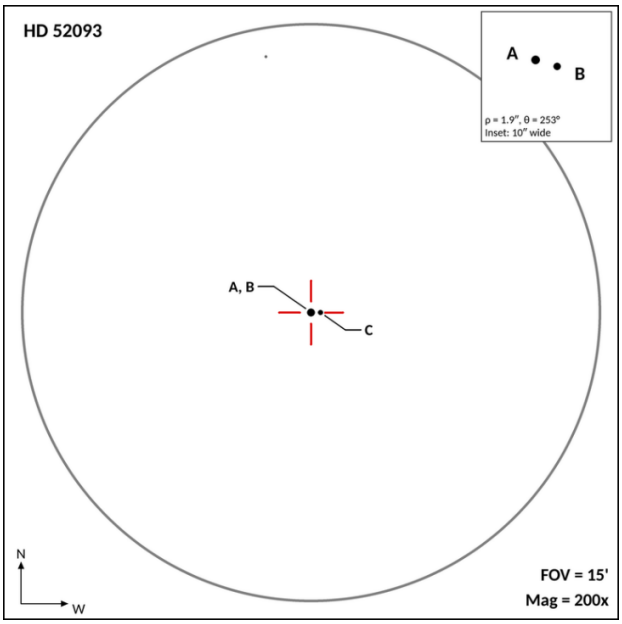
NP Puppis (CS || Magnitude Range= 6.2 to 6.5 | Spec=C-R3 | BV=+2.50 | Color=red |) Located 1,900 light years away with an energy output of 623 times the Sun's luminosity. BV=+2.50 indicating a color of Red. This is a long-period variable star with an undetermined period.



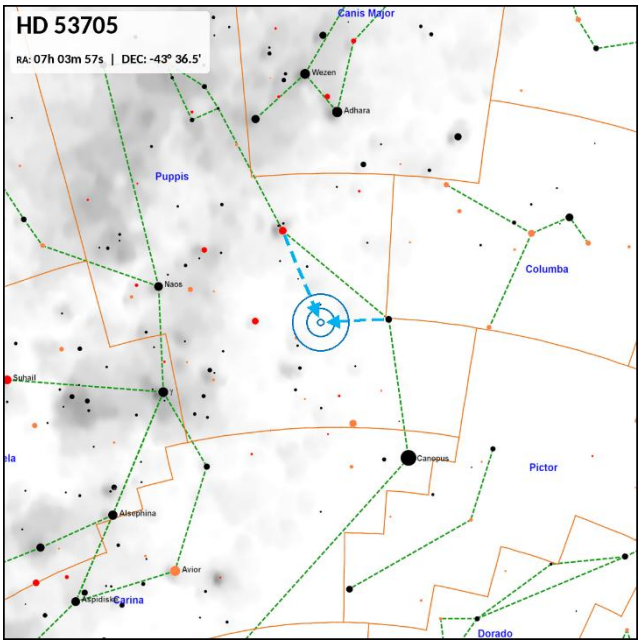


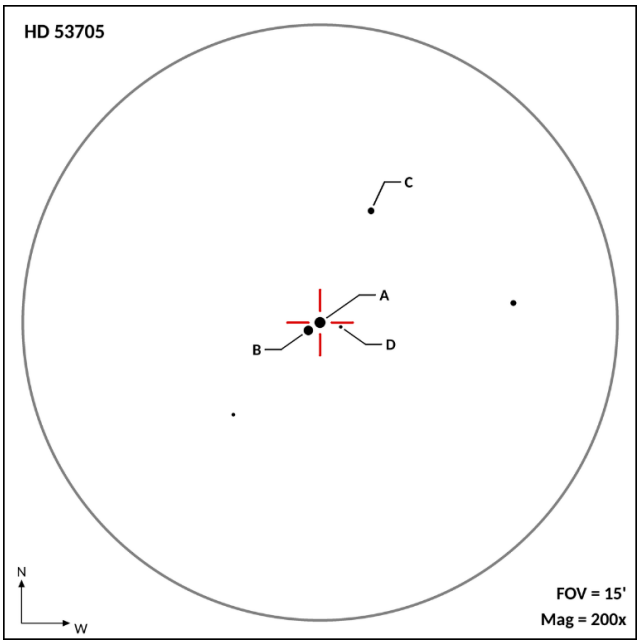
HD 52093 (MS-3 || **AB** | Mag=7.8 / 9.3 | Sep=1.9" | PA=253° | mBortle=9 | mApt=80mm | Spec=ApSi | Color=white || **AC** | Mag=7.83 / 9.71 | Sep=14.7" | PA=270° | mBortle=9 | mApt=50mm | Spec=ApSi | Color=white |) Located 930 light years away and listed as a quadruple system with the D component at magnitude 14, so it is not included in this guide. AC component is physical; the nature of the AB component is uncertain.



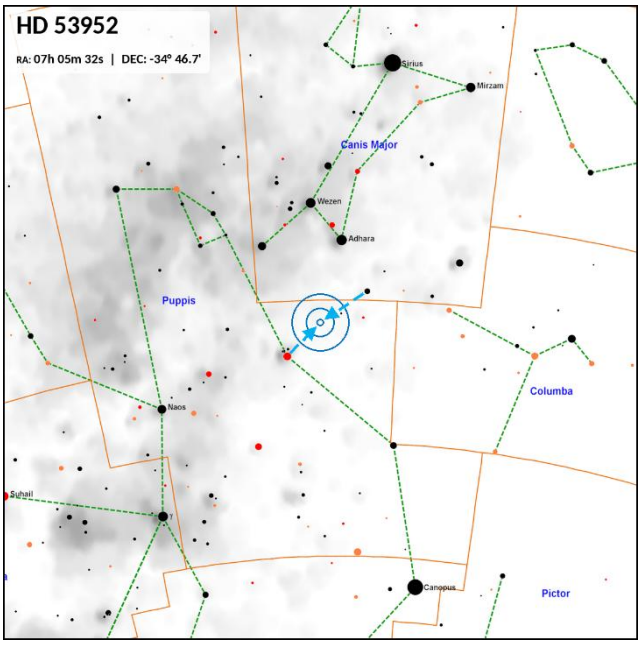


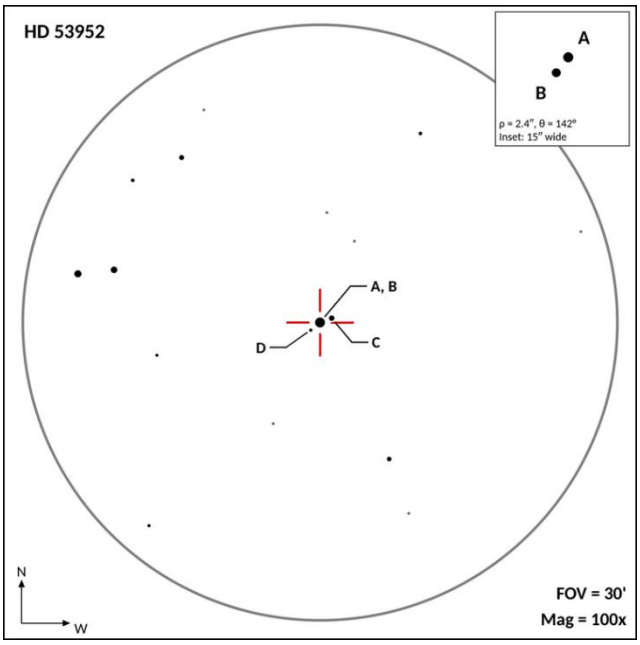
HD 53705 (MS-4 || **AB** | Mag=5.61 / 6.68 | Sep=21.3" | PA=125° | mBortle=9 | mApt=50mm | Spec=G3V / K0V | Color=yellow / orange || **AC** | Mag=5.61 / 8.83 | Sep=184.7" | PA=335° | mBortle=9 | mApt=50mm | Spec=G3V | Color=yellow || **AD** | Mag=5.61 / 11.2 | Sep=32.1" | PA=258° | mBortle=9 | mApt=80mm | Spec=G3V | Color=yellow |) A quintuple system where the Ca and Cb components are too close to resolve with Earth-based telescopes. The orbital period of the AB pair is 55,000 years. The Ca and Cb components have an orbital period of 4.6 years.



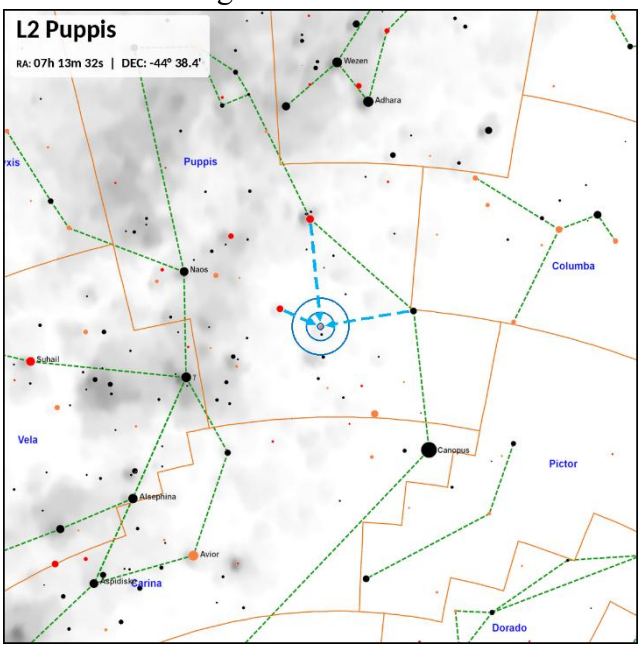


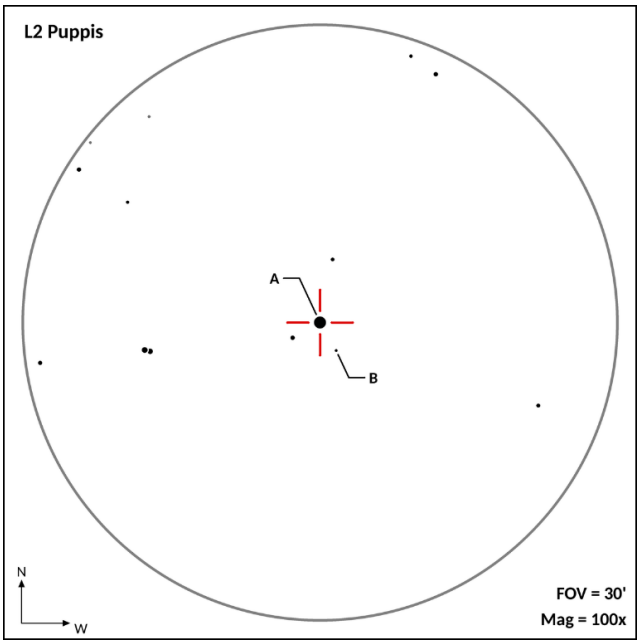
HD 53952 (MS-4 || **AB** | Mag=6.47 / 7.81 | Sep=2.4" | PA=142° | mBortle=9 | mApt=60mm | Spec=F2V | Color=yellow-white || **AC** | Mag=6.5 / 9.7 | Sep=37.6" | PA=290° | mBortle=9 | mApt=50mm | Spec=F2V | Color=yellow-white || **AD** | Mag=6.47 / 11.3 | Sep=43.9" | PA=126° | mBortle=9 | mApt=80mm | Spec=F2V | Color=yellow-white |) Located 174 light years away. The nature of the AB pair is uncertain; the AC pair is physical and the AD pair is not physical.



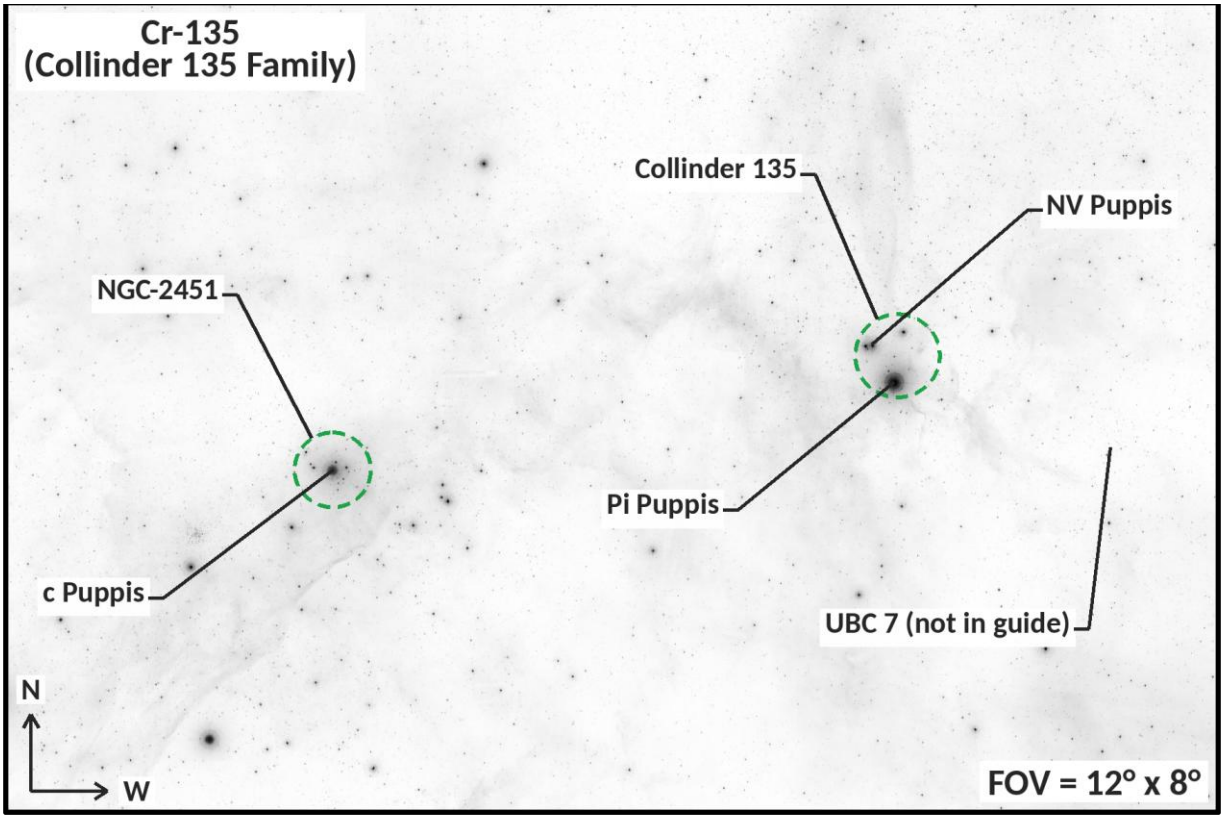


L2 Puppis (DS || **AB** | Mag=4.77 / 11.69 | Sep=97.6" | PA=210° | mBortle=9 | mApt=102mm | Spec=M5IIIe | Color=red |) Located 209 light years away, this pair is not physical, but an optical double. The primary is a semi-regular pulsating star with a period of 140 days and a magnitude range of 2.6 – 6.0 and a color index of BV=+1.56 indicating a red color.





Collinder 135 Family (Cr-135)



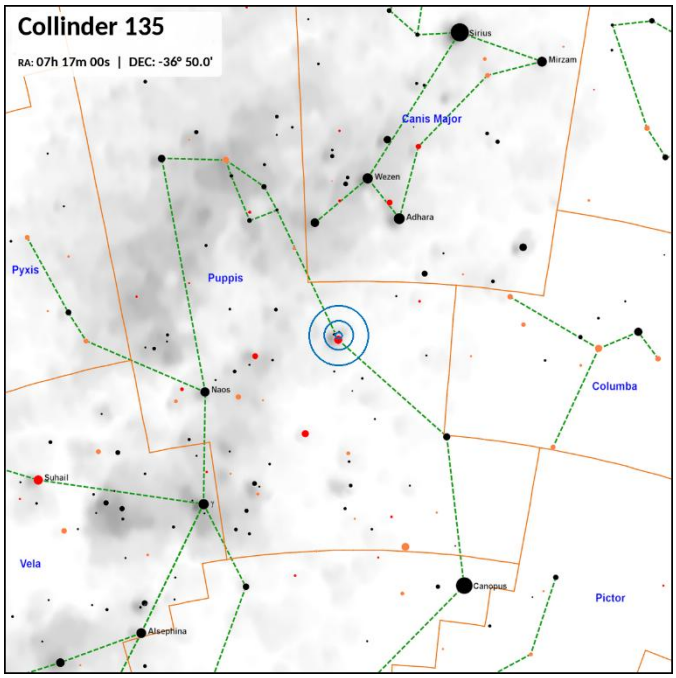
The Collinder 135 Family region contains Collinder 135, Pi Puppis, NV Puppis, NGC 2451 and c Puppis.

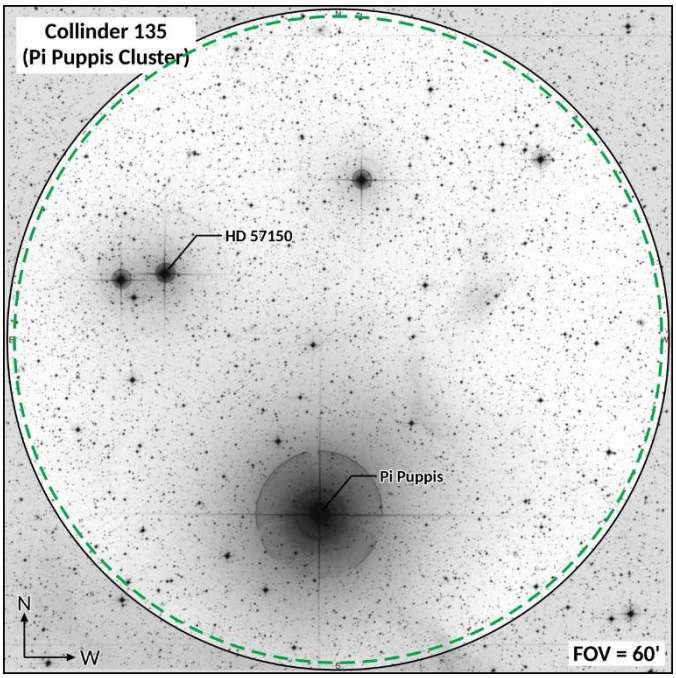
Collinder 135 gives its name to the Collinder 135 family, one of three large families of young star clusters near the Sun. Gaia measurements trace these clusters back 30 to 50 million years to a single massive star-forming complex, whose supernovae may have blown a bubble about 3,000 light years across. In Vela and Puppis, Collinder 135, UBC 7, NGC 2451B, Collinder 140 and NGC 2547 still share a common motion and are joined by a continuous spread of stars. In this guide the family is represented by Collinder 135 and NGC 2451, whose B cluster and c Puppis share the family's motion.

Closer in, Collinder 135 has a twin. UBC 7, found in Gaia data in 2018 about 2° away on the sky, lies about 24 parsecs from Collinder 135 in space. The two probably formed together as a binary cluster about 50 million years ago.

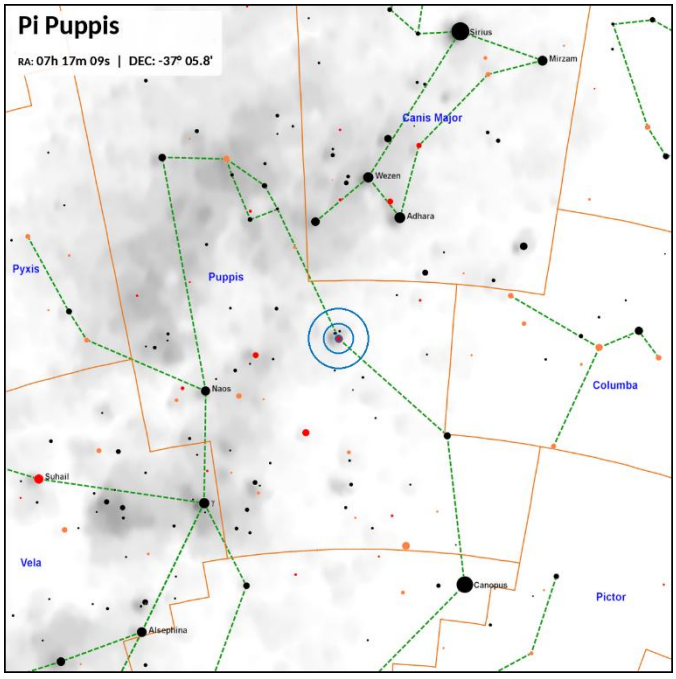
Collinder 135 itself is a bright, naked-eye cluster, about 50′ across and of combined magnitude 2.1, roughly 1,000 light years away. Its brightest star is Pi Puppis, a 2.7-magnitude orange K3 Ib supergiant of about 12 solar masses with an 8th-magnitude companion 69″ away. NV Puppis, at magnitude 4.7, is a blue-white B2 Ve Gamma Cassiopeiae variable that forms a wide pair with the Beta Cephei variable NW Puppis. The cluster is too large for most telescope fields and is best seen in binoculars or a rich-field telescope, where the orange Pi Puppis stands out against the blue-white stars around it.

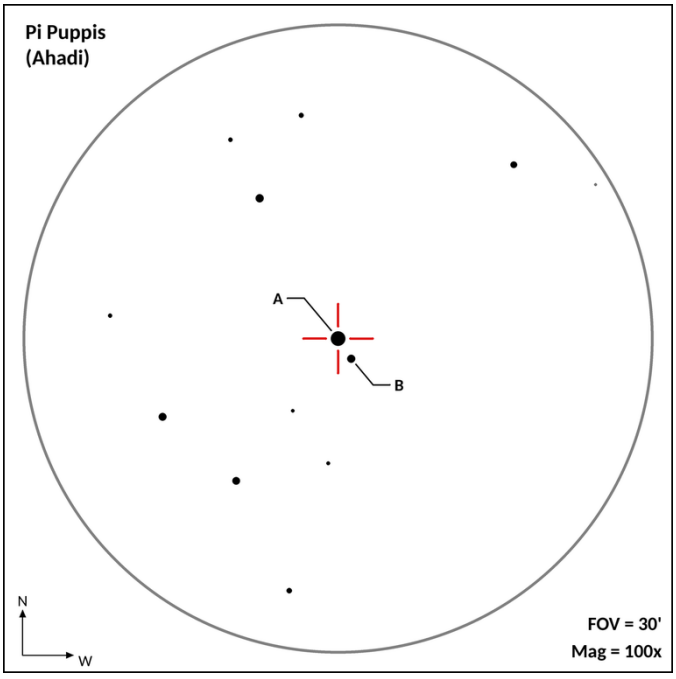
Collinder 135 (OC || Mag=2.1 | Size=50' | SB=19.2 | mBortle=9 | mApt=50mm | MC=IV2p |) The Pi Puppis Cluster is located 1,031 light years away and consists of six stars brighter than 6th magnitude and a widespread population of fainter stars. Trumpler Class IV-Not well detached from the surrounding star field, 2-Medium range of brightness between stars, p-Poor cluster with less than 50 stars. See map and description above.



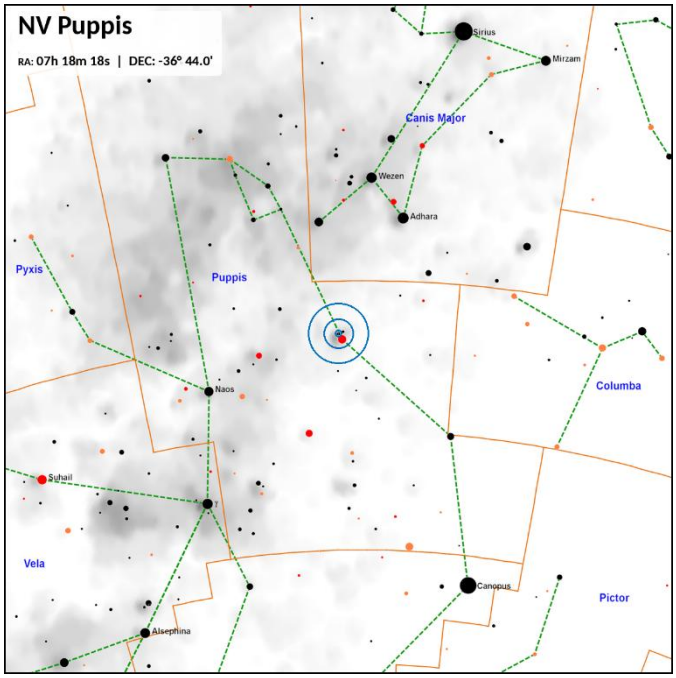


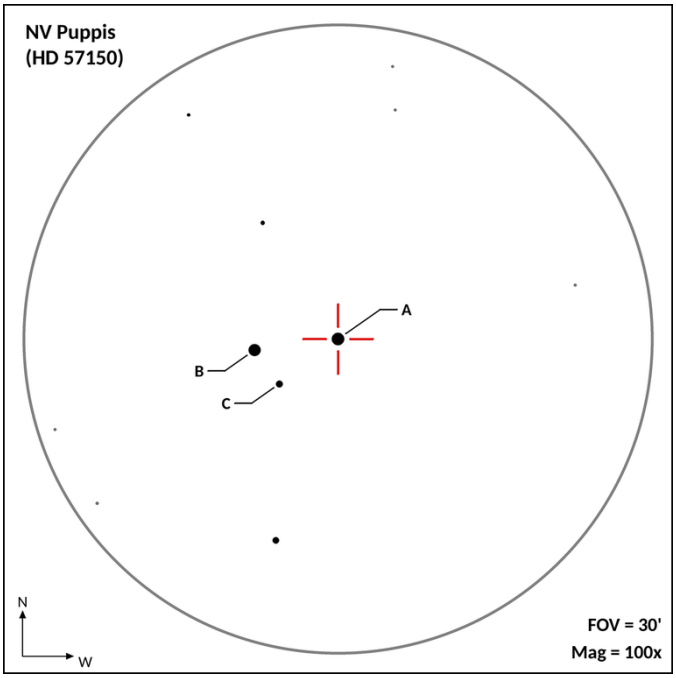
Pi Puppis (DS || **AB** | Mag=2.89 / 7.94 | Sep=69" | PA=213° | mBortle=9 | mApt=50mm | Spec=K3Ib | Color=orange |) Ahadi is the second brightest star in the Puppis constellation and is located 810 light years away and is a member of the Pi Puppis Cluster. The nature of this double is uncertain.



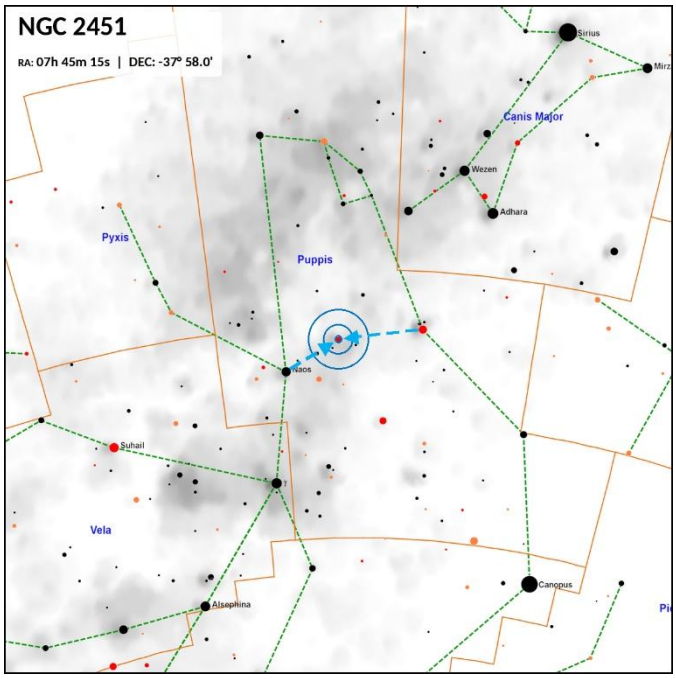


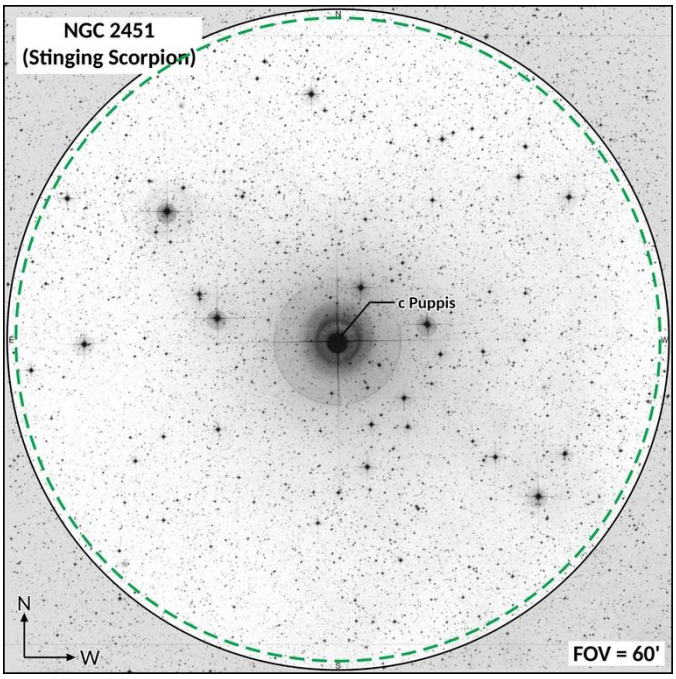
NV Puppis (MS-3 || **AB** | Mag=4.7 / 5.1 | Sep=241.6" | PA=102° | mBortle=9 | mApt=50mm | Spec=B2V / B3IV | Color=blue-white / blue-white || **BC** | Mag=5.1 / 8.7 | Sep=118.9" | PA=215° | mBortle=9 | mApt=50mm | Spec=B3IV / A0V | Color=blue-white / white |) Located 930 light years away and residing in the Pi Puppis Cluster, this is an optical star system that forms a triangle.



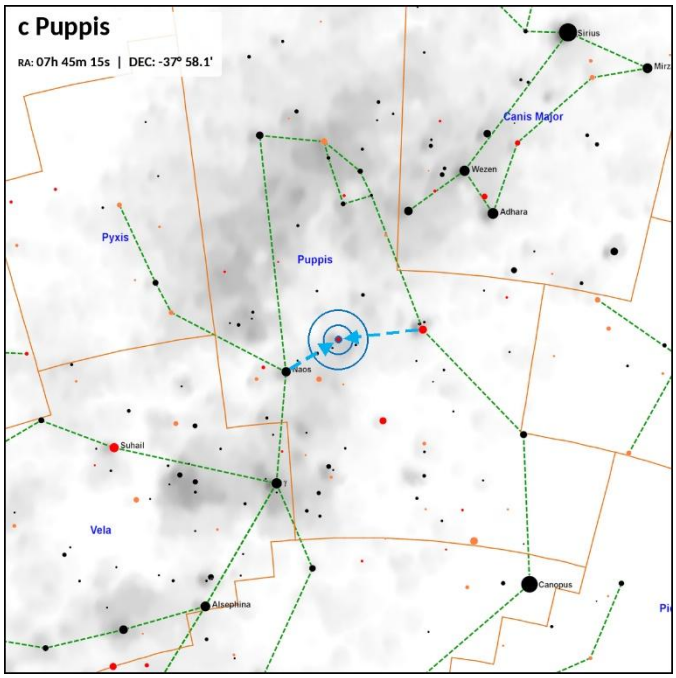


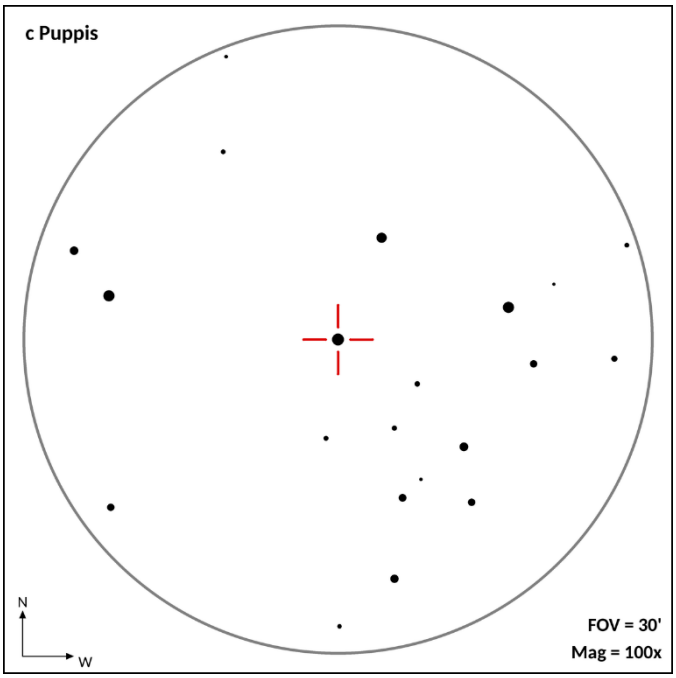
NGC 2451 (OC || Mag=3 | Size=45' | SB=19.9 | mBortle=9 | mApt=50mm | MC=II2m |) Also known as the Stinging Scorpion this cluster is actually two open clusters that lie along the same line of sight (NGC-2451A and NGC-2451B). The distance to the two respective clusters is 600 and 1,200 light years away. Trumpler Class II-Detached with little central concentration, 2-Medium range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars.



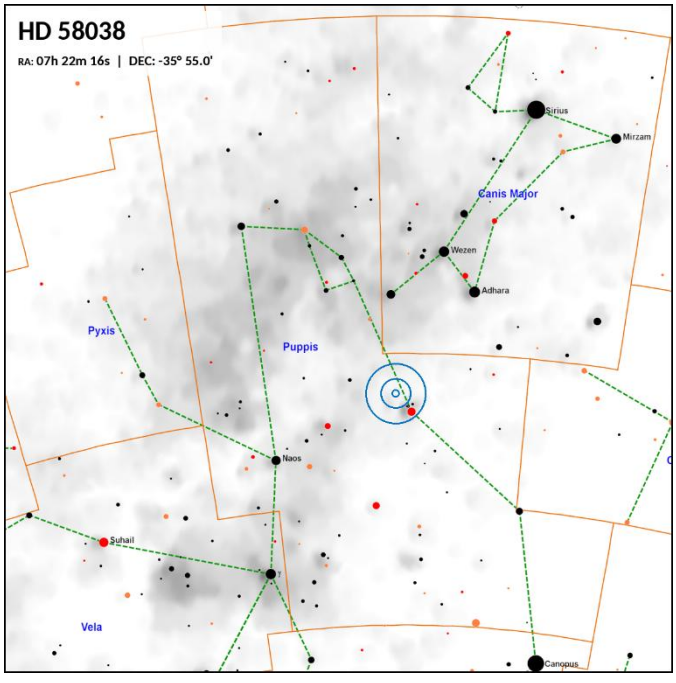


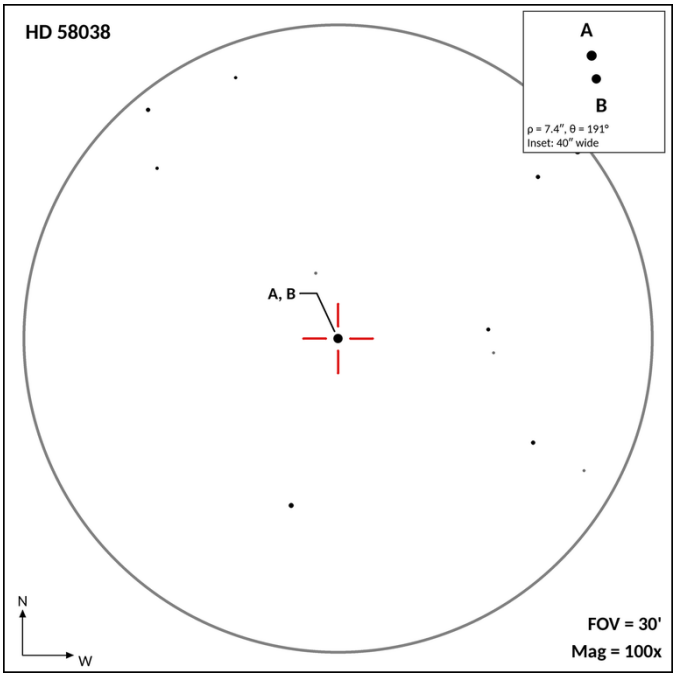
c Puppis (VS || Magnitude Range= 3.58 to 3.62 | Spec=K2.5Ib-IIa | BV=+1.73 | Color=orange |) This slow irregular variable star (type Lc) is located in NGC 2451 and is the brightest member of the cluster. There is conflicting information on distances related to this star and NGC 2451. This is a red supergiant twelve times more massive than the Sun with an estimated age of 16 million years and a radius 280 times that of our Sun.



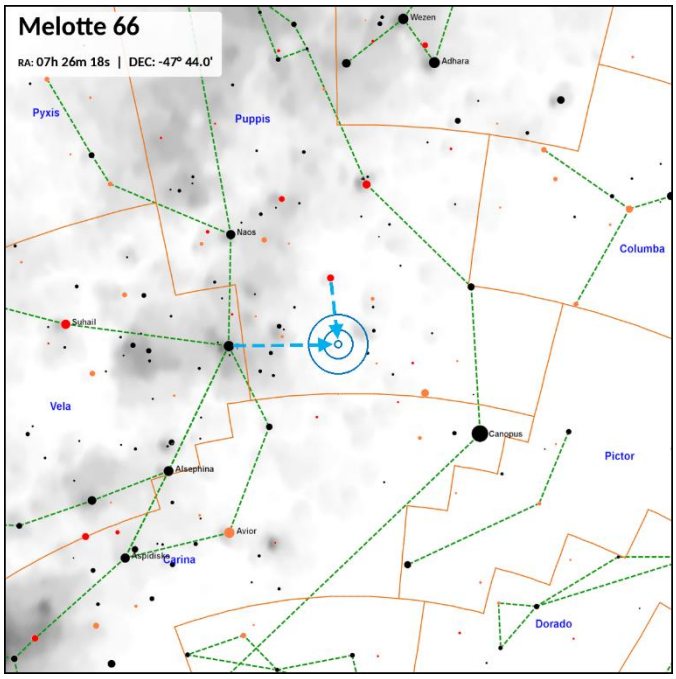


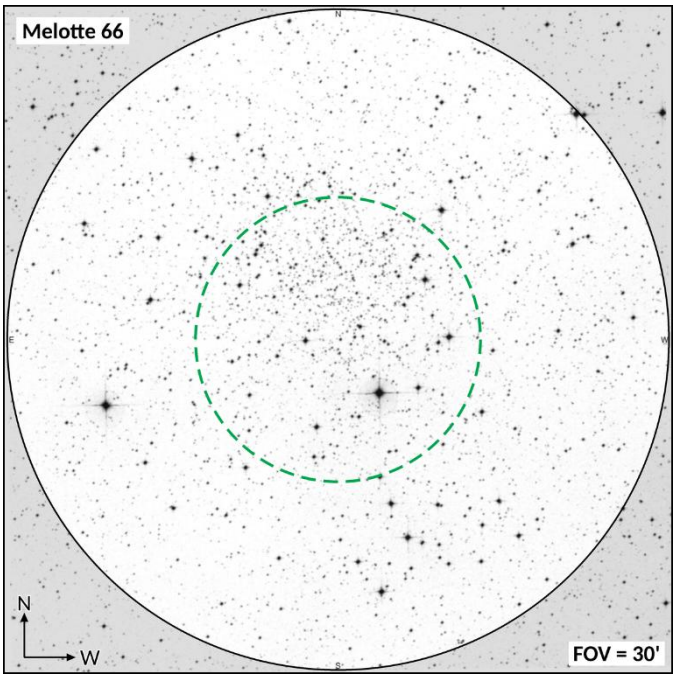
HD 58038 (DS || **AB** | Mag=7.1 / 7.9 | Sep=7.4" | PA=191° | mBortle=9 | mApt=50mm | Spec=F8 | Color=yellow-white |) Located 197 light years away and a physical double star system. Orbital characteristics have not been determined, but the companion is known to be at least 447 AU from the primary.



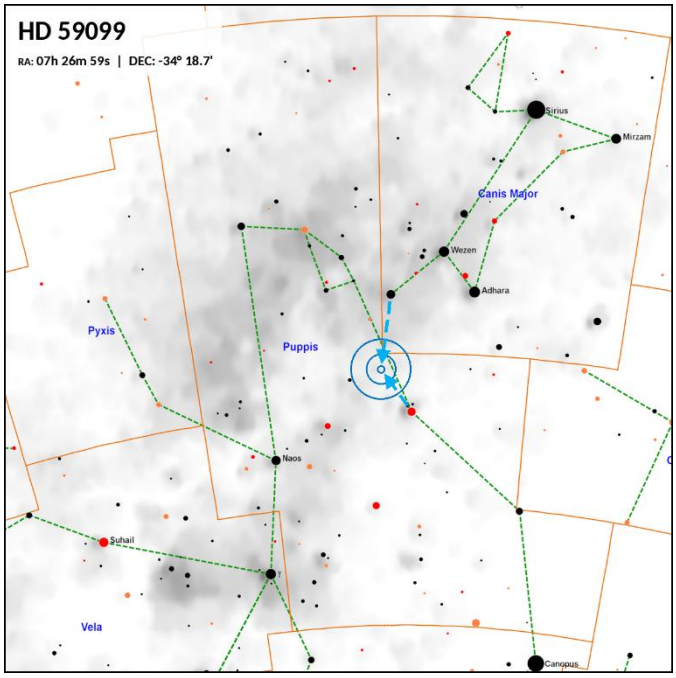


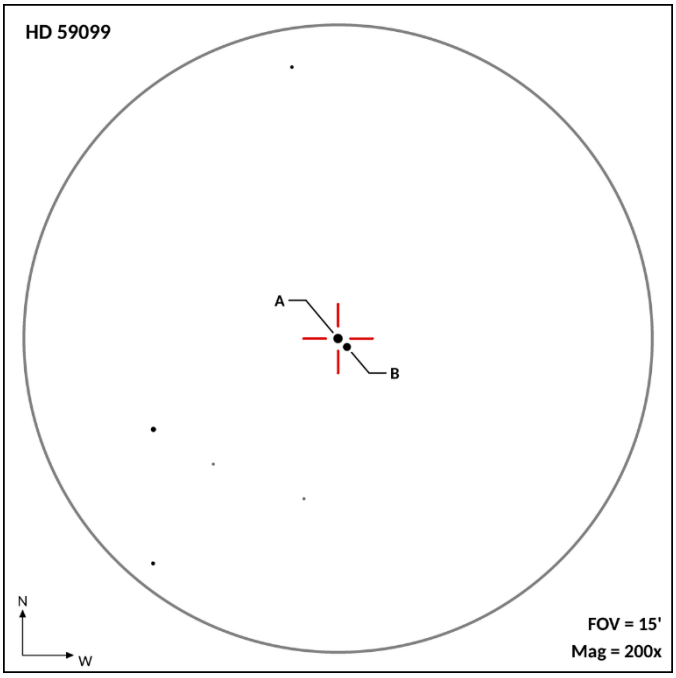
Melotte 66 (OC || Mag=7.8 | Size=10' | SB=21.4 | mBortle=9 | mApt=102mm | MC=II1r |) Located 15,000 light years away with an estimated physical diameter of 62 light years. Trumpler Class II-Detached with little central concentration, 1-Small range of brightness between stars, r-Rich cluster with more than 100 stars.



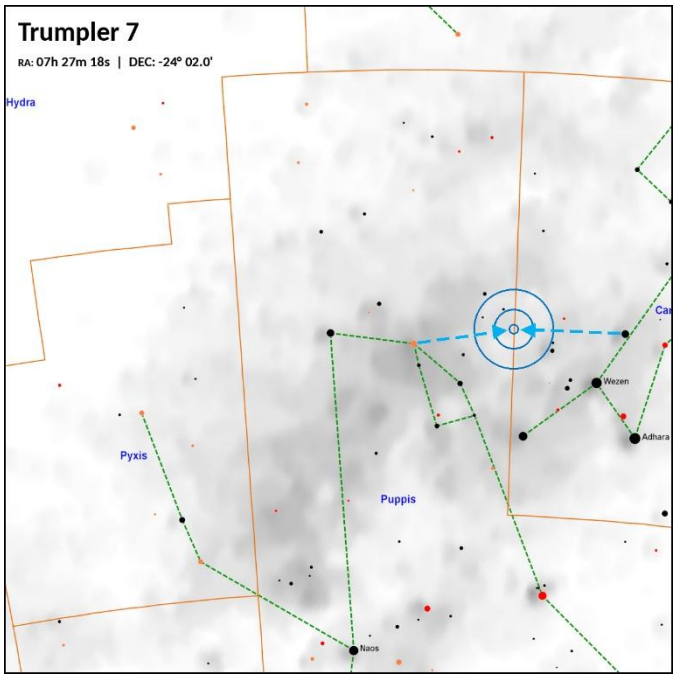


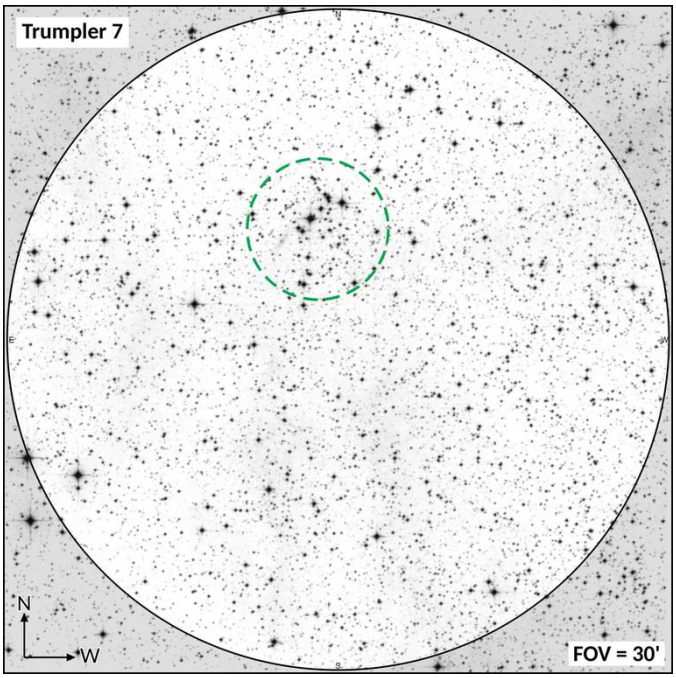
HD 59099 (DS || **AB** | Mag=7.08 / 8.06 | Sep=17.7" | PA=227° | mBortle=9 | mApt=50mm | Spec=F6/7V / F8 | Color=yellow-white / yellow |) Located 161 light years away this is a physical double. The primary is a main-sequence star 1.1 times hotter than the Sun's surface temperature.



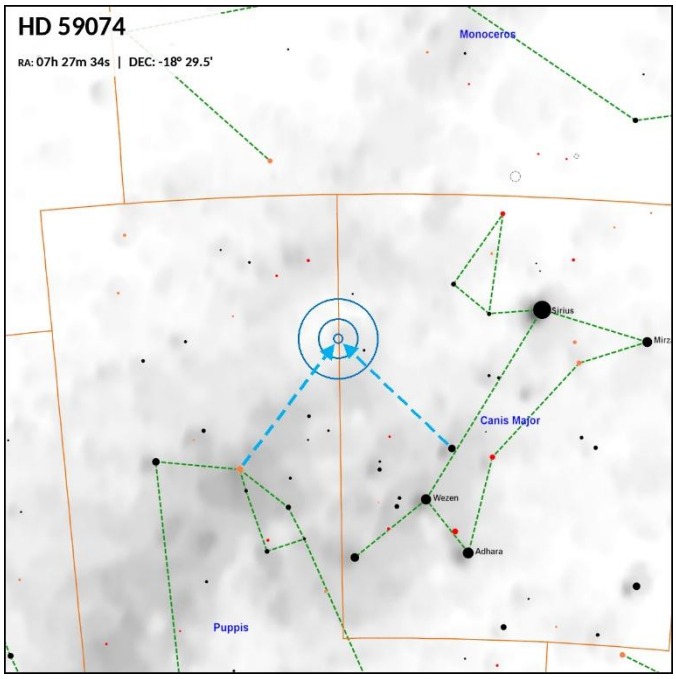


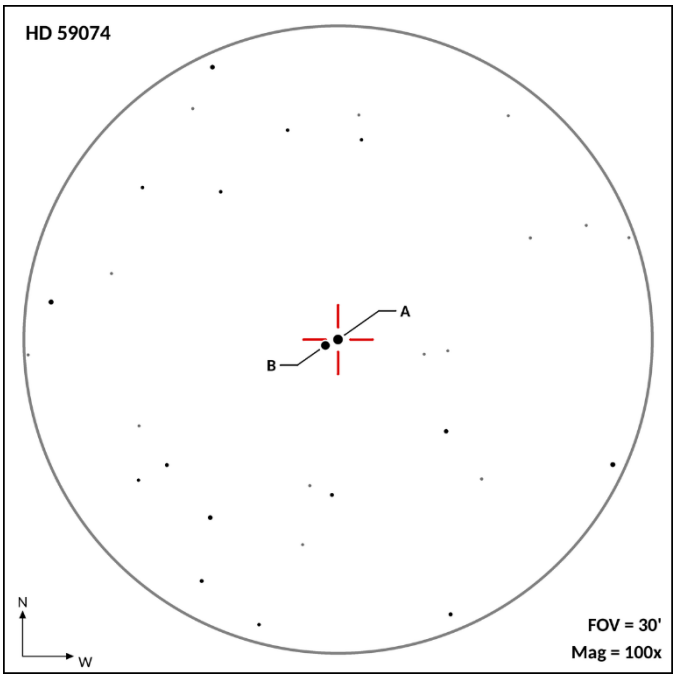
Trumpler 7 (OC || Mag=7.9 | Size=5' | SB=20.0 | mBortle=9 | mApt=114mm | MC=II3mn |) Located 4,800 light years away with an estimated physical diameter of 7.0 light years. Trumpler Class II-Detached with little central concentration, 3-Large range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars, n-Nebulosity associated with cluster. Note that the cluster appears just above the circle indicator in the image below.



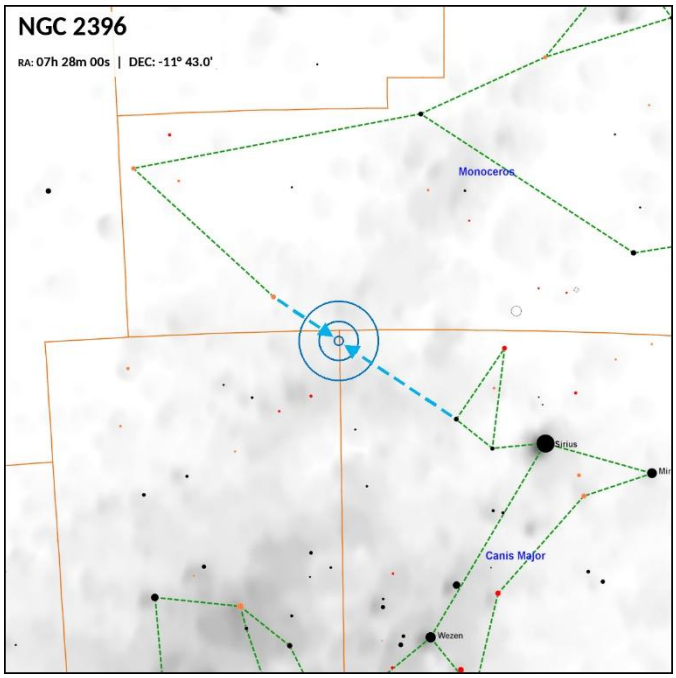


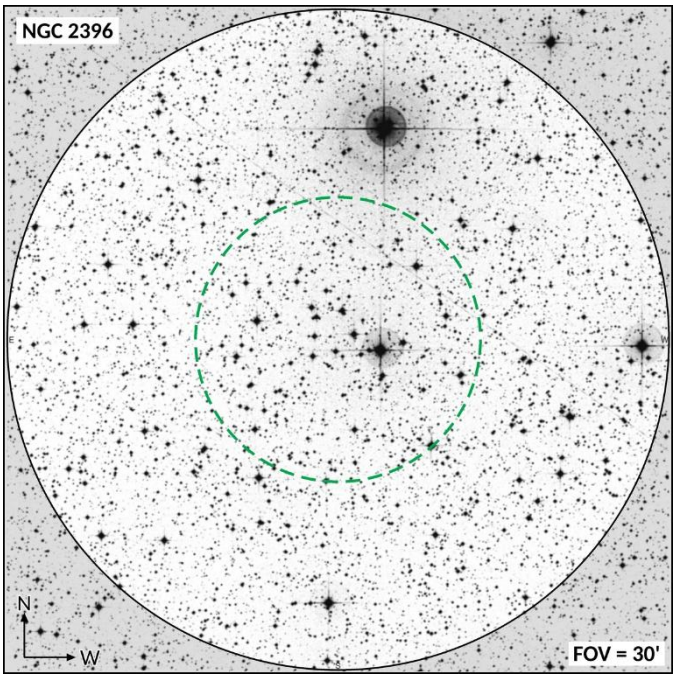
HD 59074 (DS || **AB** | Mag=6.9 / 7.6 | Sep=39.6" | PA=115° | mBortle=9 | mApt=50mm | Spec=A0 / B8I | Color=white / blue-white |) Located 680 light years away. This double is not physical. The primary is a blue-white giant with a surface temperature 2.3 times hotter than the Sun's, a diameter of 2.3 times that of the Sun and a mass of 5.8 Solar masses.



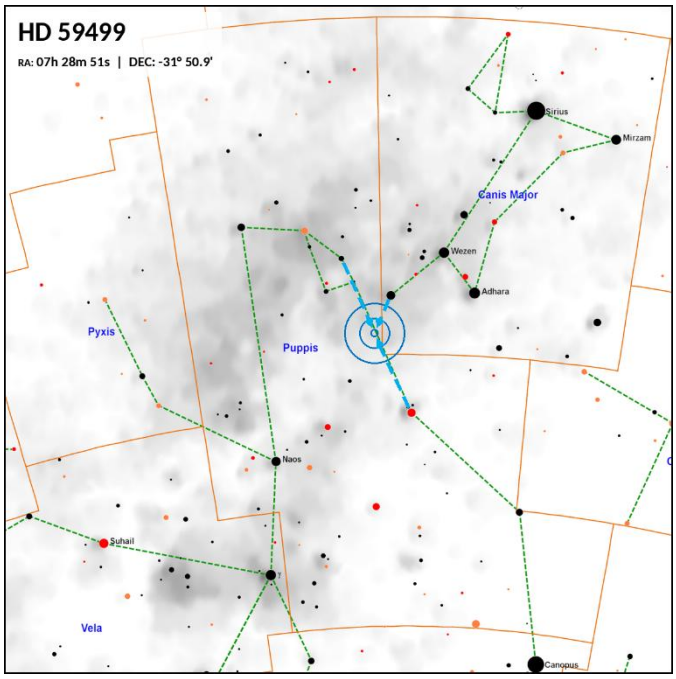


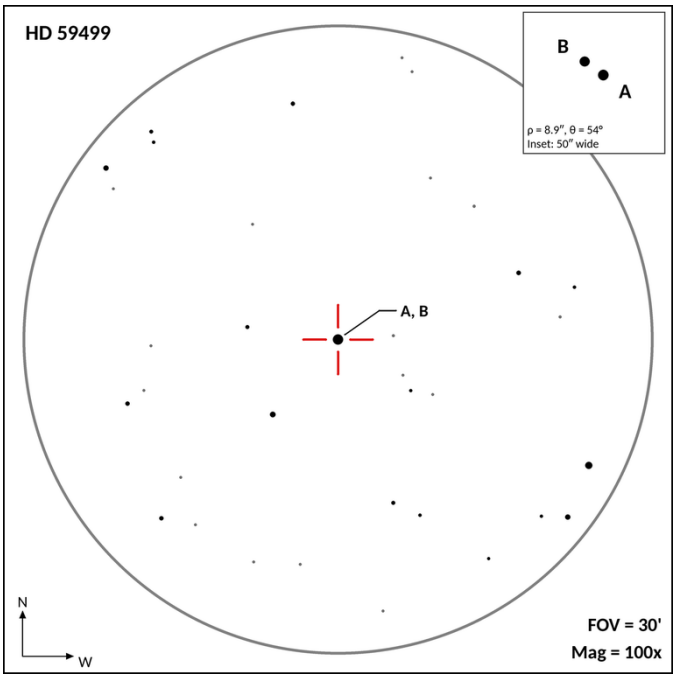
NGC 2396 (OC || Mag=7.4 | Size=10' | SB=21.0 | mBortle=9 | mApt=102mm | MC=IV1m |) Located 1,900 light years away with an estimated physical diameter of 5.6 light years. Consists of a single 9th magnitude star on the western edge of the cluster and 30 stars of 11th magnitude. Trumpler Class IV-Not well detached from the surrounding star field, 1-Small range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars.



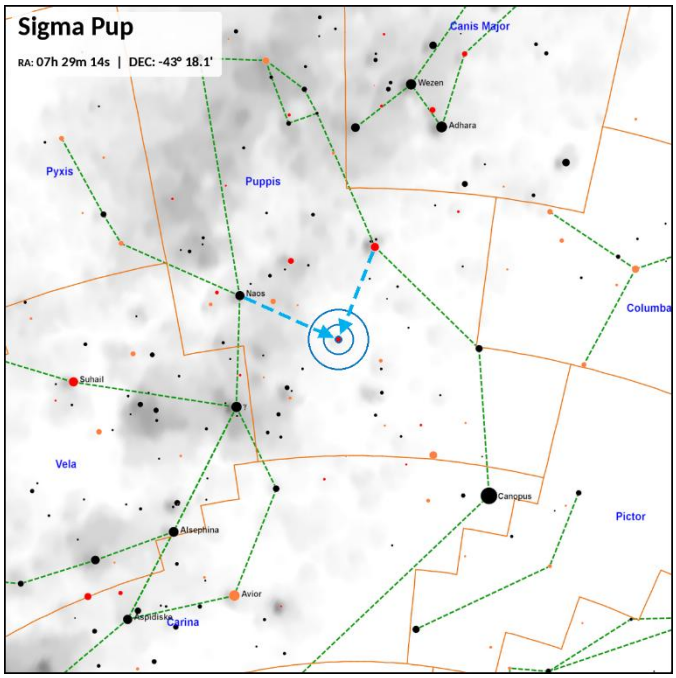


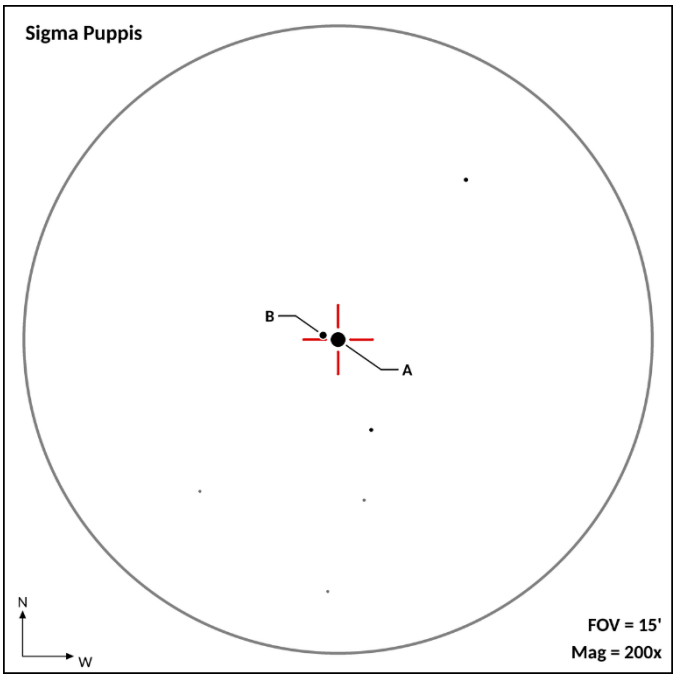
HD 59499 (DS || **AB** | Mag=6.3 / 7 | Sep=8.9" | PA=54° | mBortle=9 | mApt=50mm | Spec=B3V / B4V | Color=blue-white / blue-white |) Located 1,200 light years away. The nature of this double is uncertain. The primary is a blue-white main sequence star with a surface temperature 3.3 times hotter than our Sun and a mass of 7.0 Solar masses.



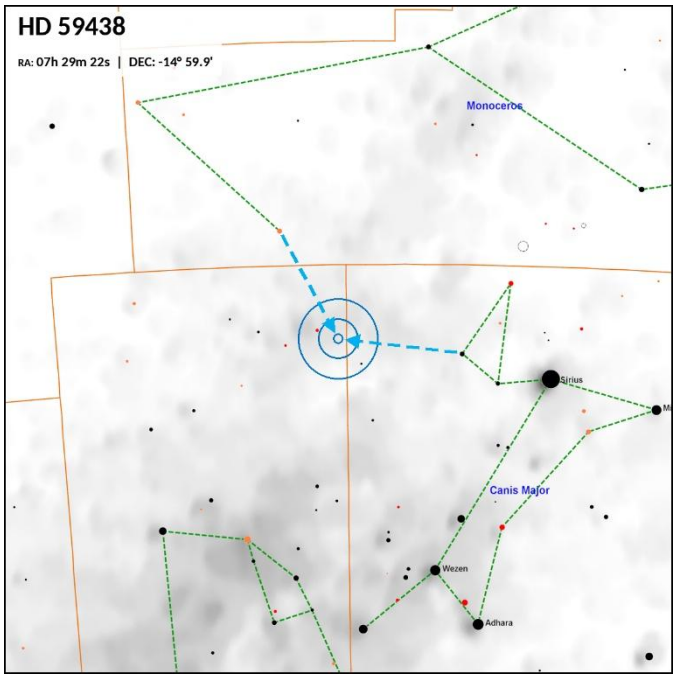


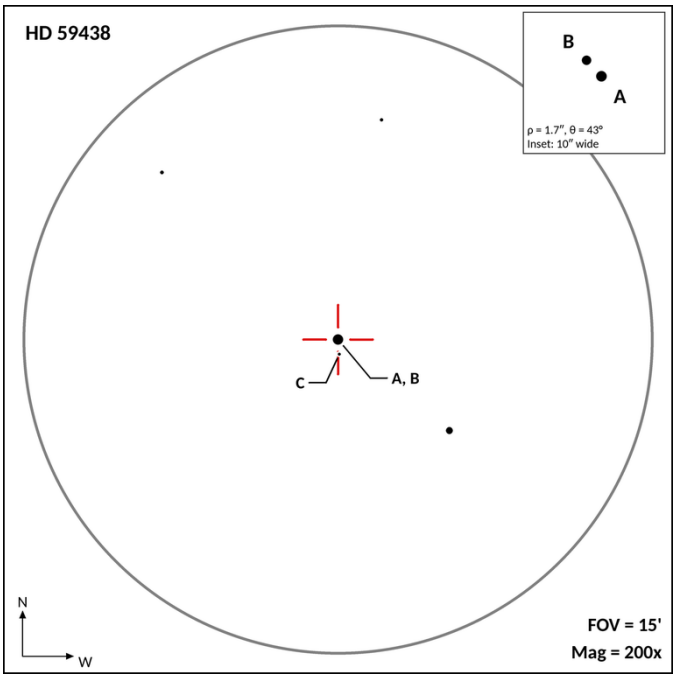
Sigma Puppis (DS || **AB** | Mag=3.25 / 8.81 | Sep=22.1" | PA=74° | mBortle=9 | mApt=50mm | Spec=K5III | Color=orange |) Located 194 light years away, the nature of this double is uncertain. However, the A component is a spectroscopic binary system (that cannot be resolved with Earth-bound telescopes) with an orbital period of 258 days.



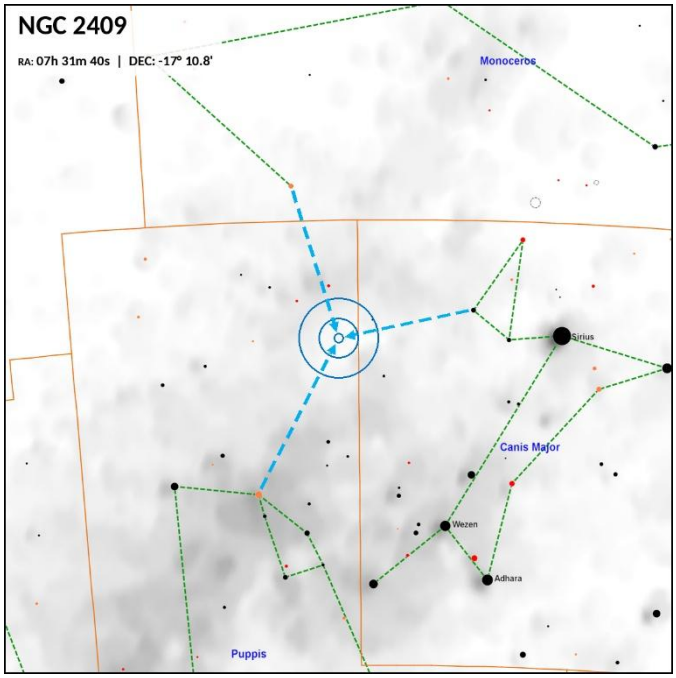


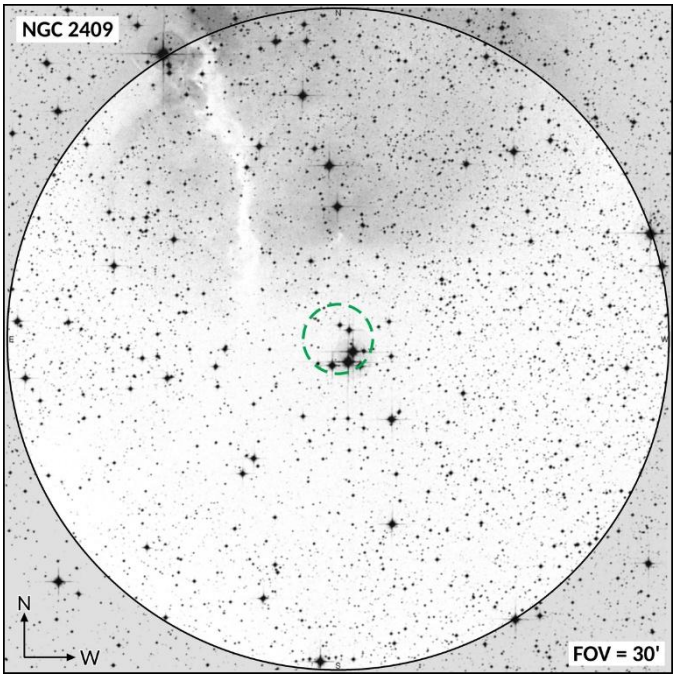
HD 59438 (MS-3 || **AB** | Mag=6.4 / 7.6 | Sep=1.7" | PA=43° | mBortle=9 | mApt=102mm | Period=686y | Spec=F7V | Color=yellow-white || **AC** | Mag=6.39 / 11.8 | Sep=21" | PA=185° | mBortle=9 | mApt=102mm | Spec=F7V | Color=yellow-white |) Located 114 light years away. The AB components have an orbital period of 686 years. All three components in this system are physically associated with each other.



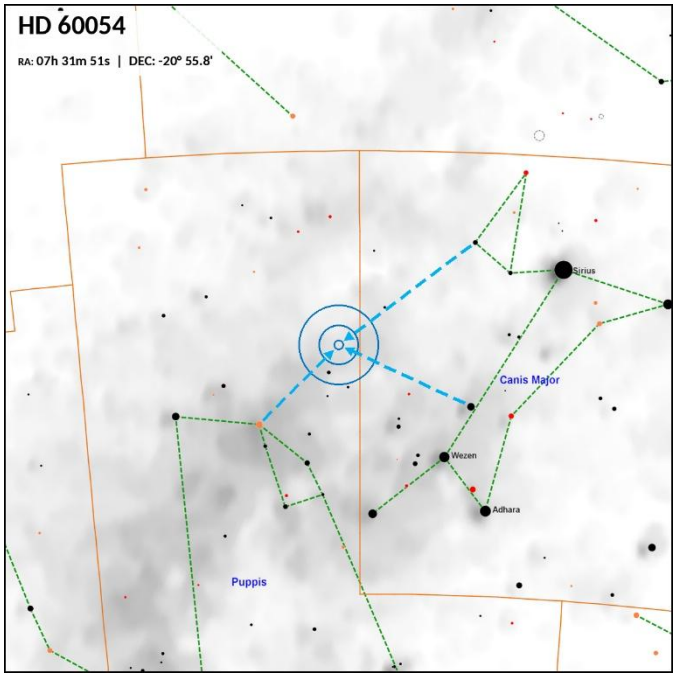


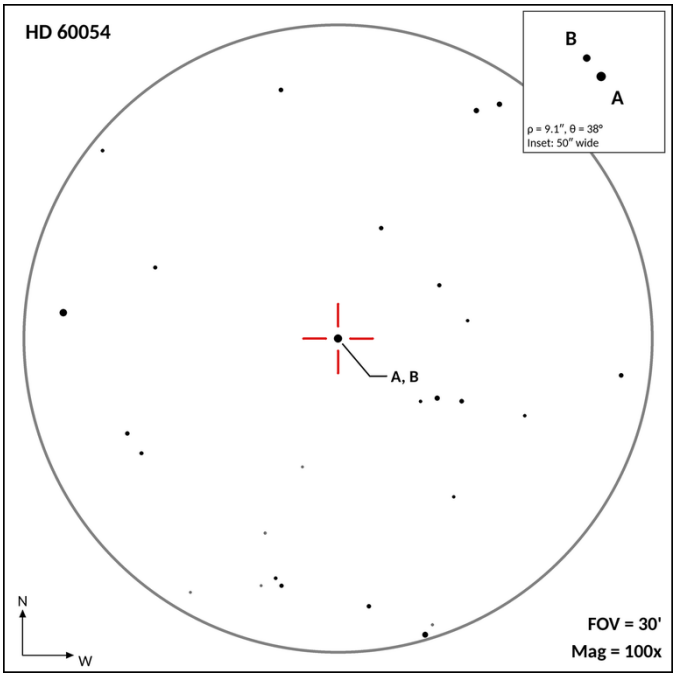
NGC 2409 (OC || Mag=7.3 | Size=2.5' | SB=17.9 | mBortle=9 | mApt=80mm | MC=II3mn |) Located 2,800 light years away with an estimated physical diameter of 2.0 light years. Trumpler Class II-Detached with little central concentration, 3-Large range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars, n-Nebulosity associated with cluster.



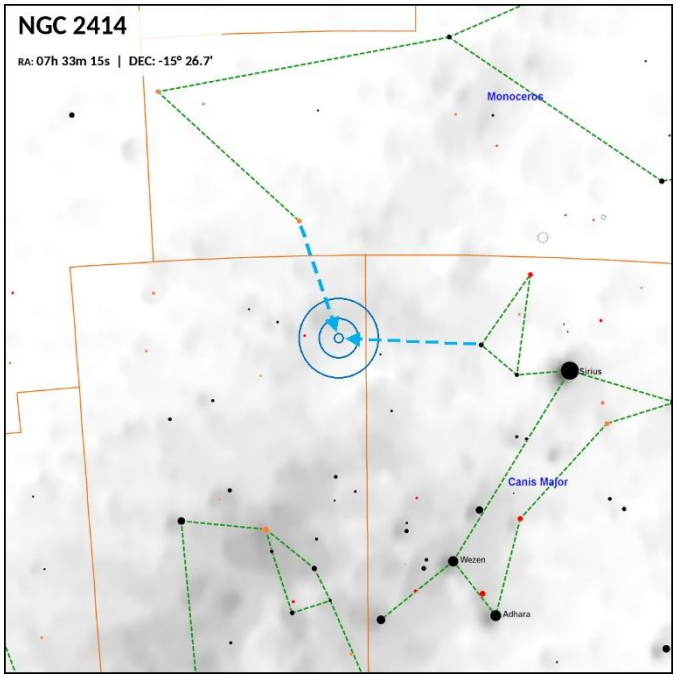


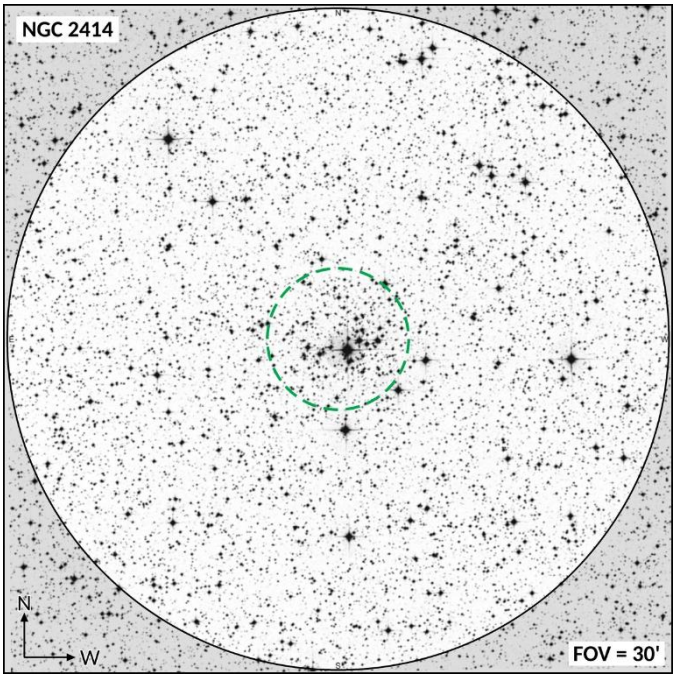
HD 60054 (DS || **AB** | Mag=7.88 / 9.9 | Sep=9.1" | PA=38° | mBortle=9 | mApt=50mm | Spec=B6III/IV | Color=blue-white |) Located 3,000 light years away. This double is not physical and is reported to be composed of white and red components.



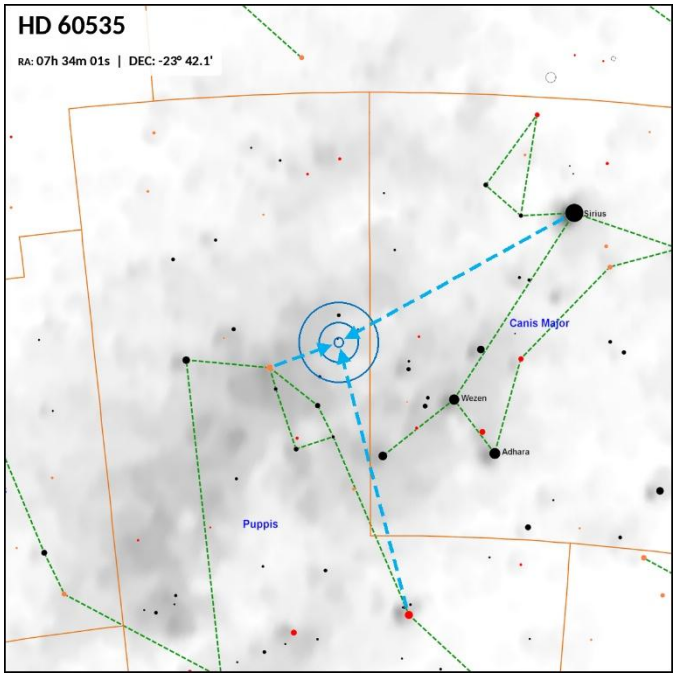


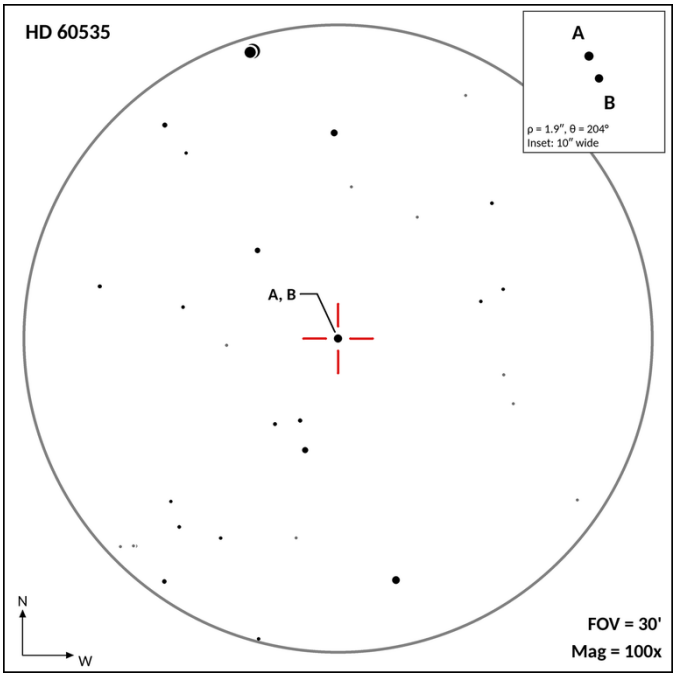
NGC 2414 (OC || Mag=7.9 | Size=5' | SB=20.0 | mBortle=9 | mApt=114mm | MC=I3m |) Located 11,000 light years away with an estimated physical diameter of 16 light years. Described as a faint cluster with 30 stars with three short star chains. Trumpler Class I-Detached with strong central concentration, 3-Large range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars.



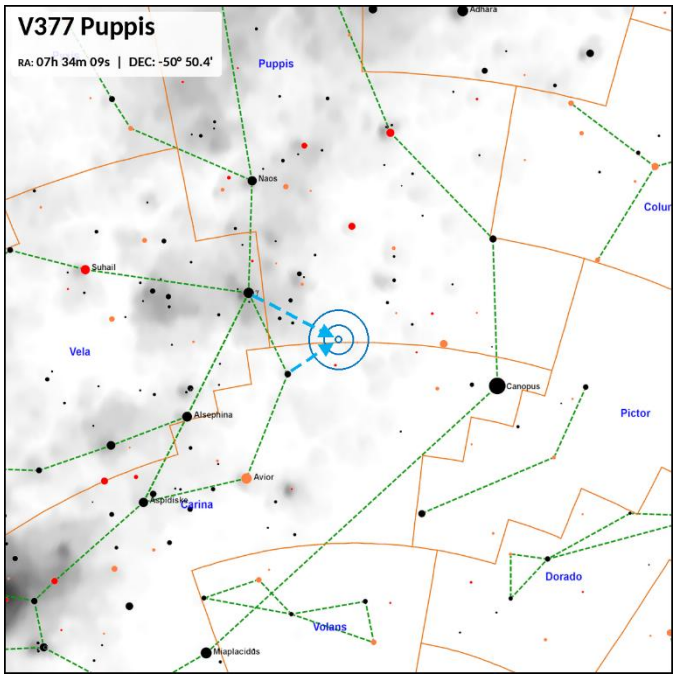


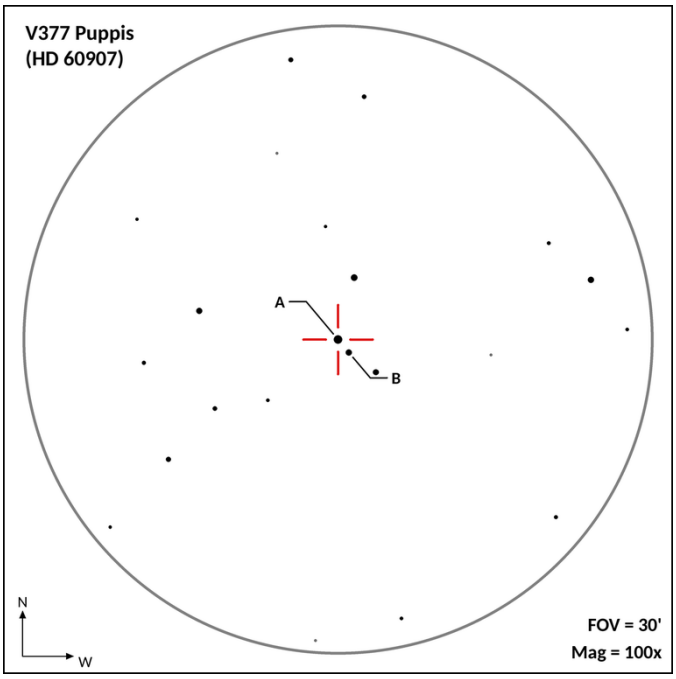
HD 60535 (DS || **AB** | Mag=8.05 / 8.94 | Sep=1.9" | PA=204° | mBortle=9 | mApt=80mm | Spec=B6/8III: | Color=blue-white |) Located 3,100 light years away, this double is not physical. The primary is a blue-white giant 2.4 times hotter than the surface of our Sun and with a diameter of 6.1 times that of our Sun and a mass of 6.4 Solar masses.



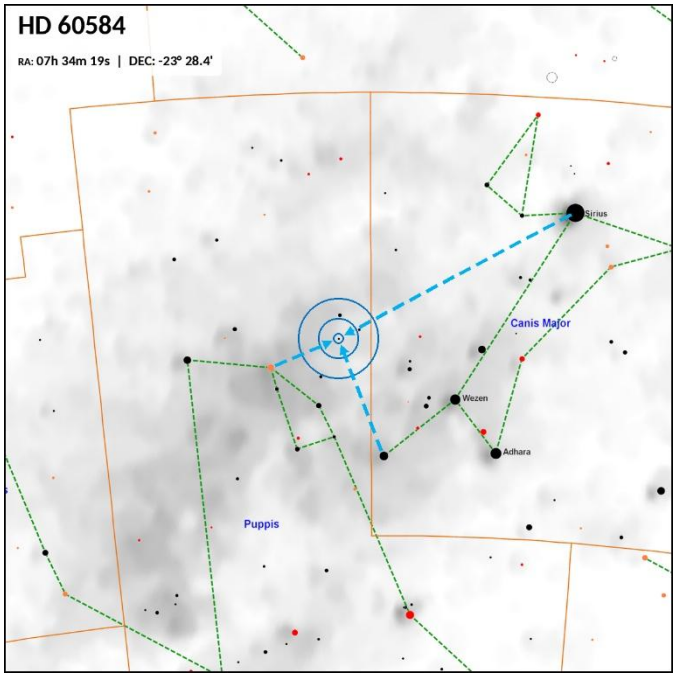


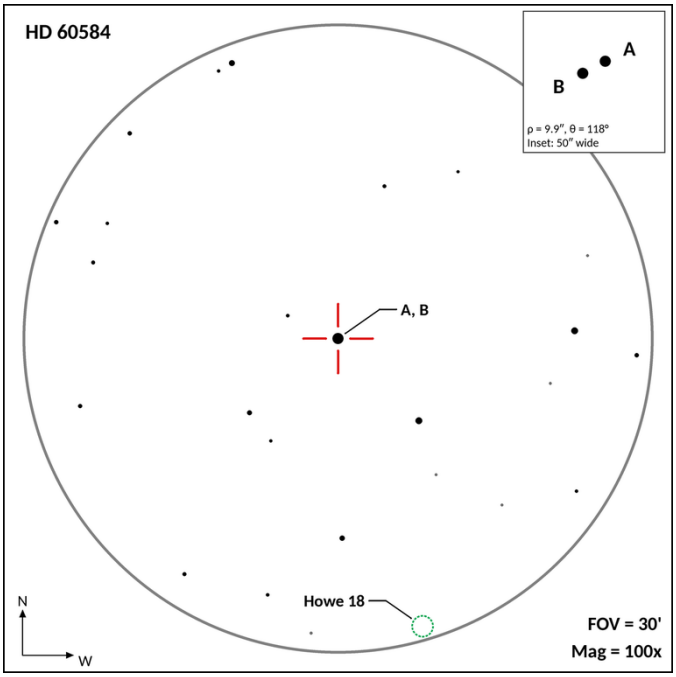
V377 Puppis (DS || **AB** | Mag=7.76 / 9.32 | Sep=48.5" | PA=220° | mBortle=9 | mApt=50mm | Spec=M3/4III | Color=red |) Located 1,400 light years away, this double is not physical. Described as a moderately bright, deep red star with a wide yellow companion.



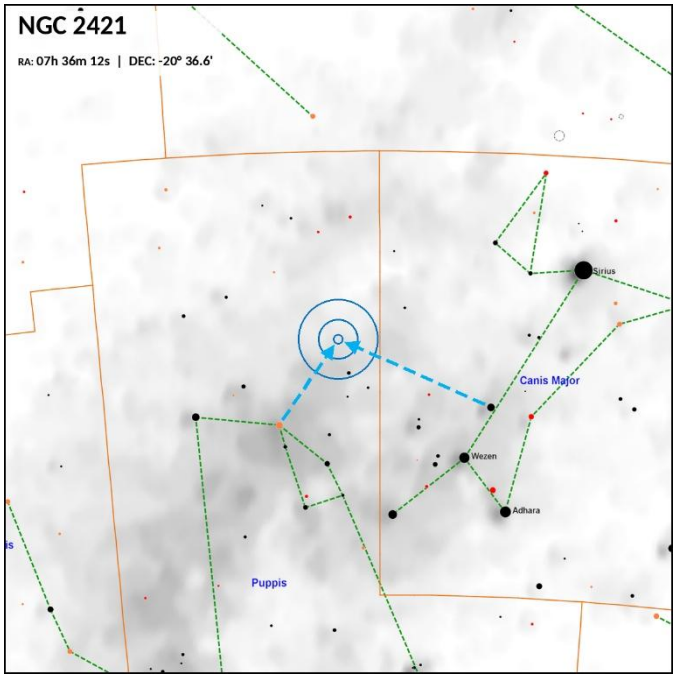


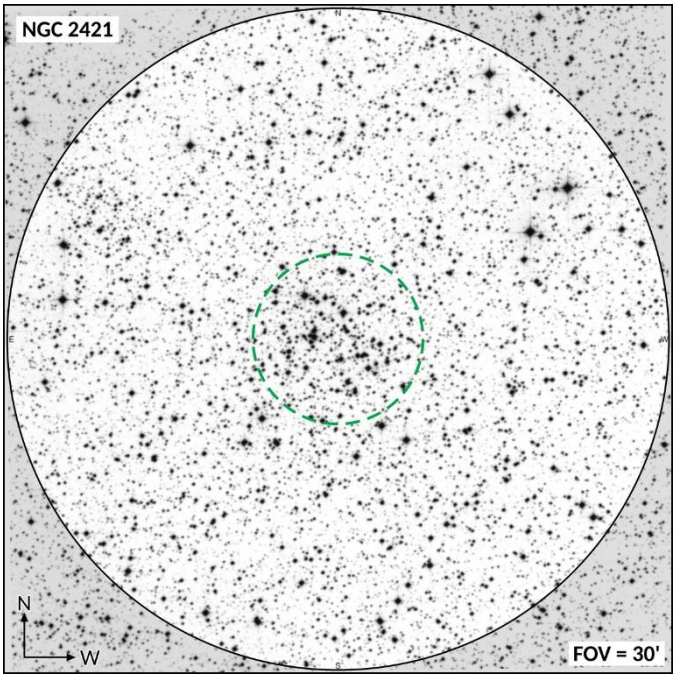
HD 60584 (DS || **AB** | Mag=5.82 / 5.85 | Sep=9.9" | PA=118° | mBortle=9 | mApt=50mm | Spec=F5/7V | Color=yellow-white |) At an estimated distance of 103 light years, this double is physical. Considered a showcase pair with another double (Howe 18) 15' to the south with a separation of 1.9".



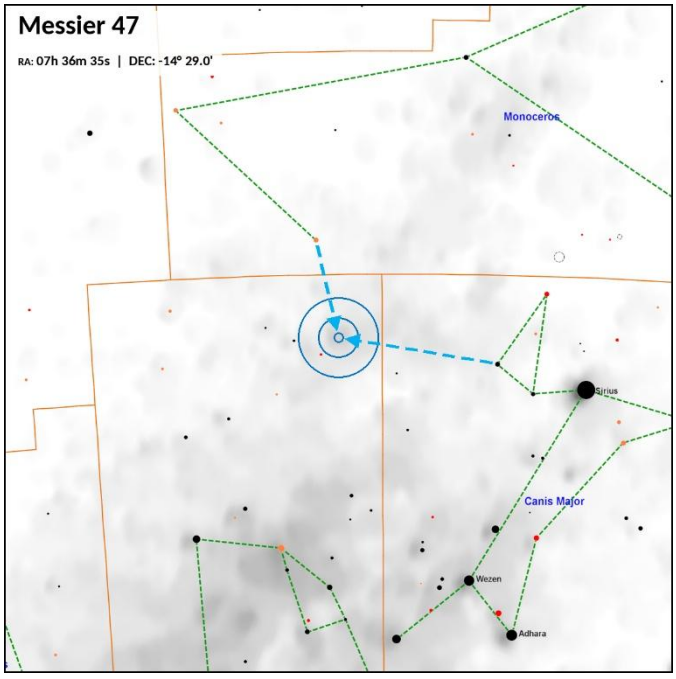


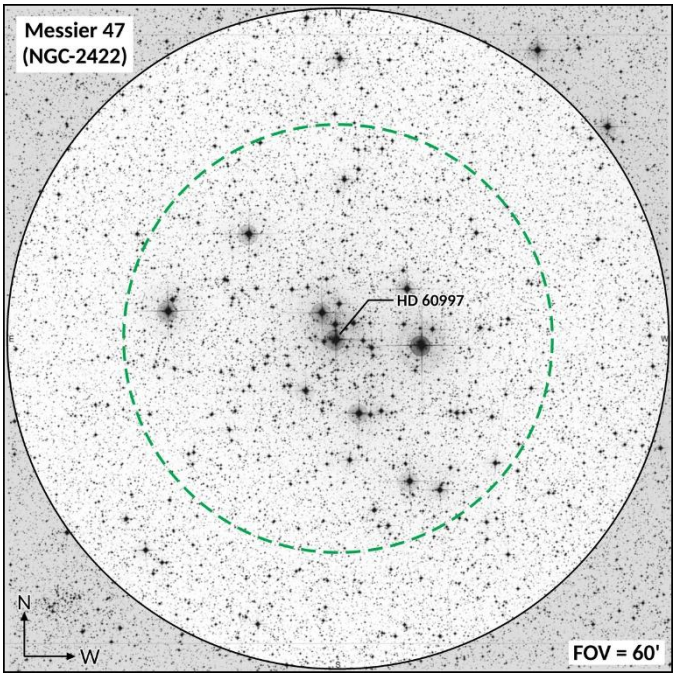
NGC 2421 (OC || Mag=8.3 | Size=6' | SB=20.8 | mBortle=6 | mApt=130mm | MC=I2r |) Located 7,200 light years away with an estimated physical diameter of 12 light years. Compact cluster with 70 faint stars. Trumpler Class I-Detached with strong central concentration, 2-Medium range of brightness between stars, r-Rich cluster with more than 100 stars.



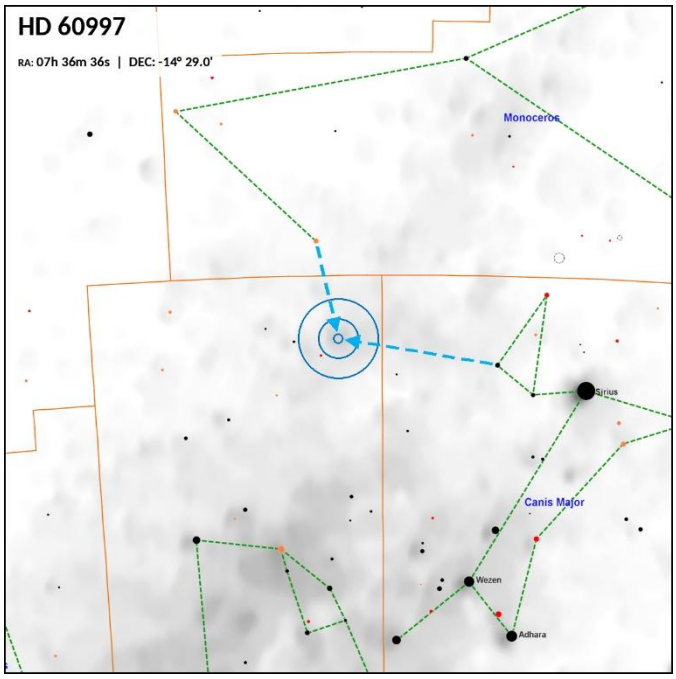


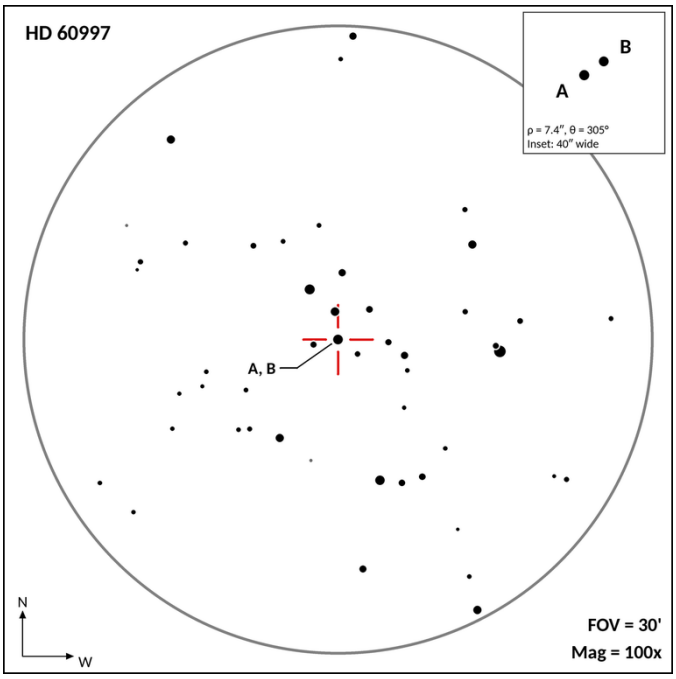
Messier 47 (OC || Mag=4.3 | Size=30' | SB=20.3 | mBortle=9 | mApt=50mm | MC=I3m |) Once considered the "lost Messier Object" due to Messier having swapped + and – signs when recording the location of this cluster. This cluster is estimated to be 78 million years old. Trumpler Class I-Detached with strong central concentration, 3-Large range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars.



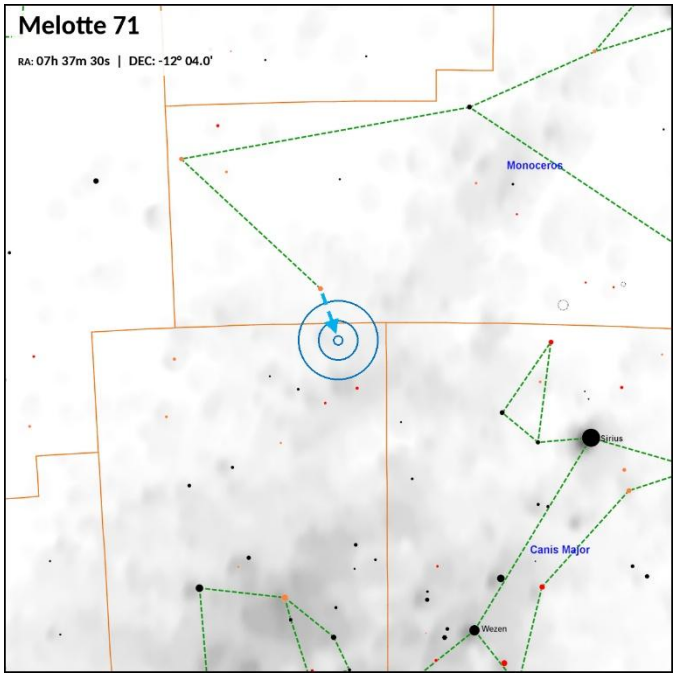


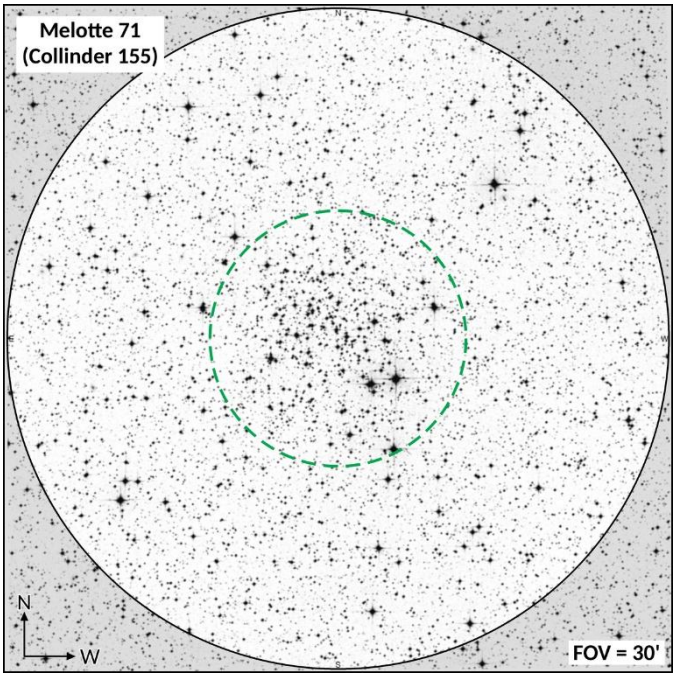
HD 60997 (DS || **AB** | Mag=6.92 / 7.3 | Sep=7.4" | PA=305° | mBortle=9 | mApt=50mm | Spec=B6V / B6V | Color=blue-white / blue-white |) Located 1,600 light years away and centered in the open cluster Messier 47. This is described as a straw yellow pair of stars. This double is not physical.



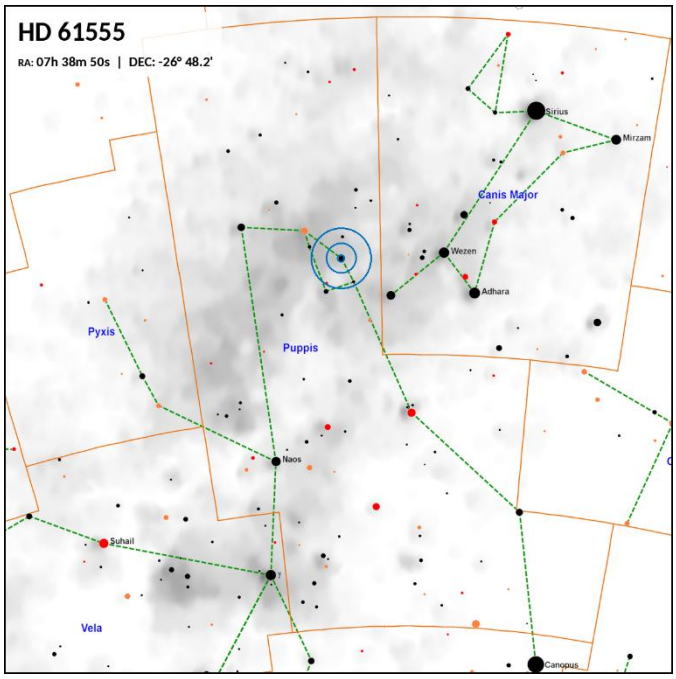


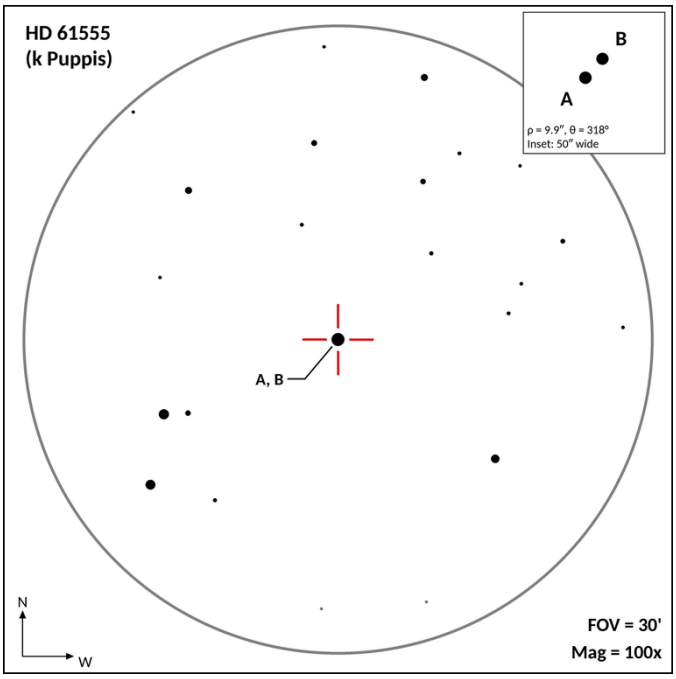
Melotte 71 (OC || Mag=7.1 | Size=9' | SB=20.5 | mBortle=9 | mApt=80mm | MC=II2r |) Located 10,000 light years away with an estimated physical diameter of 21 light years. Trumpler Class II-Detached with little central concentration, 2-Medium range of brightness between stars, r-Rich cluster with more than 100 stars.



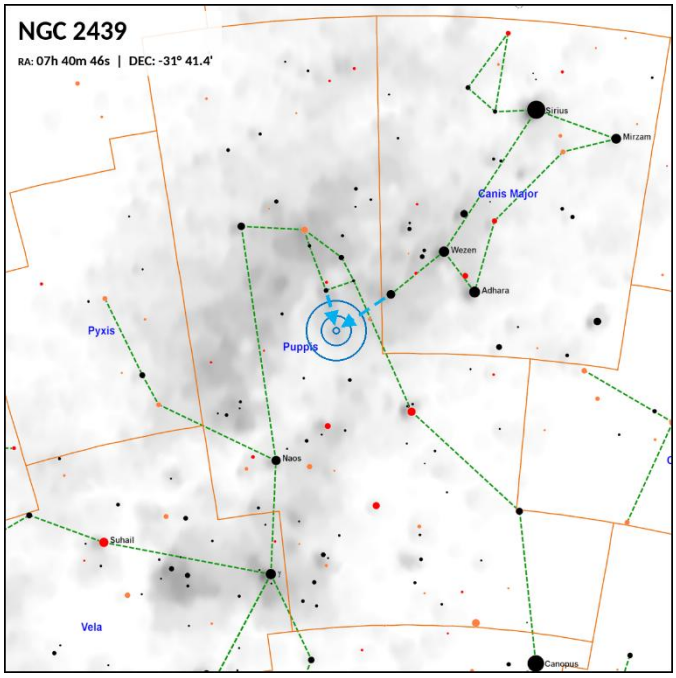


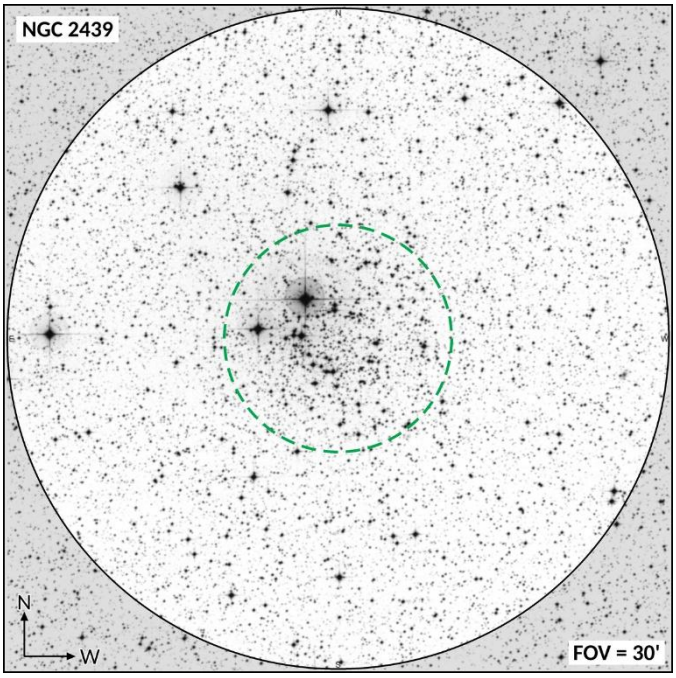
HD 61555 (DS || **AB** | Mag=4.4 / 4.62 | Sep=9.9" | PA=318° | mBortle=9 | mApt=50mm | Spec=B6V / B6V | Color=blue-white / blue-white |) k Puppis (not Kappa) is considered a showcase pair even though this double is not physical and is reported to appear as equal white stars.



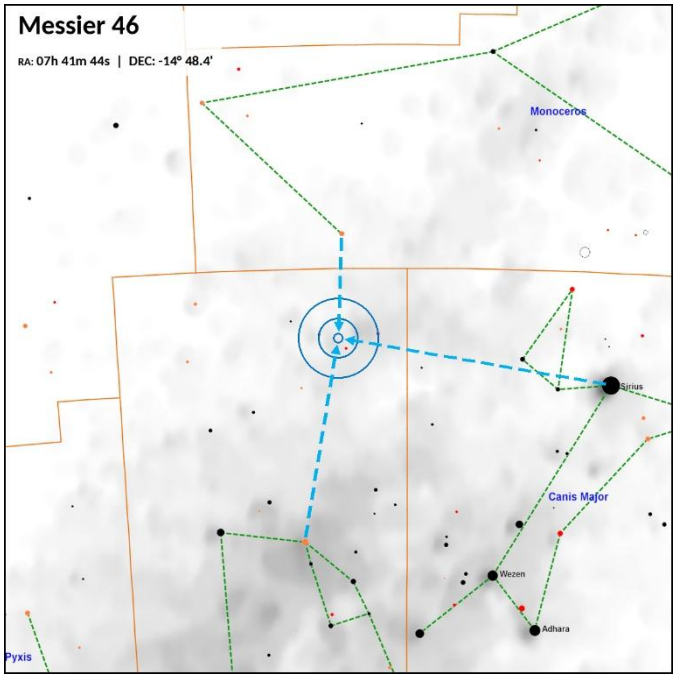


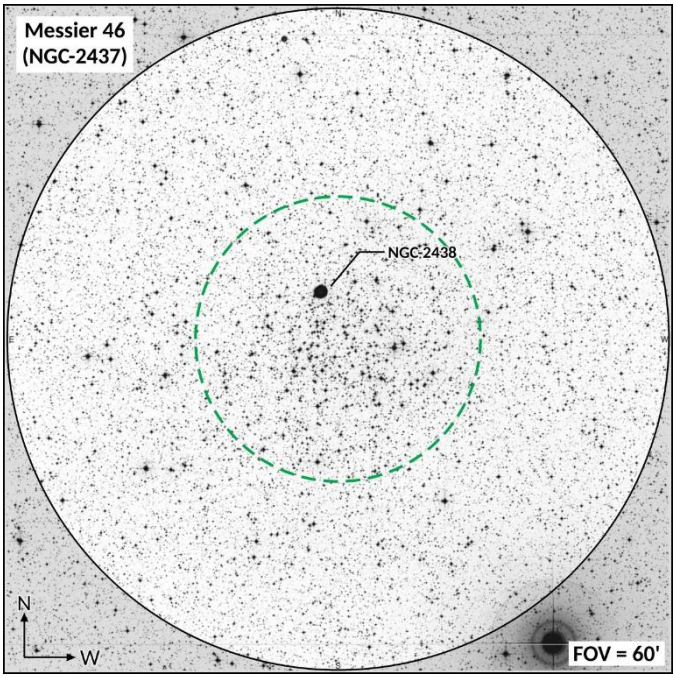
NGC 2439 (OC || Mag=6.9 | Size=8' | SB=20.0 | mBortle=9 | mApt=70mm | MC=II3r |) Considered a sparse open cluster even though the Trumpler class rates it as rich. The age estimate for this cluster is 20 to 300 million years old. Trumpler Class II-Detached with little central concentration, 3-Large range of brightness between stars, r-Rich cluster with more than 100 stars.



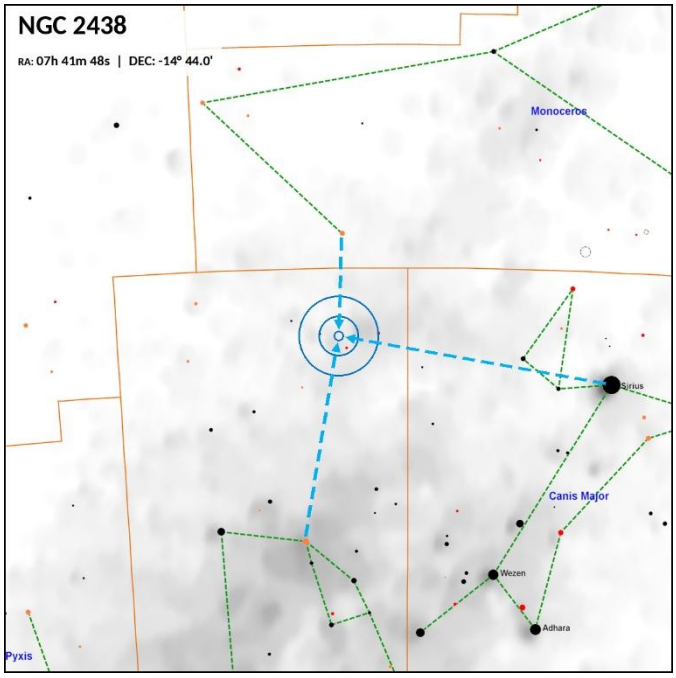


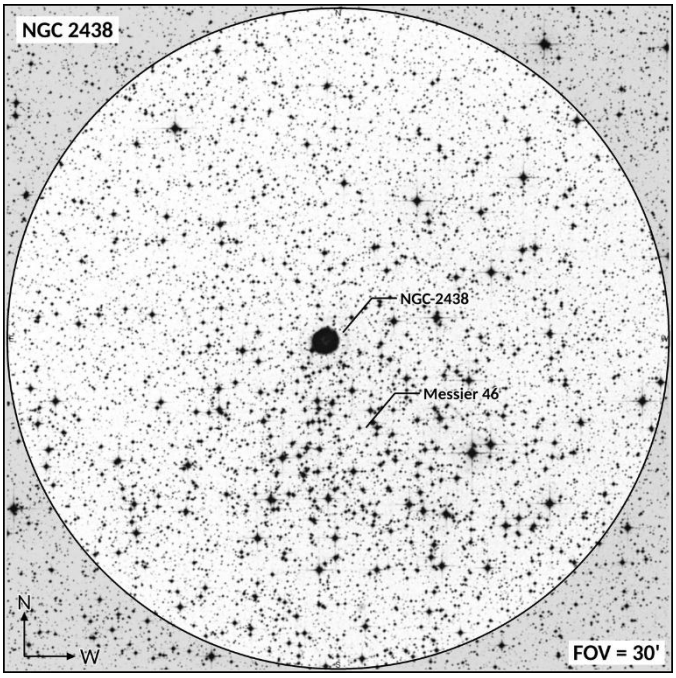
Messier 46 (OC || Mag=6.1 | Size=20' | SB=21.2 | mBortle=9 | mApt=50mm | MC=II2r |) One of my favorite open clusters since it offers a 2-for-1 with the planetary nebula NGC 2438 superimposed in front of this cluster. Best viewed with telescopes of 10" or more aperture. Trumpler Class II-Detached with little central concentration, 2-Medium range of brightness between stars, r-Rich cluster with more than 100 stars.



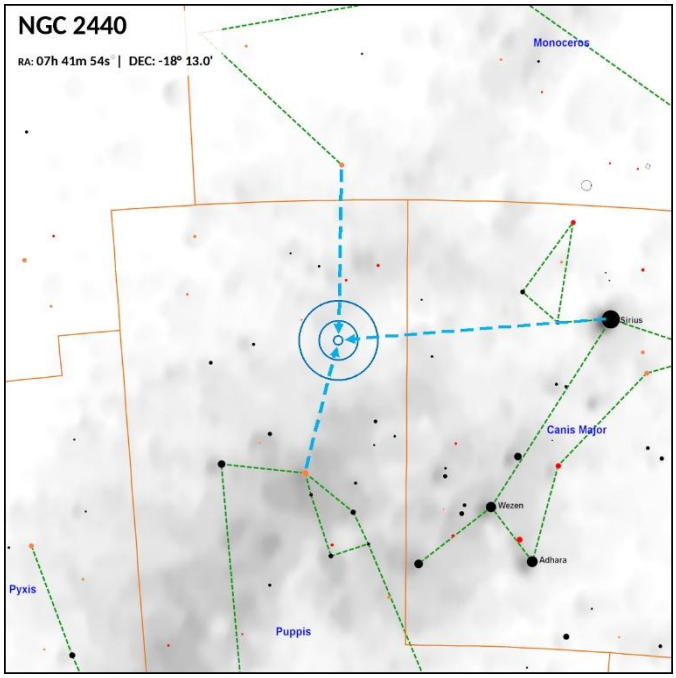


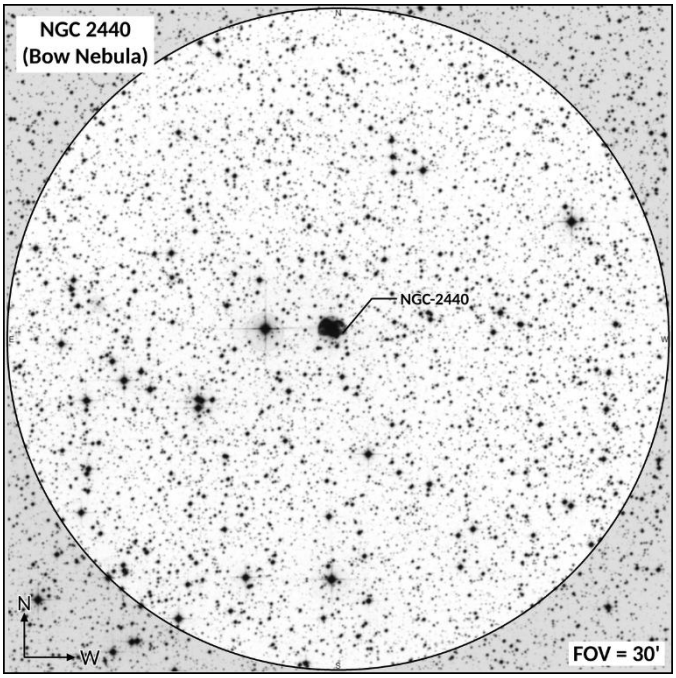
NGC 2438 (PN || Mag=10.8 | Size=1.1' | SB=19.6 | mBortle=9 | mApt=50mm | MC=Round (multiple-shell) |) While this planetary nebula appears within the northern edge of M-46 it is actually a foreground object with an estimated distance of 1,370 light years. A delight to see in larger telescopes and photographs.



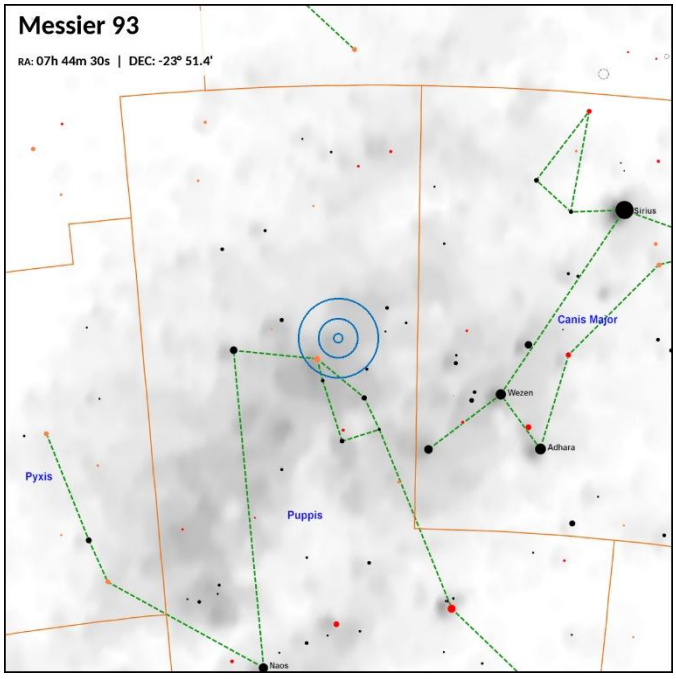


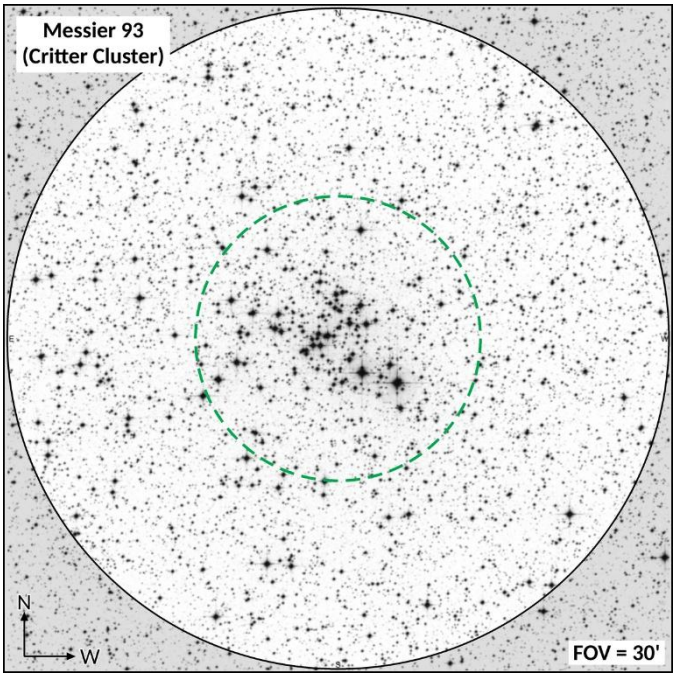
NGC 2440 (PN || Mag=9.4 | Size=1.2'x0.7' | SB=17.8 | mBortle=9 | mApt=50mm | MC=Butterfly (bipolar) |) Known by multiple names including Albino Butterfly Nebula, Kiss Nebula, Little Lips Nebula and Bow Nebula. Located about 4,000 light years away the central star (HD 62166) may be the hottest known white dwarf with an estimated temperature of 200,000 °C (360,000 °F).



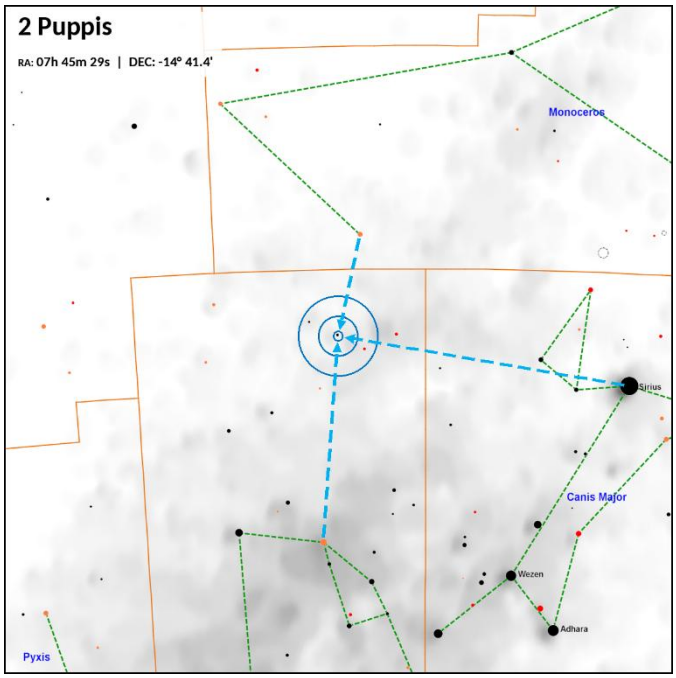


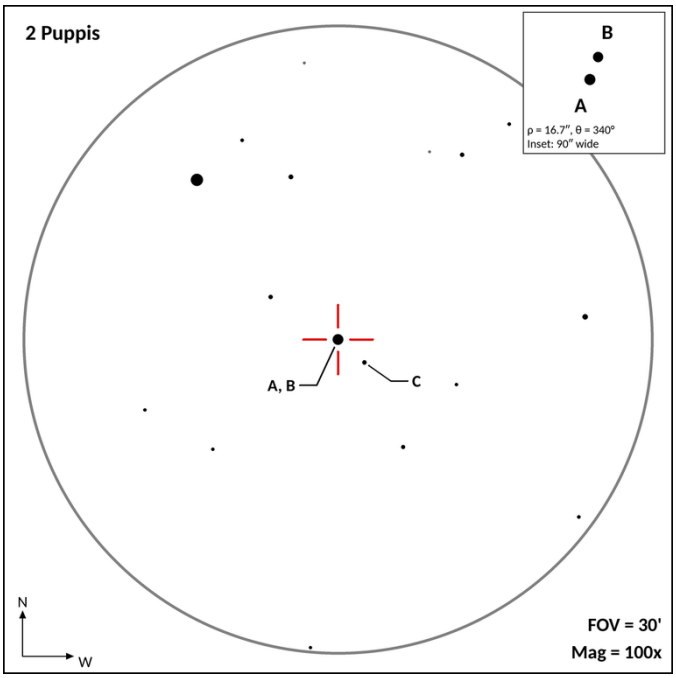
Messier 93 (OC || Mag=6 | Size=10' | SB=19.6 | mBortle=9 | mApt=50mm | MC=I3r |) The Critter Cluster (NGC-2447) is located about 3,380 light years away with an estimated age of 387 million years old. Described as having a wedge shape or a triangle shape pointing to the southwest. Trumpler Class I-Detached with strong central concentration, 3-Large range of brightness between stars, r-Rich cluster with more than 100 stars.



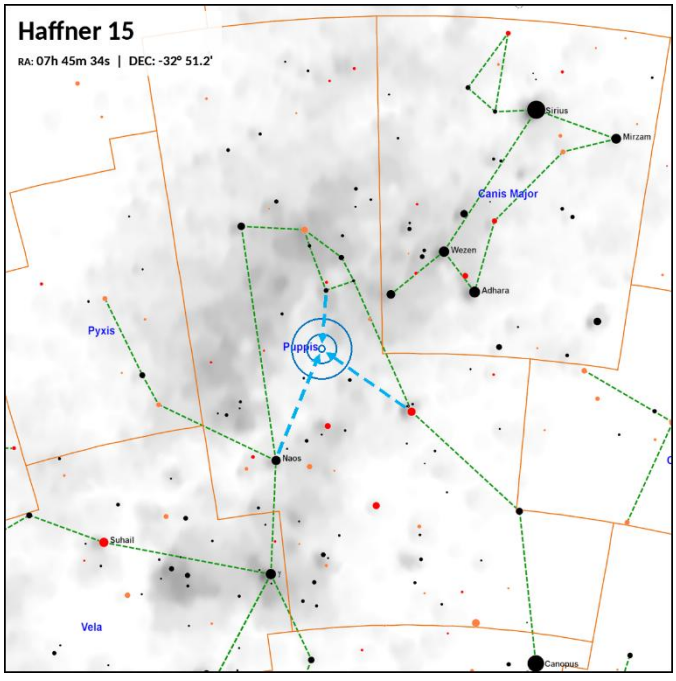


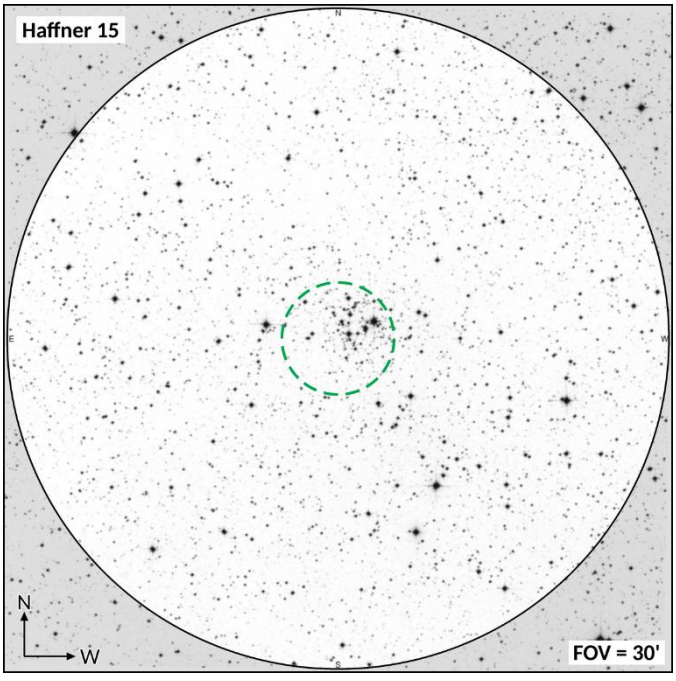
2 Puppis (MS-3 || **AB** | Mag=6 / 6.7 | Sep=16.7" | PA=340° | mBortle=9 | mApt=50mm | Spec=A2V / A8V | Color=white / white || **AC** | Mag=6 / 10.57 | Sep=100" | PA=229° | mBortle=9 | mApt=60mm | Spec=A2V | Color=white |) Located 400 light years away. The AB components are physically associated while the AC component relation is uncertain. Reported as a wide pair of yellowish peach stars next to a bright white star next to M-46.



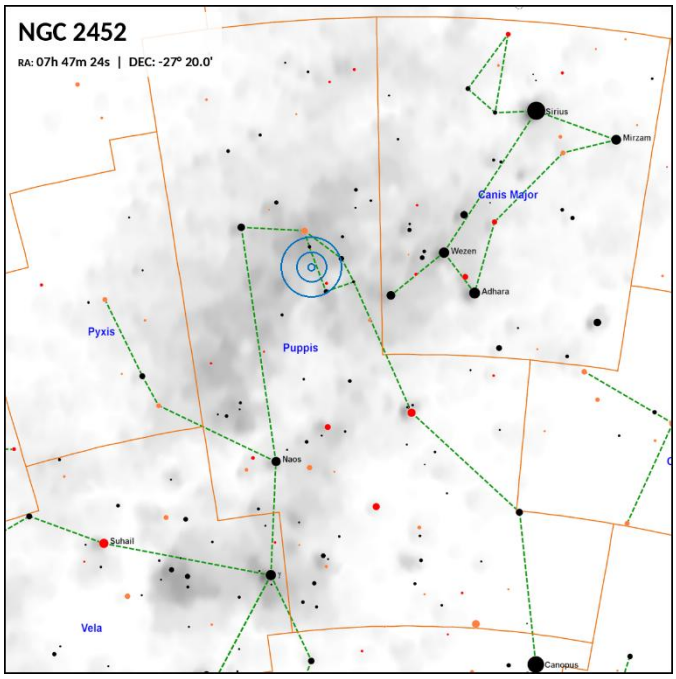


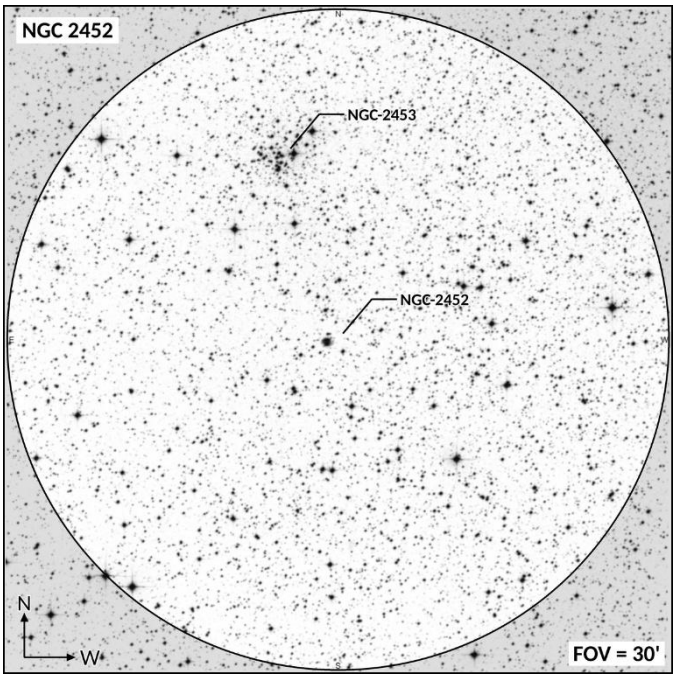
Haffner 15 (OC || Mag=9.4 | Size=4' | SB=21.0 | mApt=250mm | MC=II2m |) Located 11,000 light years away with an estimated physical diameter of 13 light years. Trumpler Class II-Detached with little central concentration, 2-Medium range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars.



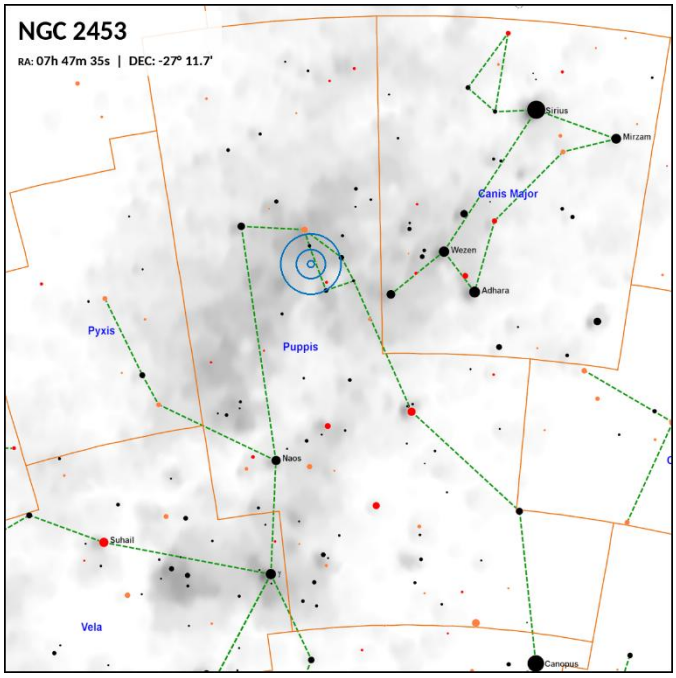


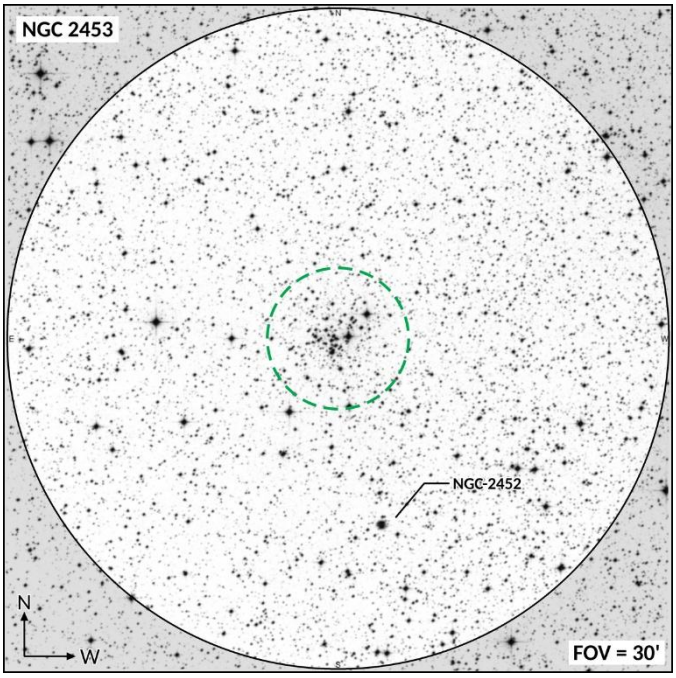
NGC 2452 (PN || Mag=12 | Size=0.3' | SB=18.0 | mBortle=9 | mApt=80mm | MC=Elliptical (annular) |) A planetary nebula located about 15,000 light years away with an estimated age of 40 to 50 thousand years old and located close to NGC 2453. These objects are not associated with each other.



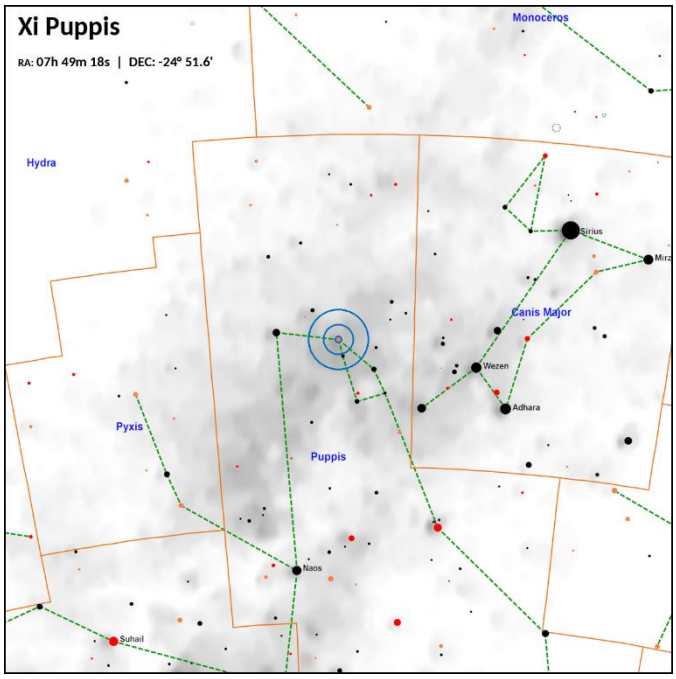


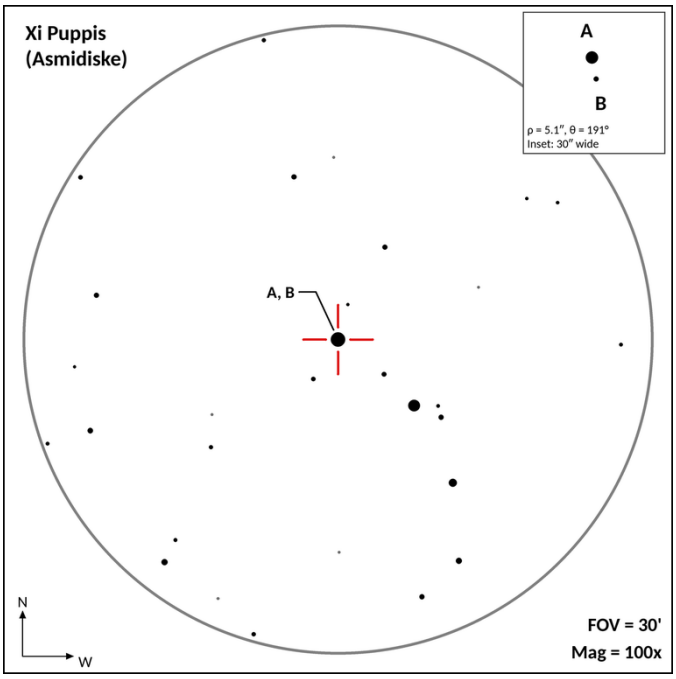
NGC 2453 (OC || Mag=8.3 | Size=5' | SB=20.4 | mBortle=6 | mApt=130mm | MC=I3m |) Located 7,000 light years away with an estimated physical diameter of 8.2 light years. This cluster contains about 30 stars of 11th magnitude and fainter. Trumpler Class I-Detached with strong central concentration, 3-Large range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars.



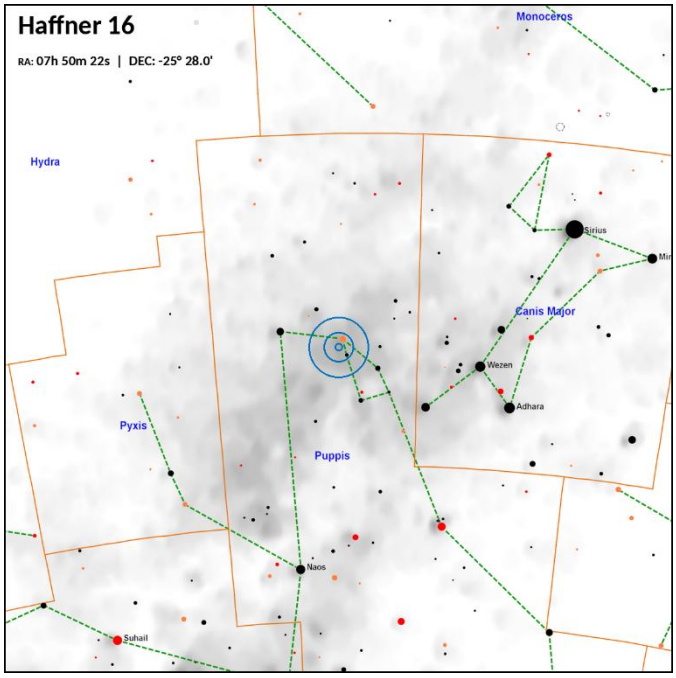


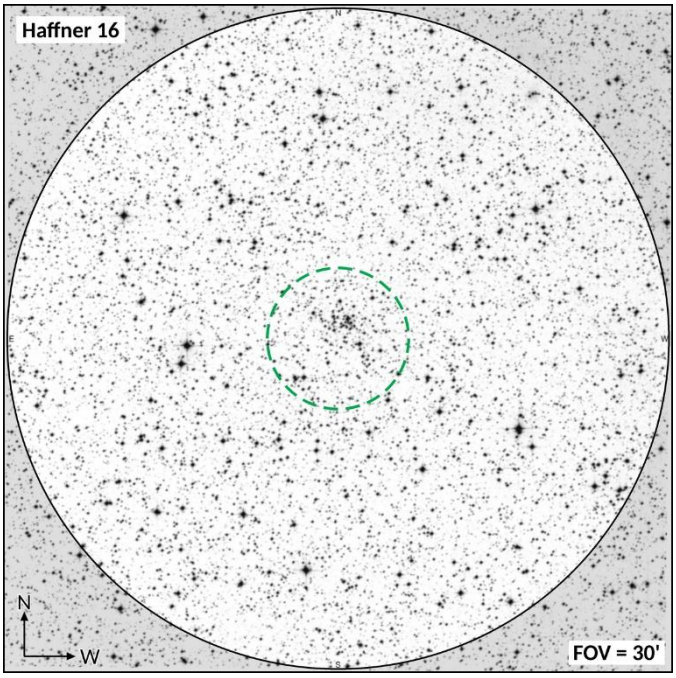
Xi Puppis (DS || **AB** | Mag=3.45 / 13 | Sep=5.1" | PA=191° | mApt=180mm | Spec=G3Ib | Color=yellow |) The primary known as Asmidiske is a supergiant with an estimated distance of 1,200 light years and 8,300 times more luminous than the Sun and a radius of 120 times that of the Sun.



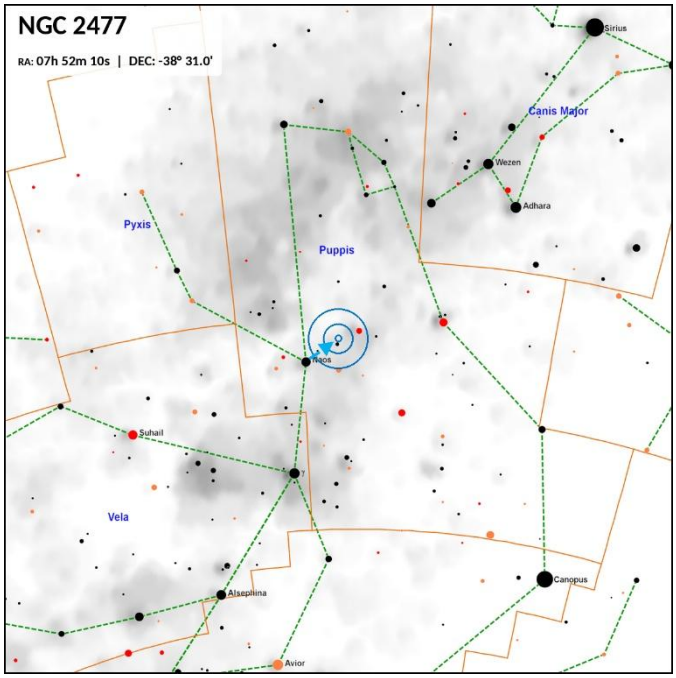


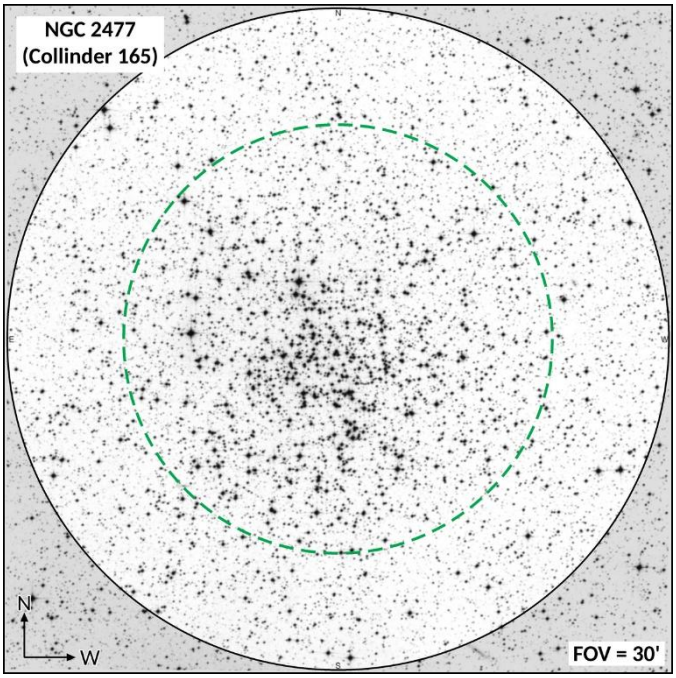
Haffner 16 (OC || Mag=10 | Size=5' | SB=22.1 | mApt=300mm | MC=I2m |) Located 10,000 light years away with an estimated physical diameter of 15 light years. Trumpler Class I-Detached with strong central concentration, 2-Medium range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars.



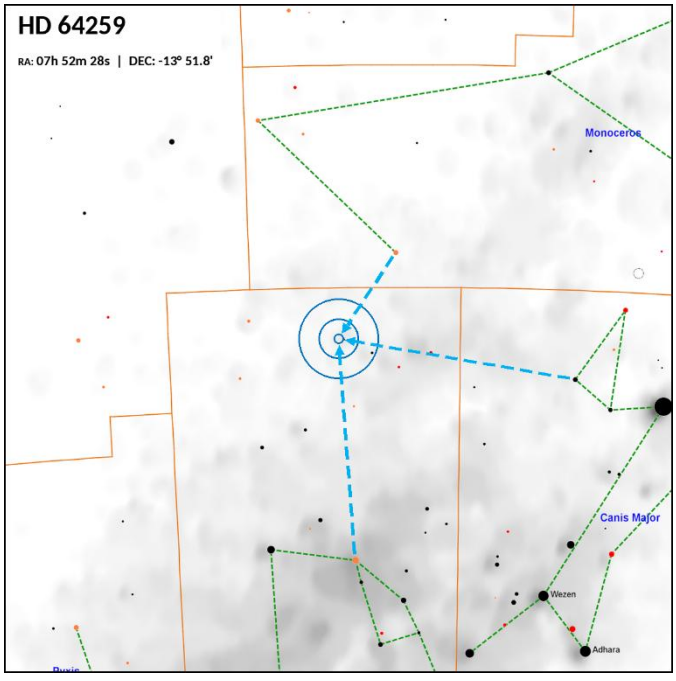


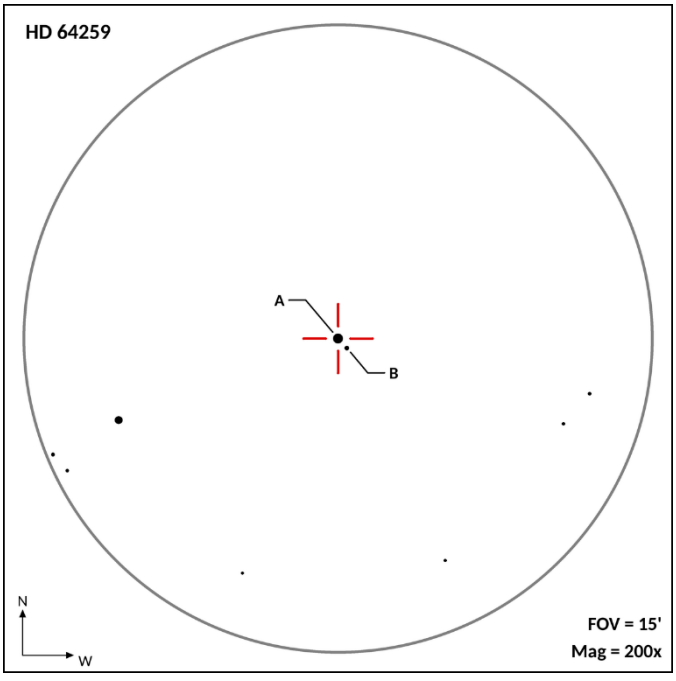
NGC 2477 (OC || Mag=5.8 | Size=15' | SB=20.3 | mBortle=9 | mApt=50mm | MC=I2r |) The Termite Hole Cluster contains about 300 stars and is estimated to be about 1.0 billion years old. A large, rich cluster. Trumpler Class I-Detached with strong central concentration, 2-Medium range of brightness between stars, r-Rich cluster with more than 100 stars.



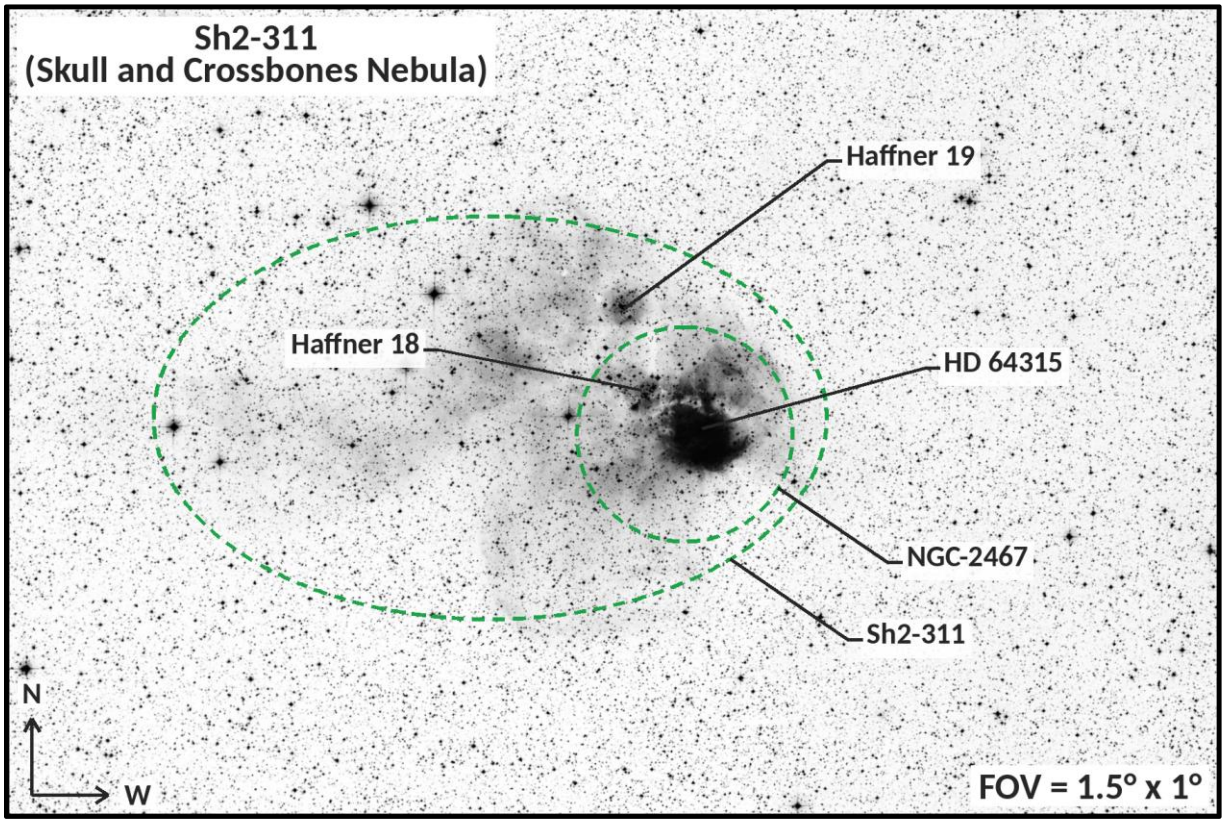


HD 64259 (DS || **AB** | Mag=6.61 / 10.5 | Sep=18.6" | PA=223° | mBortle=9 | mApt=60mm | Spec=K2III | Color=orange |) Located 480 light years away. The primary is an orange giant with a mass of 1.2 Solar masses. This double is not physical.





Skull and Crossbones Nebula (Sh2-311)



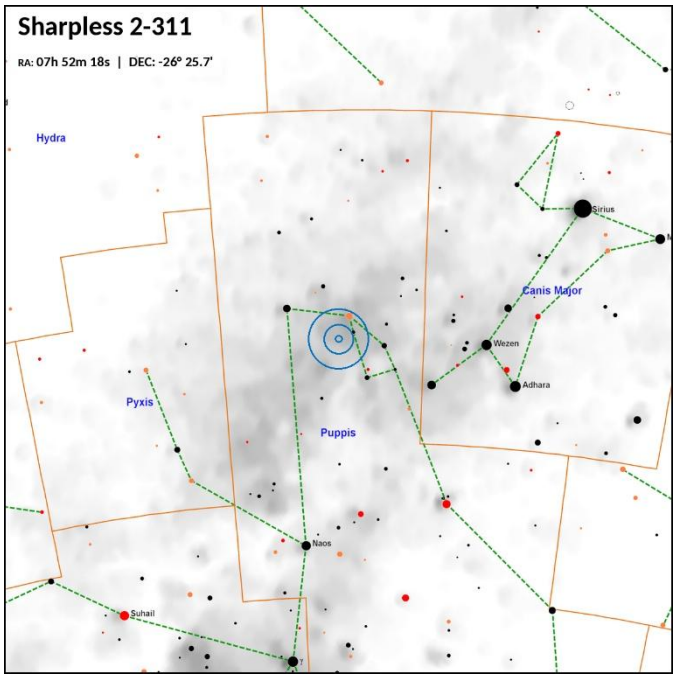
The Skull and Crossbones Nebula region contains Sharpless 2-311, NGC 2467, Haffner 18 and Haffner 19.

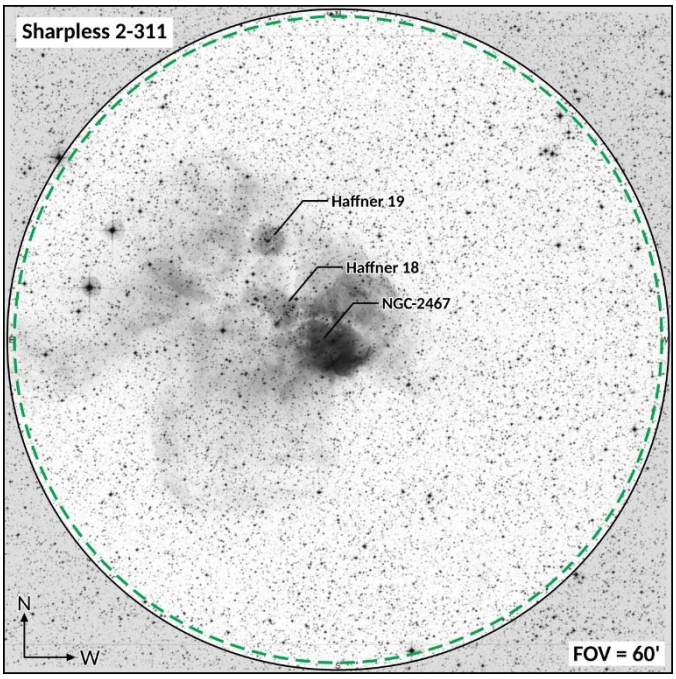
Sharpless 2-311 (also catalogued as NGC 2467 and Gum 9) is a bright H II region in the Puppis OB association, ionized mainly by HD 64315 (V402 Puppis), an O6 V star later found to be a massive multiple system. Two young clusters lie within the glow: Haffner 18, whose O7 V star lights a smaller nebula of its own, and Haffner 19, a compact cluster inside a small, nearly spherical ionized bubble. In deep images, dust lanes and two bright bubbles suggest a face, with Haffner 19 and the star HD 64455 as the eyes.

The complex is one patch of nebulosity on the sky but not one object in space. Published distances range from about 4,400 to 22,000 light years depending on the method. A 2015 survey placed NGC 2467 at about 16,000 light years and Haffner 19 at about 19,000 light years, both in the Perseus arm, with Haffner 18 much farther away at about 37,000 light years.

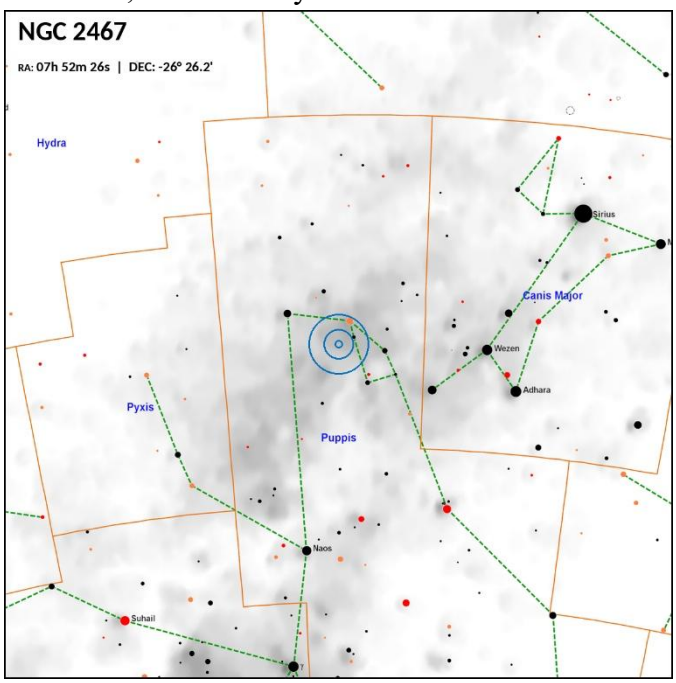
Visually, the brightest part is a glow 4′ to 7′ across around HD 64315. With an OIII filter, 13- to 17.5-inch telescopes show a mottled nebula up to about 10′ across, with a dark lane northwest of the central star. Haffner 18 and 19 are small and faint and need 200 to 250 mm of aperture to view.

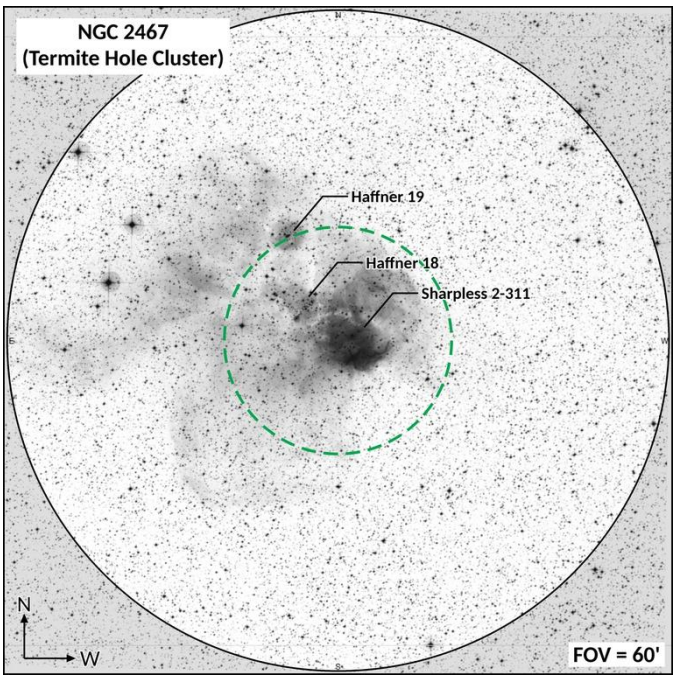
Sharpless 2-311 (EN || Size=50'x30' |) Located 4,400 light years away, this bright nebula contains a number of open clusters including Haffner 18, 19 and NGC 2467. See map and description above.



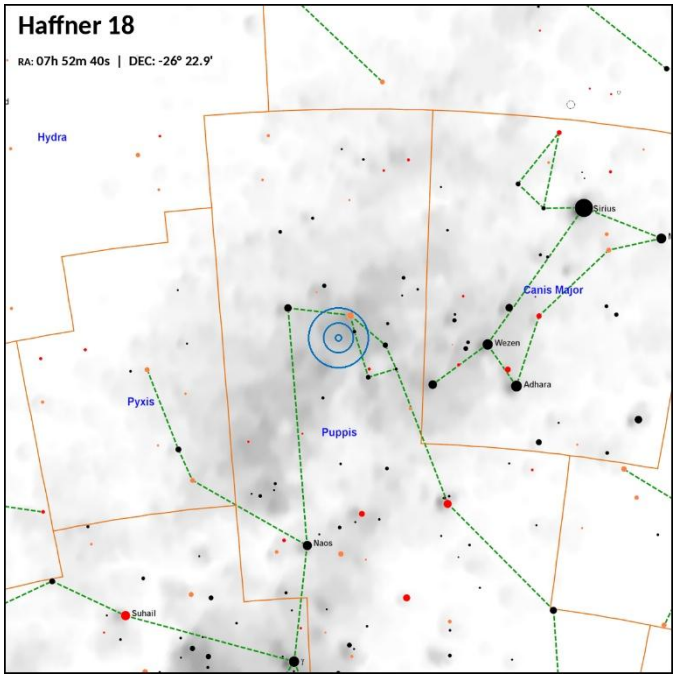


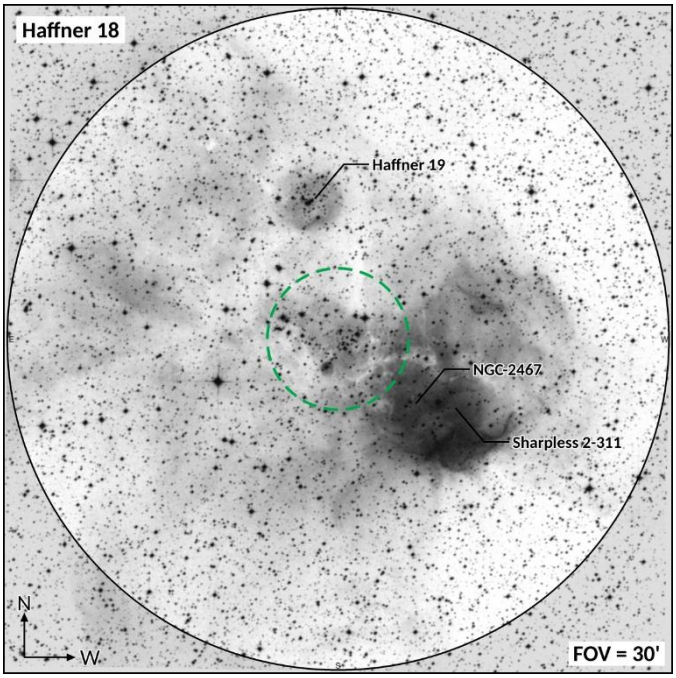
NGC 2467 (OC || Mag=7 | Size=16' | SB=21.6 | mBortle=9 | mApt=70mm | MC=I3mn |) The Emission Comet has been considered the nucleus of the Puppis I association, but in reality, does not represent a distinct open cluster but a superimposition of several stellar groups along the same line of sight. Trumpler Class I-Detached with strong central concentration, 3-Large range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars, n-Nebulosity associated with cluster.



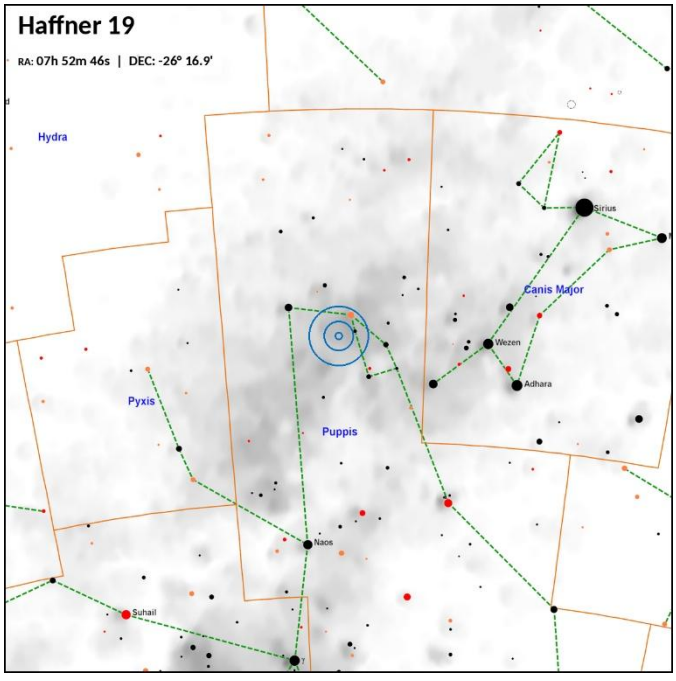


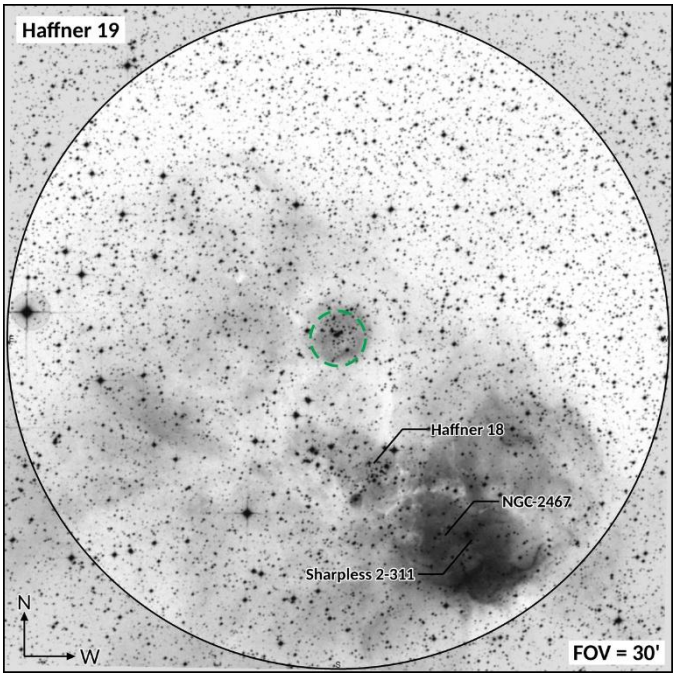
Haffner 18 (OC, EN || Mag=9.3 | Size=5' | SB=21.4 | mApt=200mm | MC=I2pn |) Located 20,000 light years away with an estimated physical diameter of 29 light years. Trumpler Class I-Detached with strong central concentration, 2-Medium range of brightness between stars, p-Poor cluster with less than 50 stars, n-Nebulosity associated with cluster.



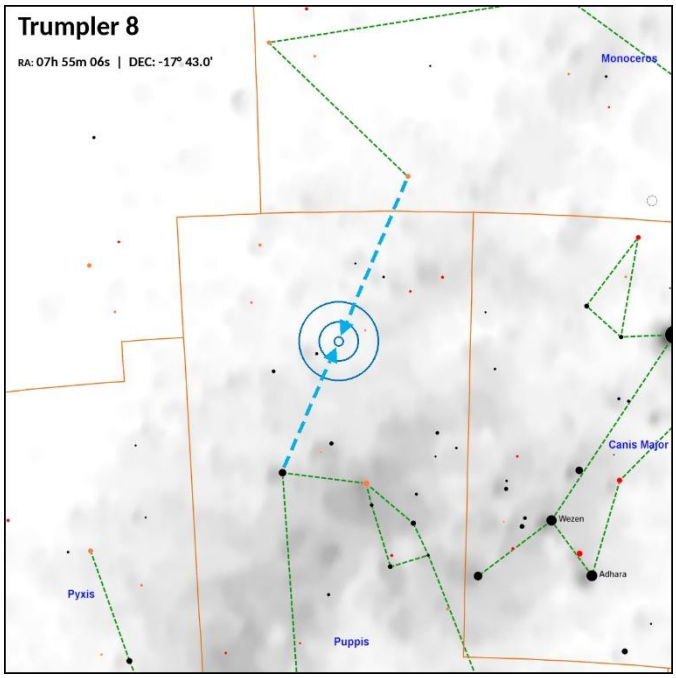


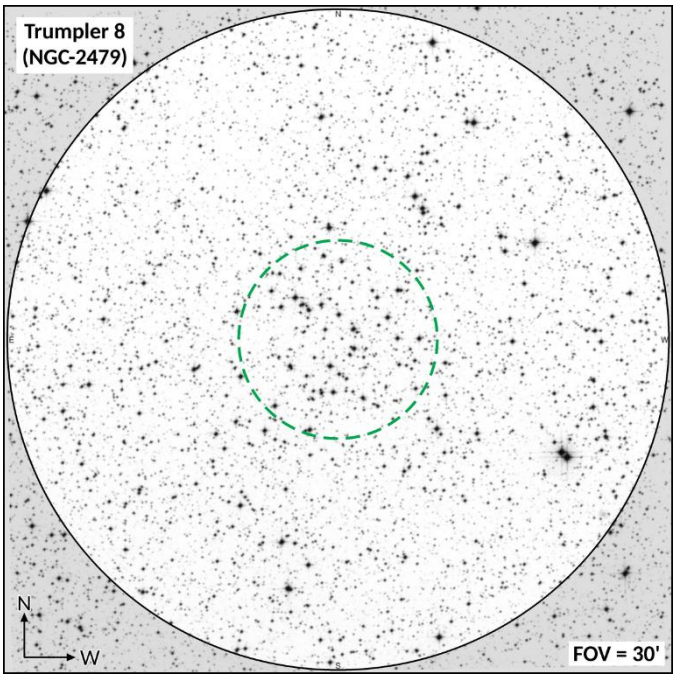
Haffner 19 (OC || Mag=9.4 | Size=2' | SB=19.5 | mApt=250mm | MC=I1mn |) Located 21,000 light years away with an estimated physical diameter of 12 light years. Trumpler Class I-Detached with strong central concentration, 1-Small range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars, n-Nebulosity associated with cluster.



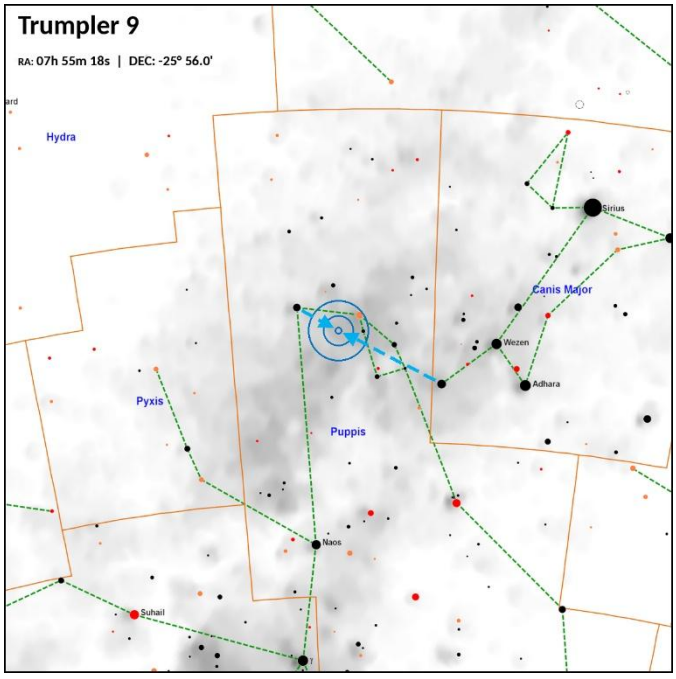


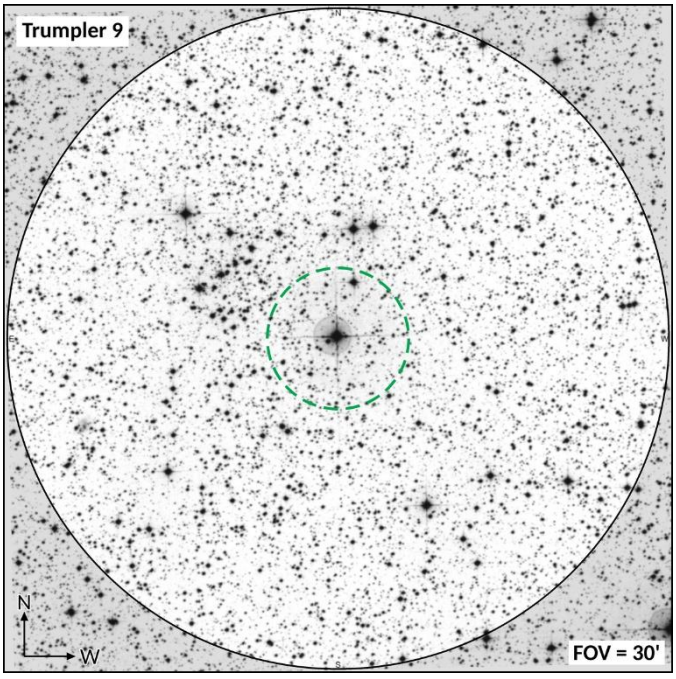
Trumpler 8 (OC || Mag=9.6 | Size=7' | SB=22.5 | mApt=250mm | MC=III1m |) Located 5,200 light years away with an estimated physical diameter of 15 light years. Described as somewhat concentrated toward the center with a string of stars extending eastwards from the northeast edge of the cluster. Trumpler Class III-Detached with no noticeable central concentration, 1-Small range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars.



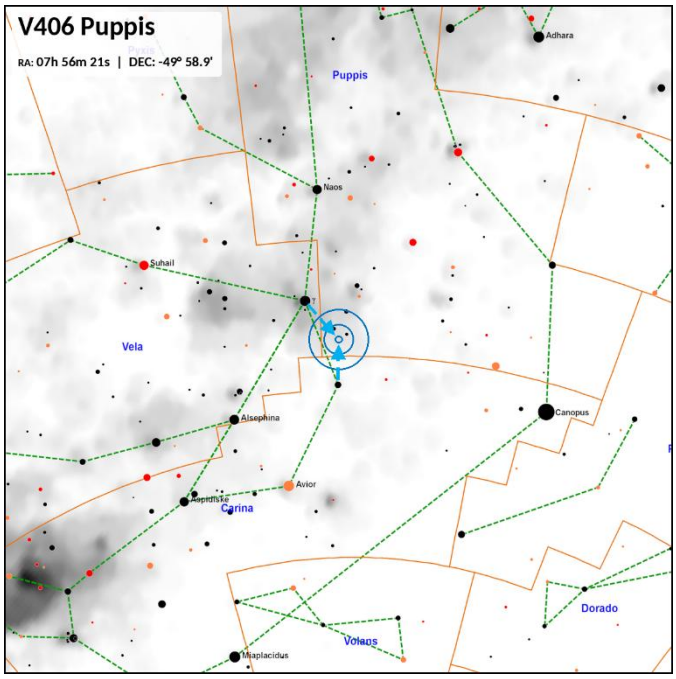


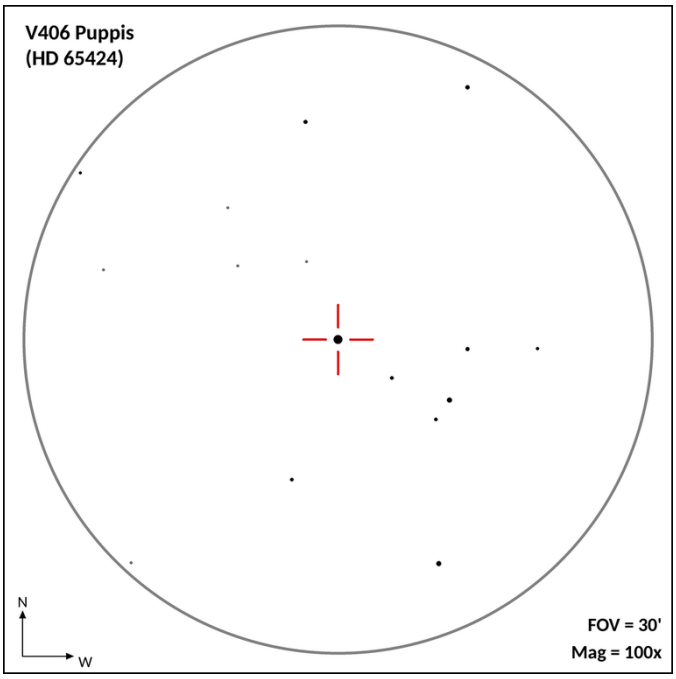
Trumpler 9 (OC || Mag=8.7 | Size=5' | SB=20.8 | mBortle=4 | mApt=150mm | MC=II2p |) Located 7,500 light years away with an estimated physical diameter of 11 light years. Trumpler Class II-Detached with little central concentration, 2-Medium range of brightness between stars, p-Poor cluster with less than 50 stars.



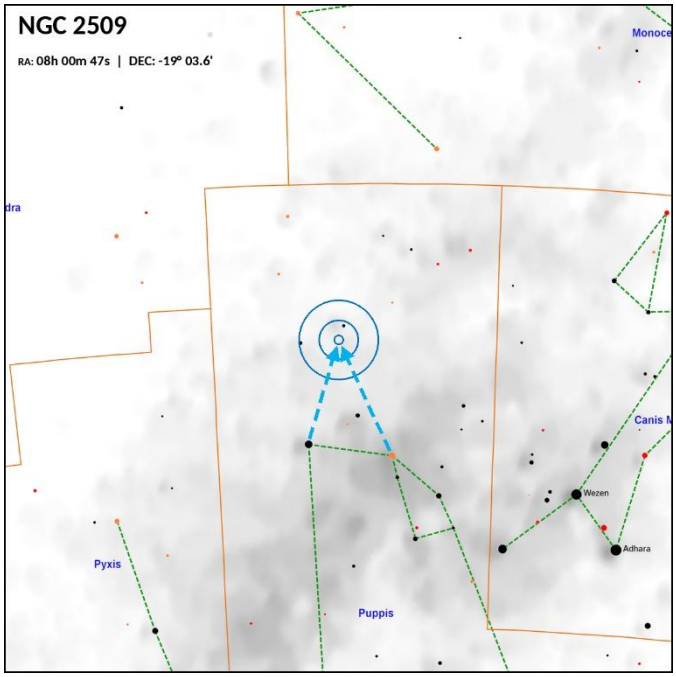


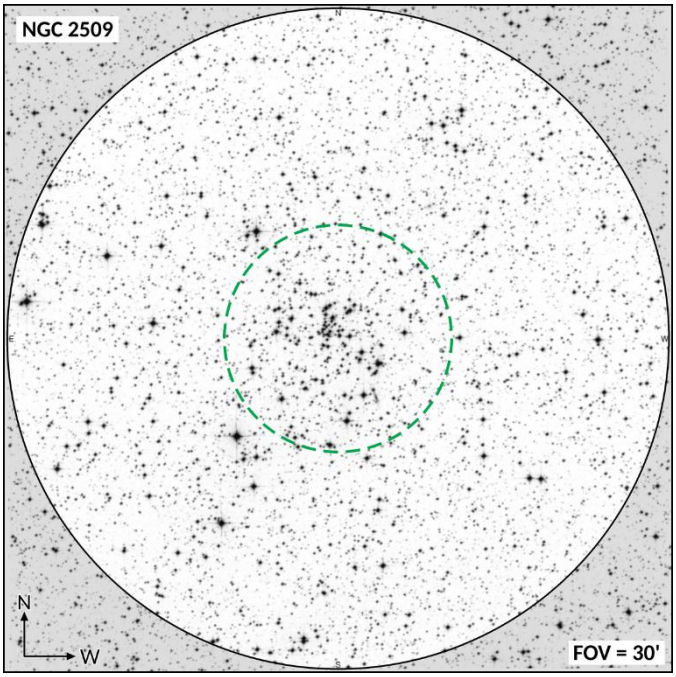
V406 Puppis (CS || Magnitude Range= 7.39 to 8.14 | Spec=C-N4IV | BV=+3.56 | Color=deep red |) Located 2,000 light years away. A red supergiant with an energy output 70 times that of the Sun's luminosity. This is a long-period variable star with an unknown period. BV=+3.56 indicating a color of Deep Red.



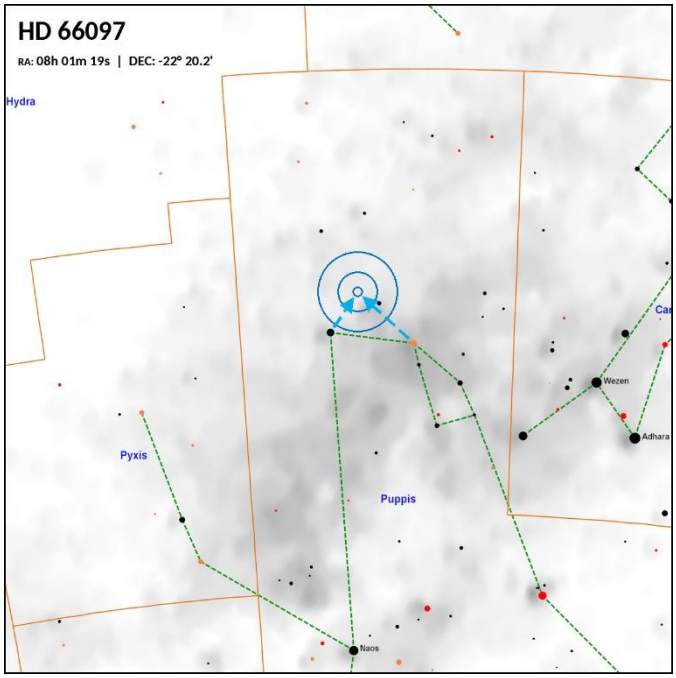


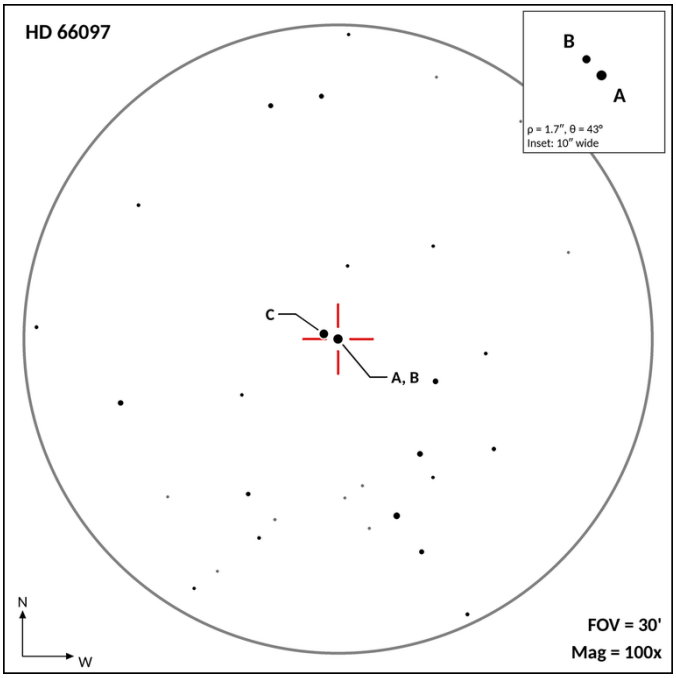
NGC 2509 (OC || Mag=9.3 | Size=8' | SB=22.4 | mApt=200mm | MC=I1r |) Located between 3,000 and 9,500 light years away with an estimated width of 14 light years the cluster is estimated to be between 1.2 and 8 billion years old. Trumpler Class I-Detached with strong central concentration, 1-Small range of brightness between stars, r-Rich cluster with more than 100 stars.



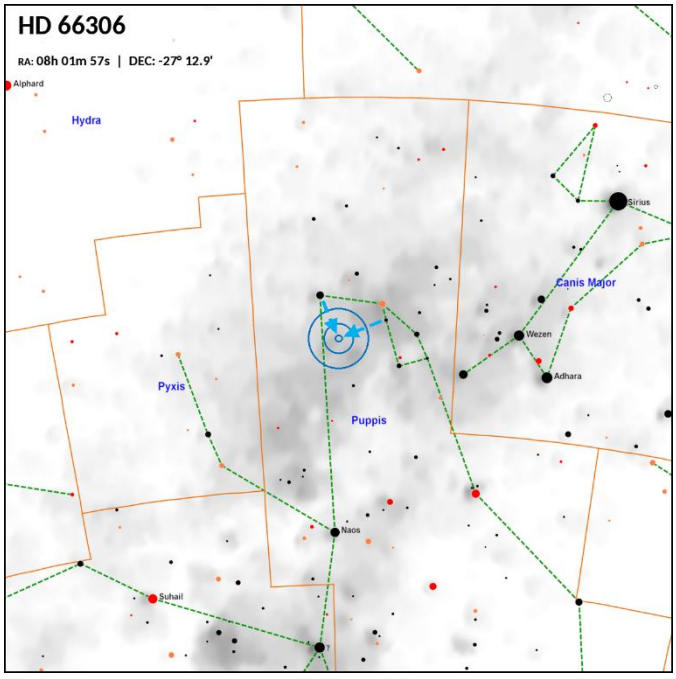


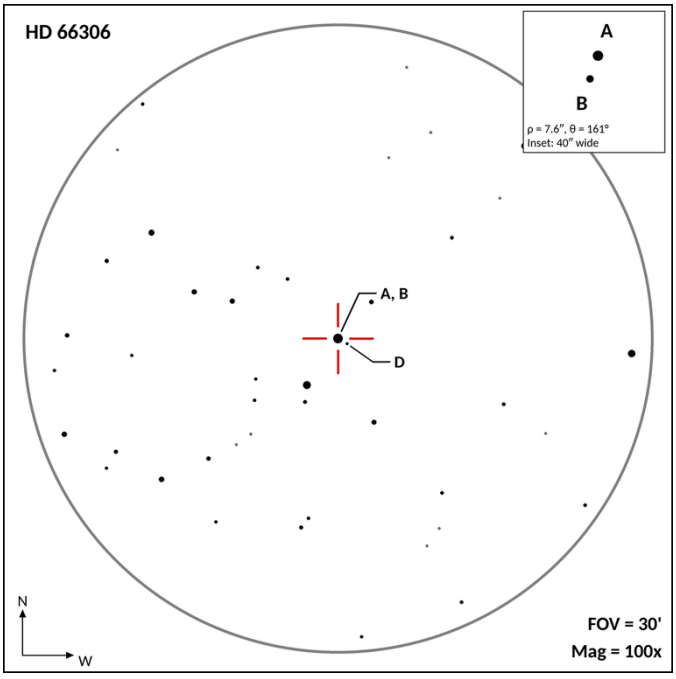
HD 66097 (MS-3 || **AB** | Mag=7.15 / 9.2 | Sep=1.7" | PA=43° | mBortle=9 | mApt=102mm | Spec=A1V | Color=white || **AC** | Mag=7.15 / 7.62 | Sep=43" | PA=70° | mBortle=9 | mApt=50mm | Spec=A1V / G0 | Color=white / yellow |) Located 520 light years away. The nature of the AB pair is unknown. The AC pair is not physical. A pale yellow and ruddy color pair of stars.



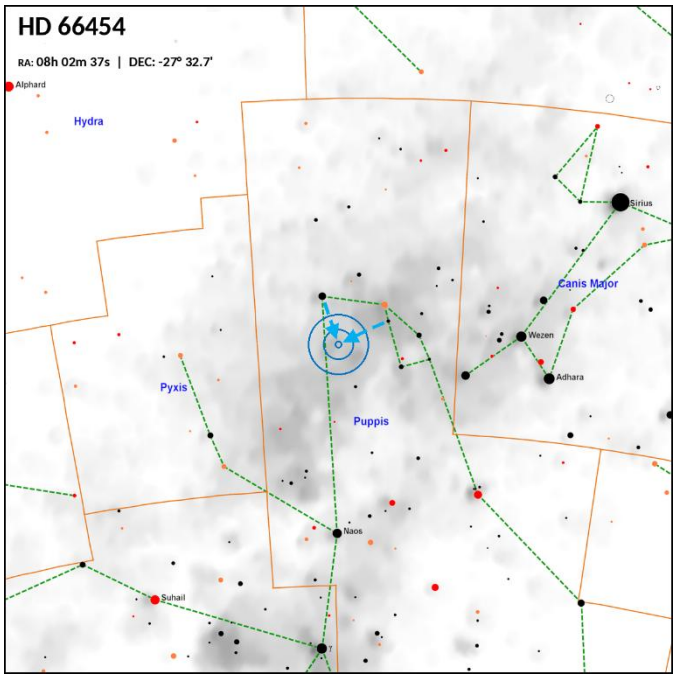


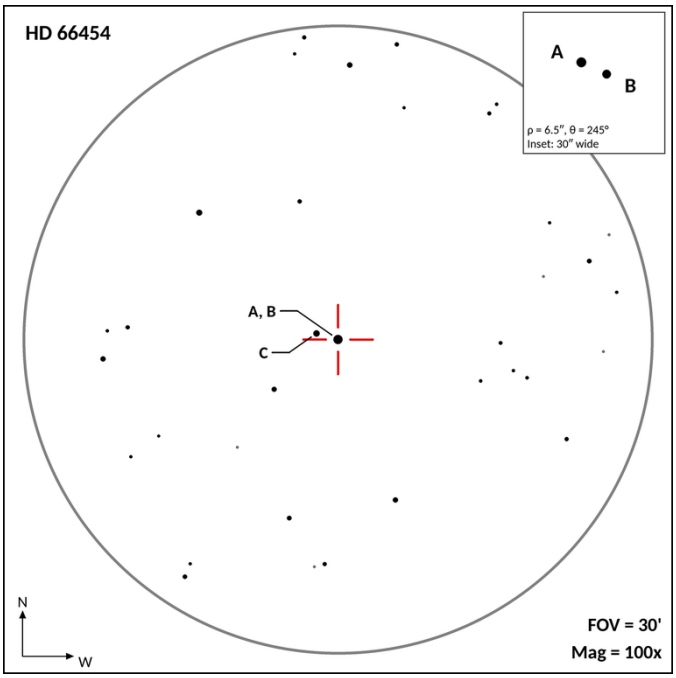
HD 66306 (MS-3 || **AB** | Mag=6.8 / 9.9 | Sep=7.6" | PA=161° | mBortle=9 | mApt=50mm | Spec=B7II | Color=blue-white || **AD** | Mag=6.85 / 12 | Sep=30" | PA=240° | mBortle=8 | mApt=114mm | Spec=B7II | Color=blue-white |) Located 4,000 light years away. The nature of the AB pair is unknown and the AD pair is not physical. A triple with three stars in a row.



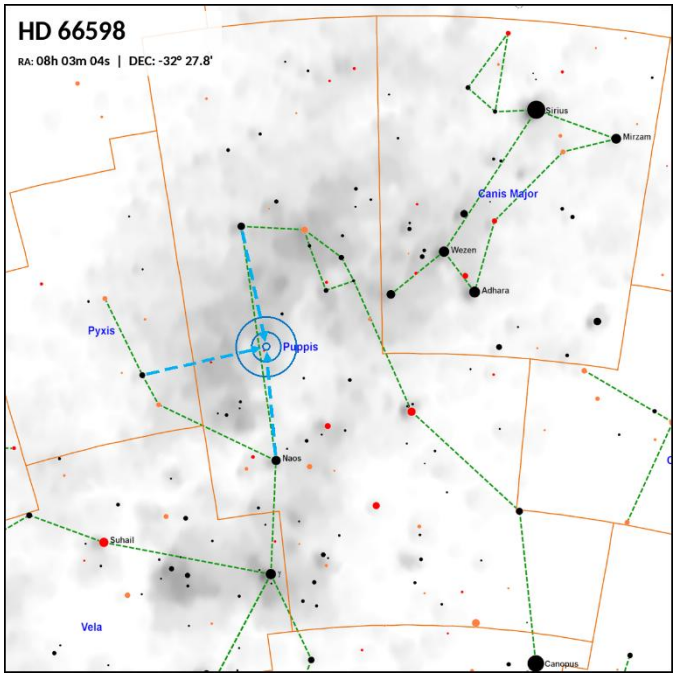


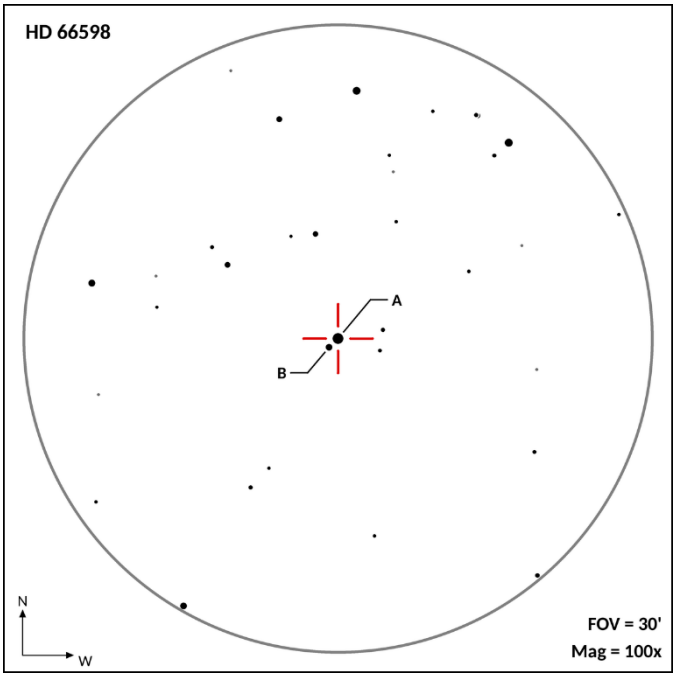
HD 66454 (MS-3 || **AB** | Mag=7.22 / 8.41 | Sep=6.5" | PA=245° | mBortle=9 | mApt=50mm | Spec=G2IV | Color=yellow || **AC** | Mag=7.2 / 9.2 | Sep=64.5" | PA=74° | mBortle=9 | mApt=50mm | Spec=G2IV | Color=yellow |) Located 960 light years away. The nature of the AB pair is uncertain; the AC pair is not physical. The primary is a yellow-orange giant 34.9 times the Sun's diameter with a luminosity output 460 times the Sun's and a mass of 1.2 Solar masses.



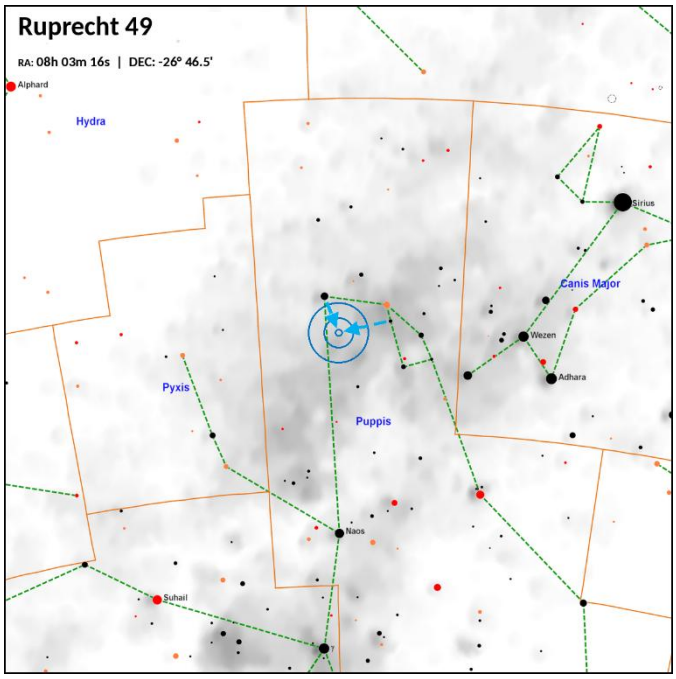


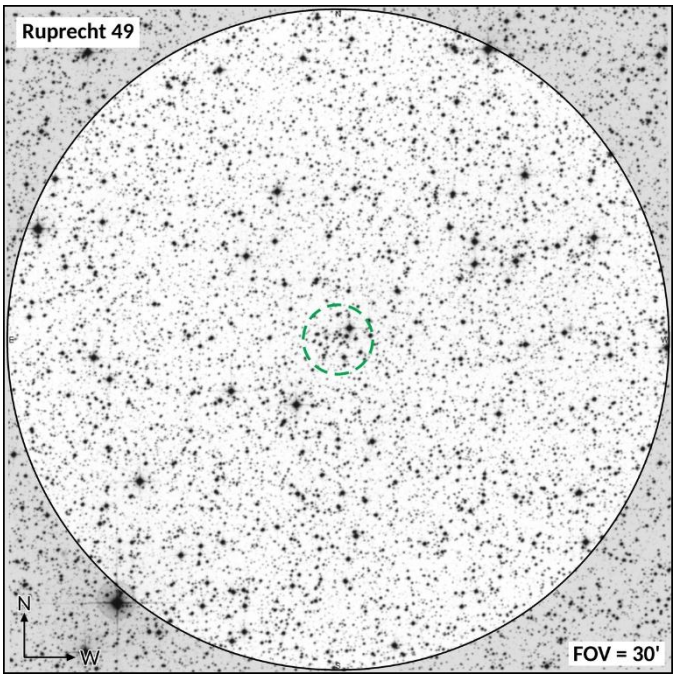
HD 66598 (DS || **AB** | Mag=6 / 9 | Sep=35.9" | PA=134° | mBortle=9 | mApt=50mm | Spec=K2.5III | Color=orange |) Located 470 light years away. This double is not physical. Described as a bright orange star with a wide companion.



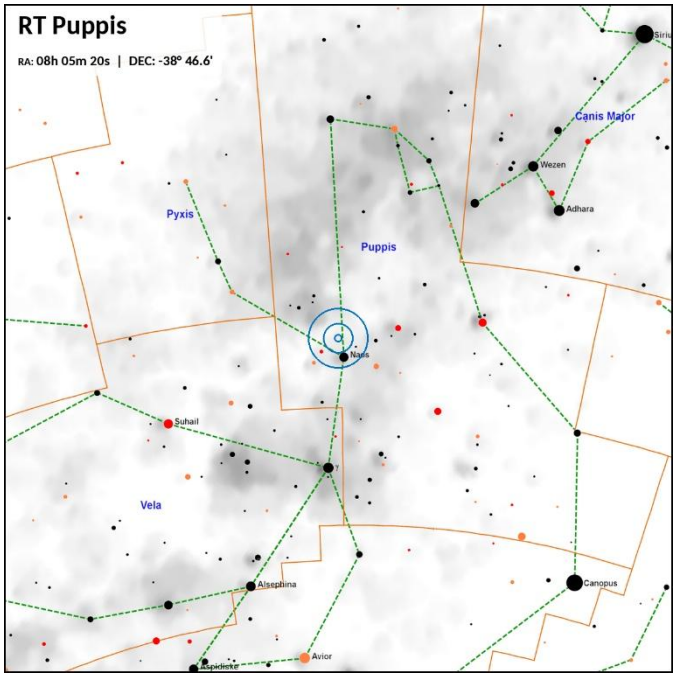


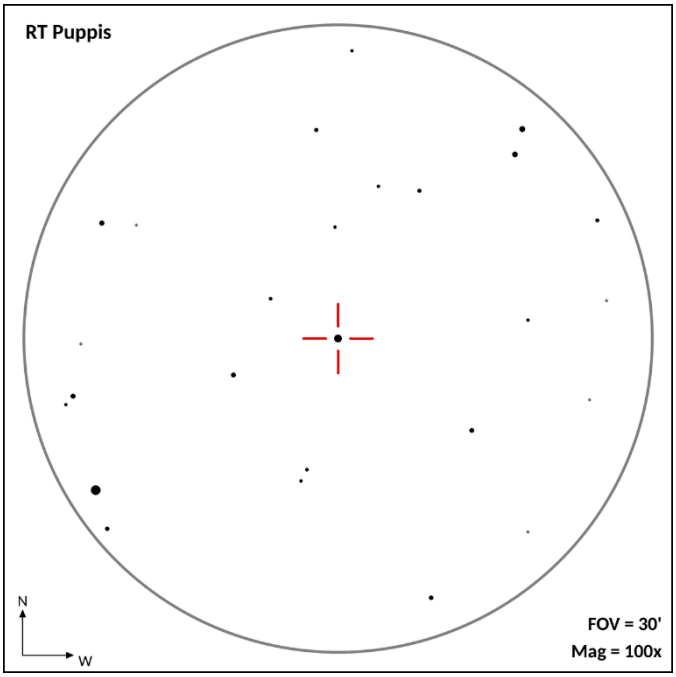
Ruprecht 49 (OC || Mag=9.6 | Size=2.5' | SB=20.2 | mApt=250mm | MC=II1p |) Located 5,900 light years away with an estimated physical diameter of 3.5 light years. Trumpler Class II-Detached with little central concentration, 1-Small range of brightness between stars, p-Poor cluster with less than 50 stars.



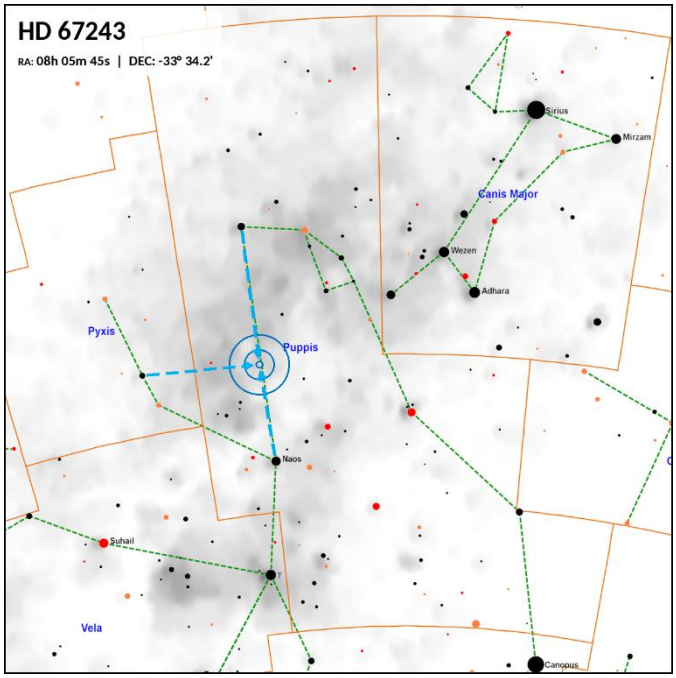


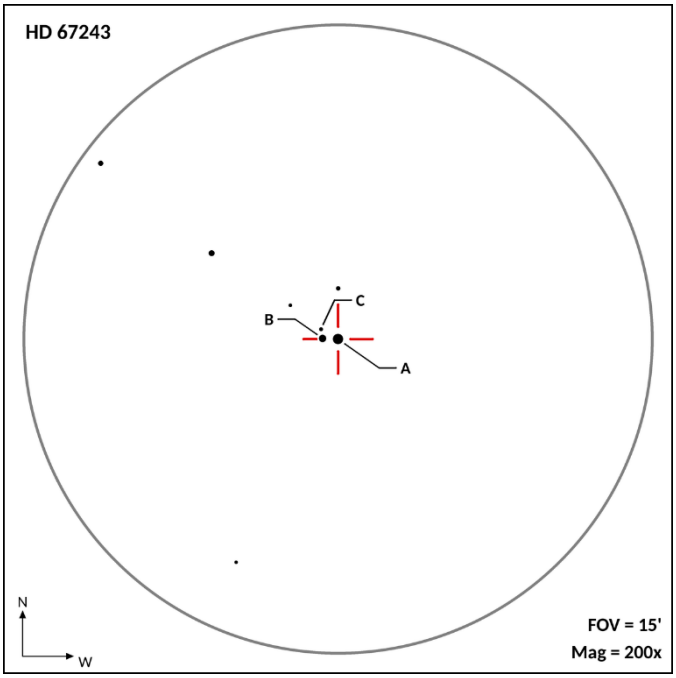
RT Puppis (CS || Magnitude Range= 8.2 to 9.1 | Period=0.27y | Spec=C6,2 | BV=+2.43 | Color=orange-red |) Located 3,200 light years away. The period of this variable star is 100 days and has a color index of BV=+2.43 indicating a color of Orange-Red.



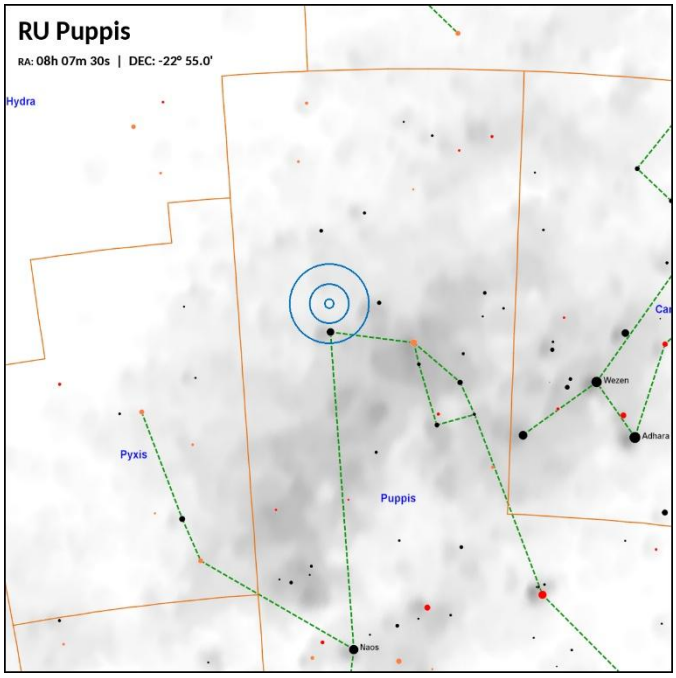


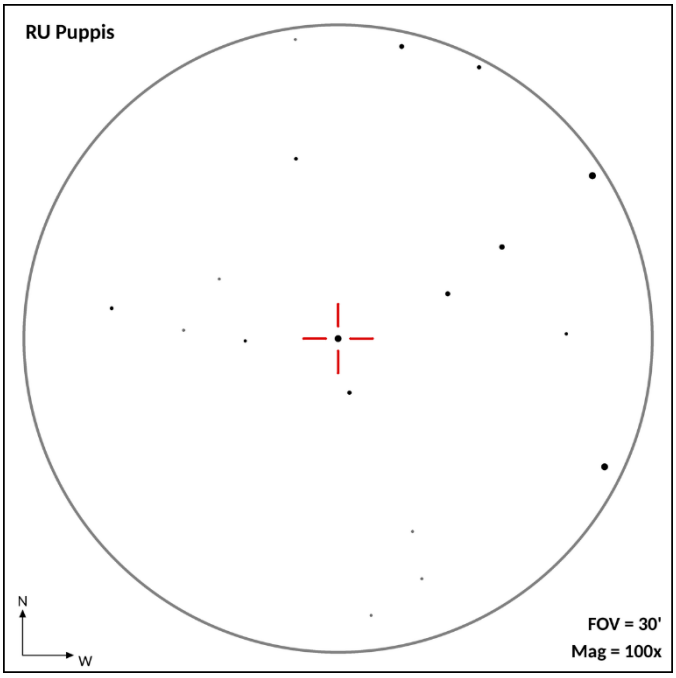
HD 67243 (MS-3 || **AB** | Mag=6.26 / 8.44 | Sep=21.9" | PA=88° | mBortle=9 | mApt=50mm | Spec=G1Ib | Color=yellow || **AC** | Mag=6.26 / 11 | Sep=27.9" | PA=60° | mBortle=9 | mApt=70mm | Spec=G1Ib | Color=yellow |) Located 2,300 light years away. This is an optical triple star system described as a beautiful bright orange star with a white companion that lies between a deep red field star and close dim pair (Hartung).



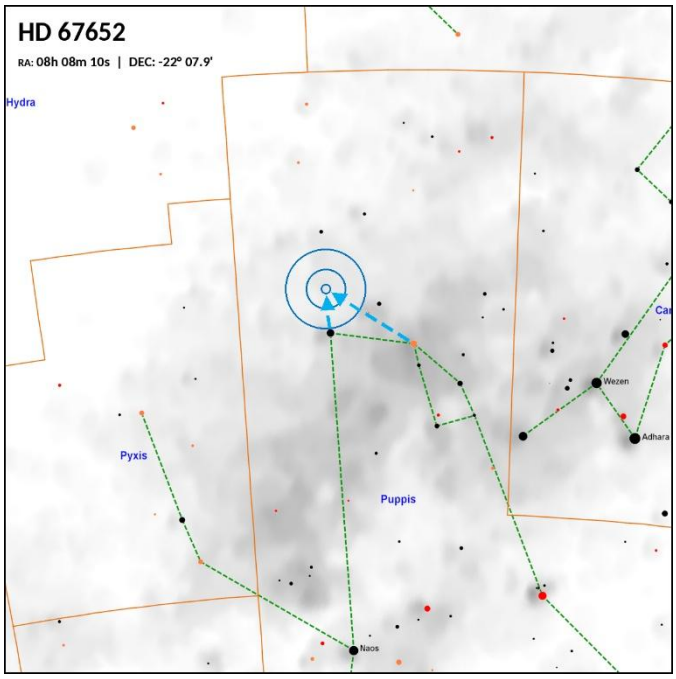


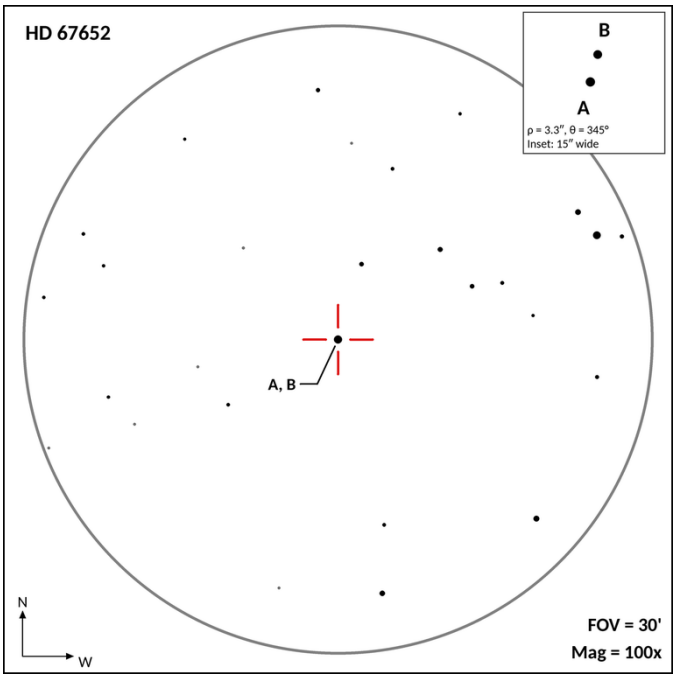
RU Puppis (CS || Magnitude Range= 8.9 to 11.1 | Period=1.16y | Spec=C5,4 | BV=+3.61 | Color=deep red |) Located 4,700 light years away. BV=+3.61 indicating a color of Deep Red.



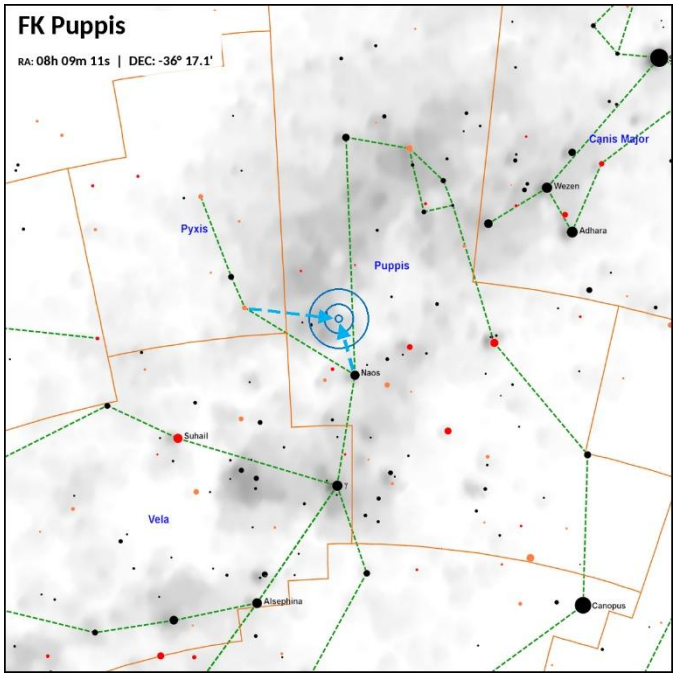


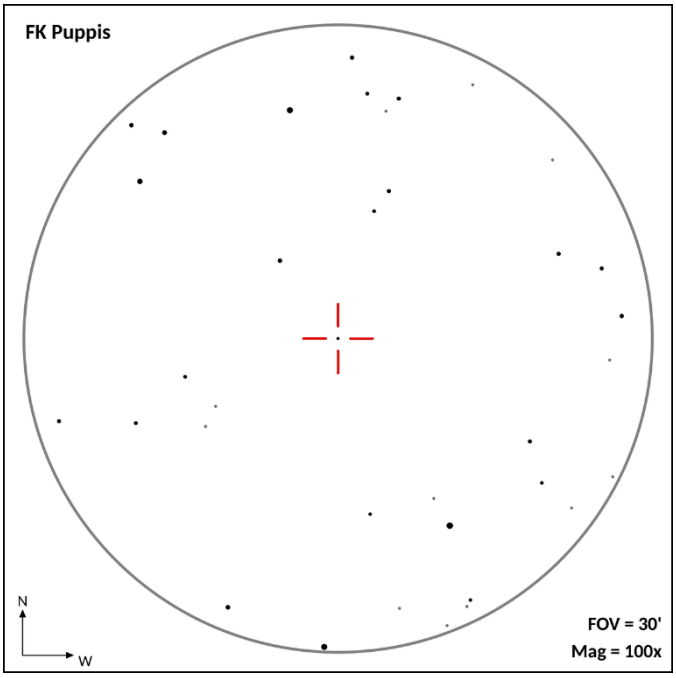
HD 67652 (DS || **AB** | Mag=7.9 / 8.5 | Sep=3.3" | PA=345° | mBortle=9 | mApt=50mm | Spec=G0V | Color=yellow |) Located 218 light years away and a physical double. The primary is 1.8 times the Sun's diameter with an energy output 3.6 times that of the Sun's and has roughly the same mass as our Sun.



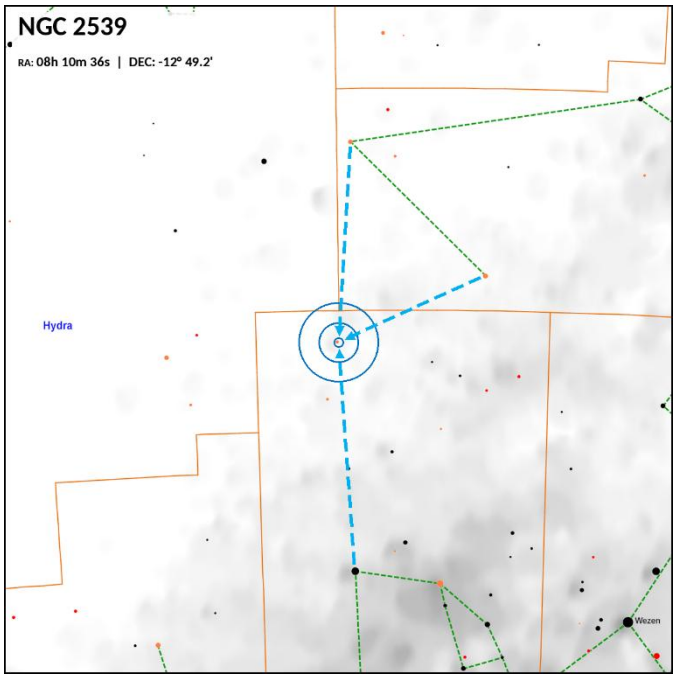


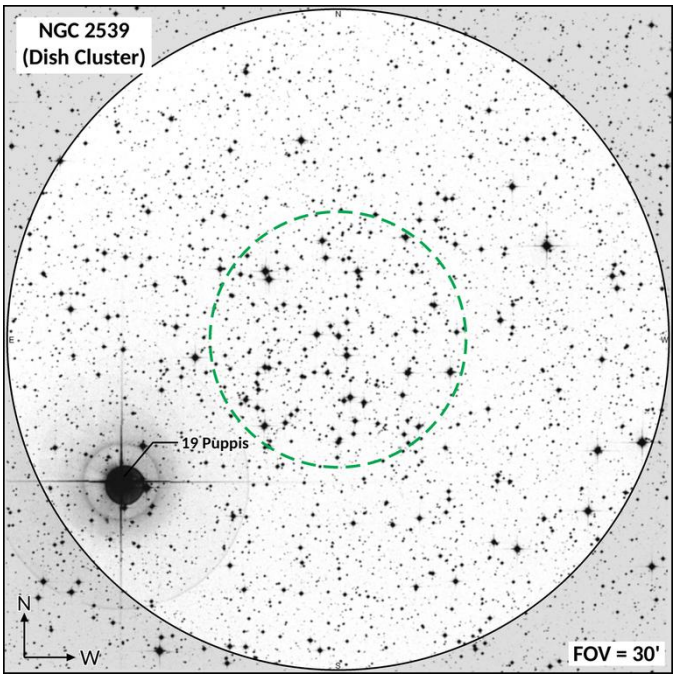
FK Puppis (CS || Magnitude Range= 12.0 to 15.3 (photographic) | Period=1.37y | Spec=C6-,3e(N) | BV=+4.52 | Color=deep red |) Located 3,700 light years away. A semi-regular variable star with a period of 502 days. BV=+4.52 indicating a color of Deep Red.



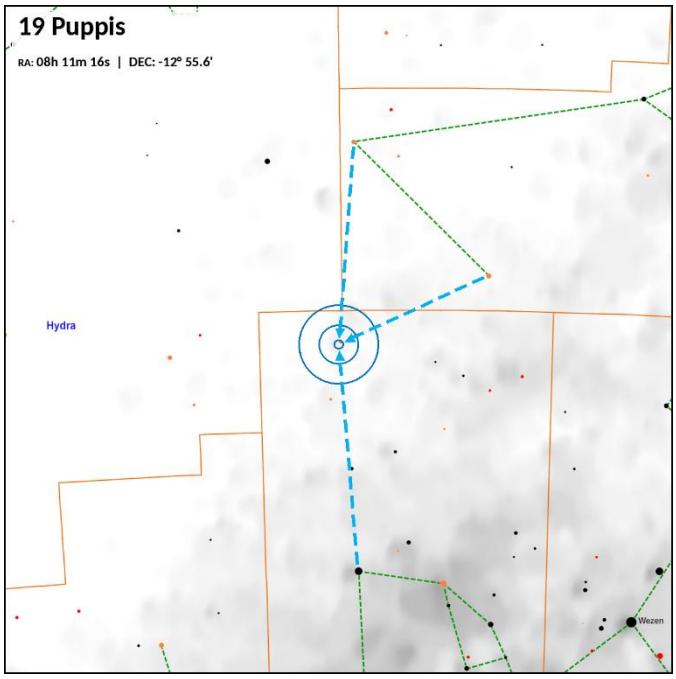


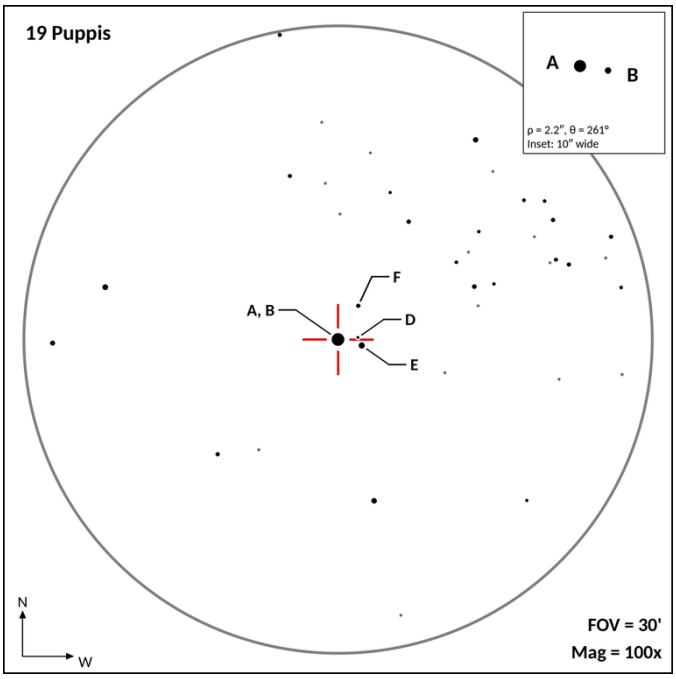
NGC 2539 (OC || Mag=6.5 | Size=9' | SB=19.9 | mBortle=9 | mApt=60mm | MC=III2m |) The Dish Cluster has a diameter of 24 light years. Trumpler Class III-Detached with no noticeable central concentration, 2-Medium range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars.



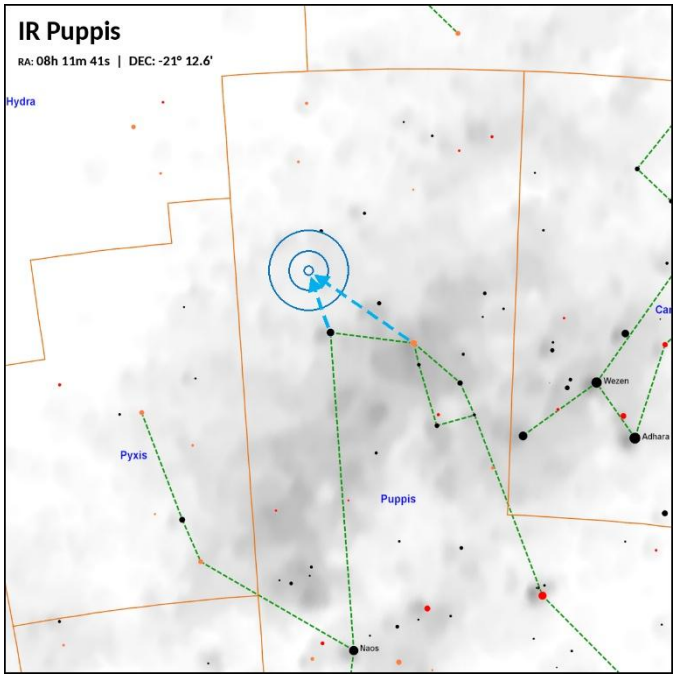


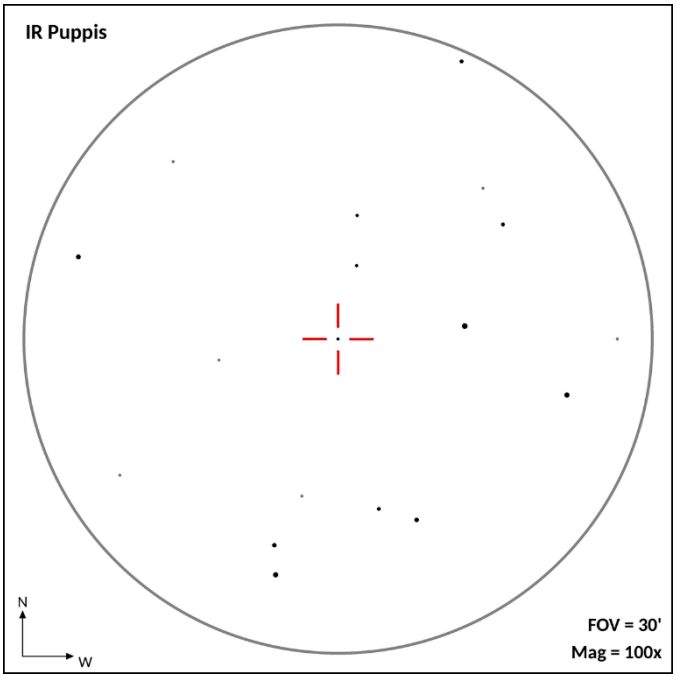
19 Puppis (MS-5 || **AB** | Mag=4.8 / 11.2 | Sep=2.2" | PA=261° | mBortle=9 | mApt=102mm | Spec=G8III | Color=yellow || **AD** | Mag=4.82 / 11.9 | Sep=57.3" | PA=276° | mBortle=9 | mApt=114mm | Spec=G8III | Color=yellow || **AE** | Mag=4.82 / 9.37 | Sep=70" | PA=256° | mBortle=9 | mApt=50mm | Spec=G8III | Color=yellow || **AF** | Mag=4.82 / 10.74 | Sep=112.4" | PA=329° | mBortle=9 | mApt=60mm | Spec=G8III | Color=yellow |) For most of the stars in this "system" it has not been determined whether they are physically related. However, the AE pair is physical.



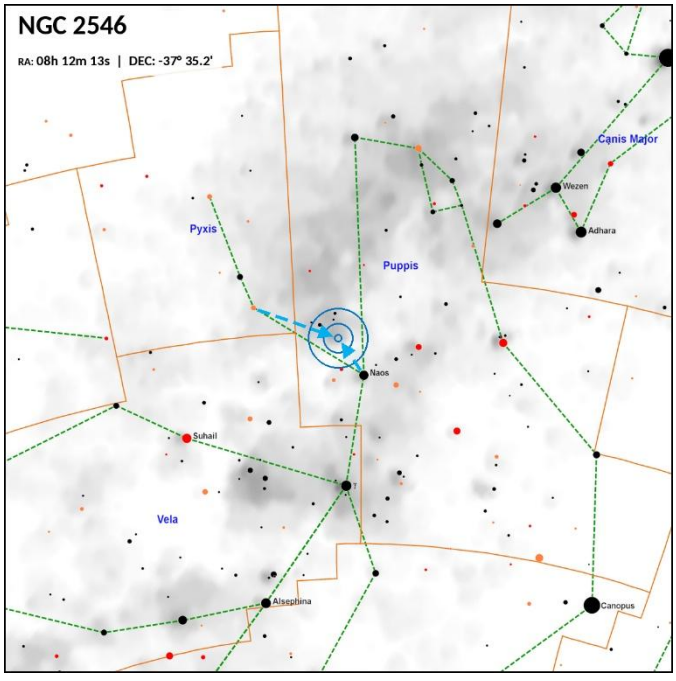


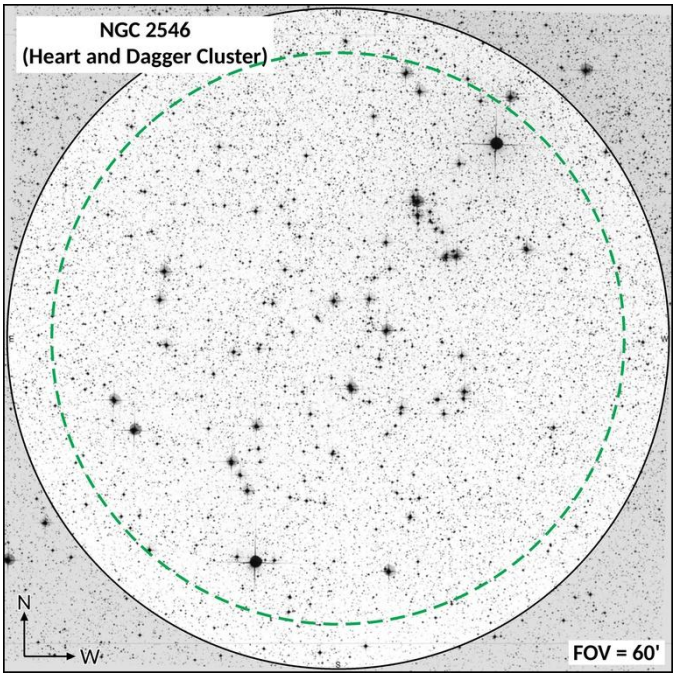
IR Puppis (CS || Magnitude Range= 12.5 to 15.5 (photographic) | Period=0.19y | Spec=C4,3(N) | BV=+3.02 | Color=red |) Located 5,000 light years away, this is a pulsating semi-regular variable star with a period of 70 days. BV=+3.02 indicating a color of Red.



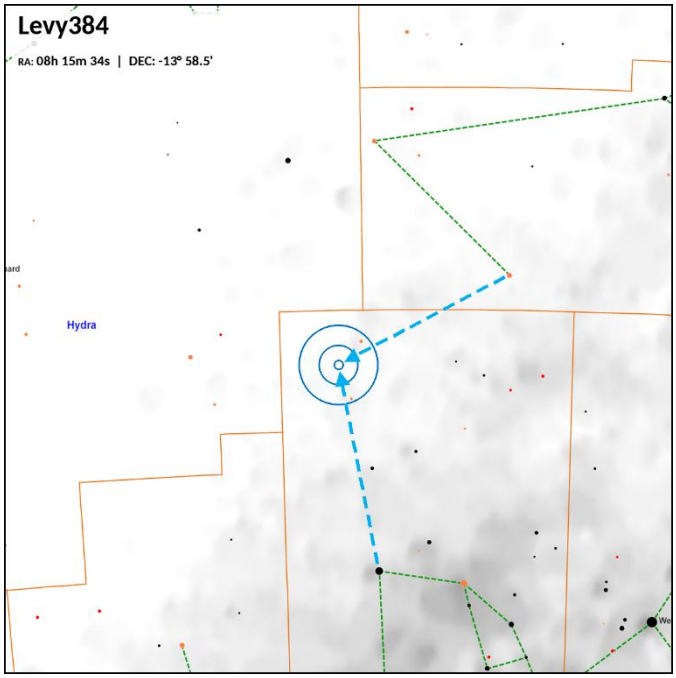


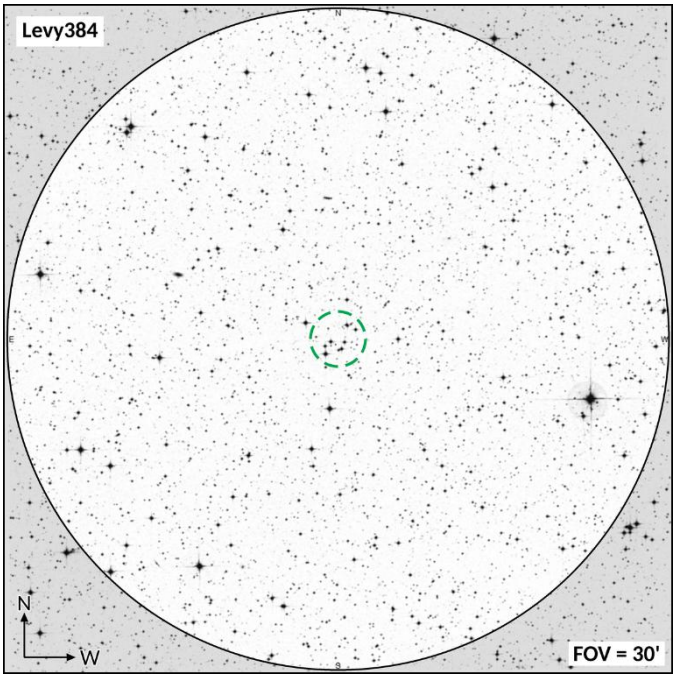
NGC 2546 (OC || Mag=6.3 | Size=40' | SB=22.9 | mBortle=9 | mApt=50mm | MC=III2m |) The Heart and Dagger Cluster is actually a pair of independent but overlapping open clusters. Trumpler Class III-Detached with no noticeable central concentration, 2-Medium range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars.



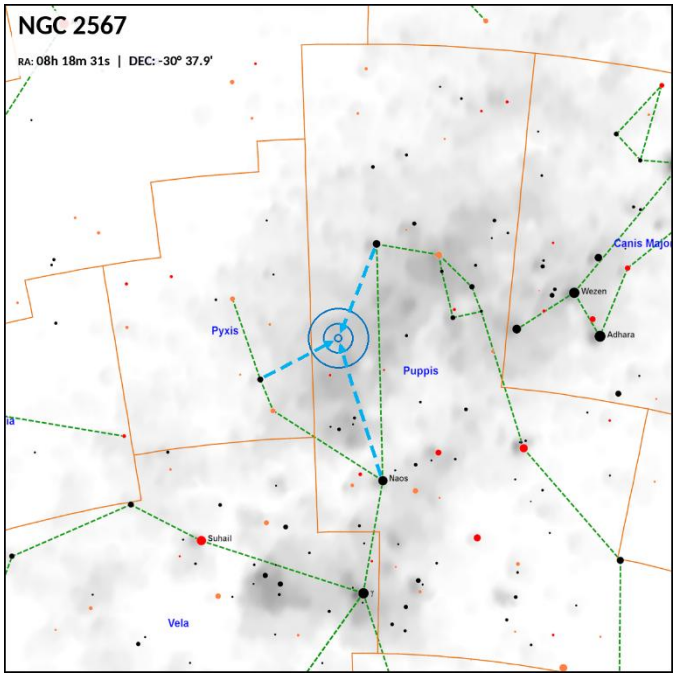


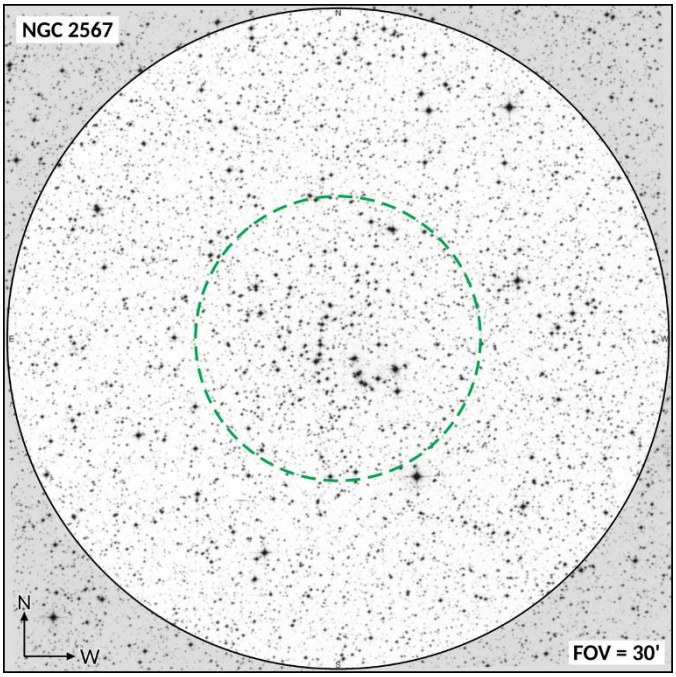
Levy 384 (AS || Size=2' | Stars=7 | Ref Star: TYC 5438-2084-1 |) This asterism is noted in the RASC Observer's Handbook (2025) under the Deep-Sky Gems section. Noted as "Compact asterism in Puppis (special!)". Levy description is "Newly discovered small asterism, possible open cluster". Some descriptions call it the Bookworm.



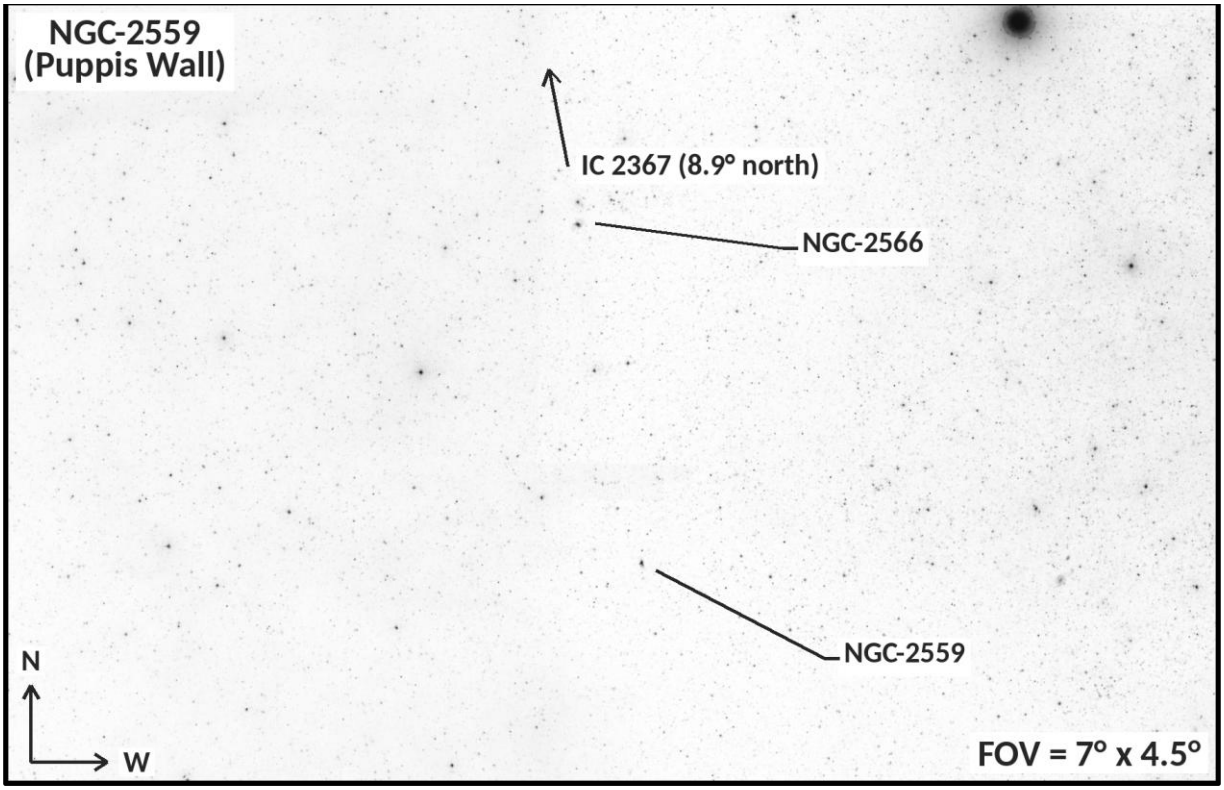


NGC 2567 (OC || Mag=7.4 | Size=10' | SB=21.0 | mBortle=9 | mApt=102mm | MC=II2m |) This cluster is estimated to be 4,500 light years away and 500 million years old. Trumpler Class II-Detached with little central concentration, 2-Medium range of brightness between stars, m-Moderately rich cluster with 50 to 100 stars.





Puppis Wall (NGC-2559)



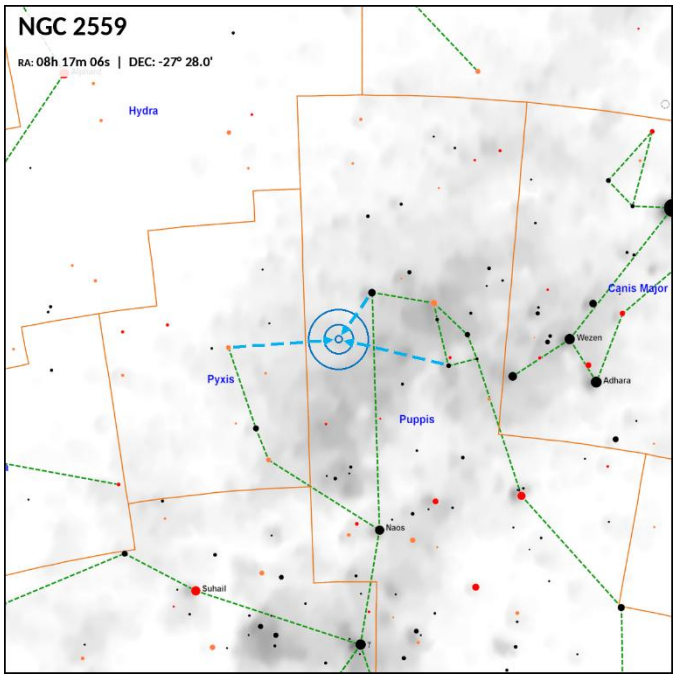
The Puppis Wall region contains NGC 2559, NGC 2566 and IC 2367.

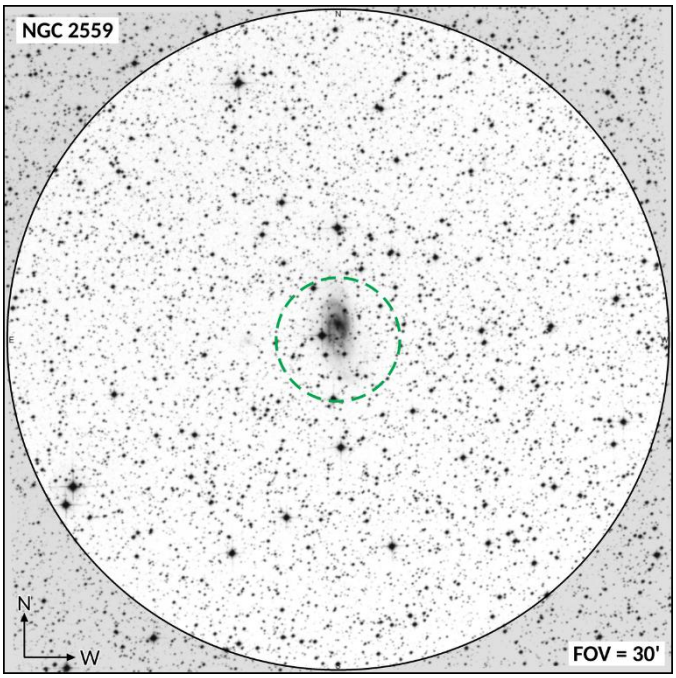
The Puppis Wall is a sheet of galaxies lying behind the Milky Way. Dust in our galaxy hides about a quarter of the sky from galaxy surveys, the so-called zone of avoidance, but in Puppis the dust is thin enough for galaxies to be found through it. A 2004 study mapped 369 galaxies behind this part of the Milky Way out to 8,000 km/s, using radio measurements from the Nançay telescope for many of their velocities, and found twelve galaxy groups, five of them new.

The Wall stands out at recession velocities of 1,400 to 2,600 km/s, roughly 65 to 120 million light years away. It is about 30 megaparsecs (100 million light years) long, stretches across the sky rather than toward us, and links the Antlia and Fornax galaxy clusters across the Milky Way. Its galaxies are about 20 times more crowded than average, half the density of the richest part of the Perseus–Pisces supercluster, yet no motion within it is detected, so it has not yet begun to collapse. The same study reports a large void lying beyond it.

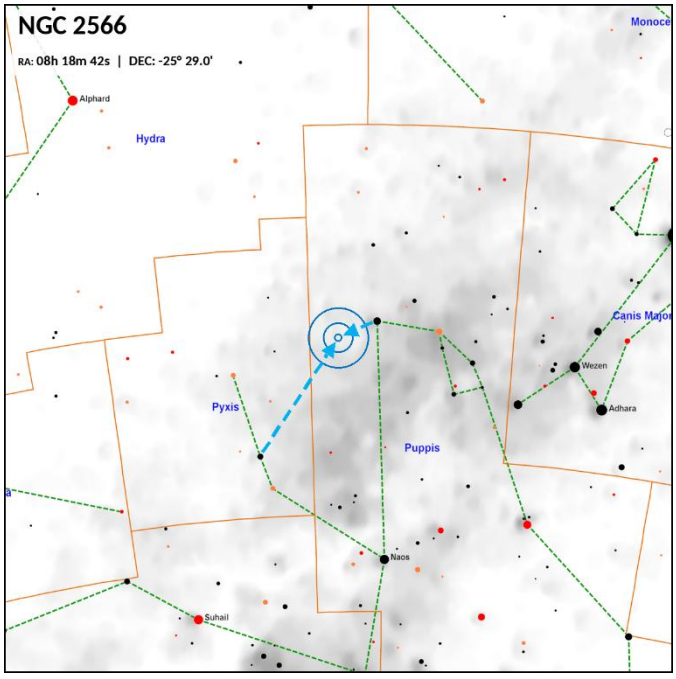
In this guide the Wall is represented by NGC 2559 and NGC 2566, members of the NGC 2559 group, one of the groups found in the 2004 study and noted for spirals short of hydrogen gas. IC 2367, 8.9° to the north, has a velocity within the Wall's range and is a probable member, though no study names it as one. All three are seen through rich Milky Way star fields.

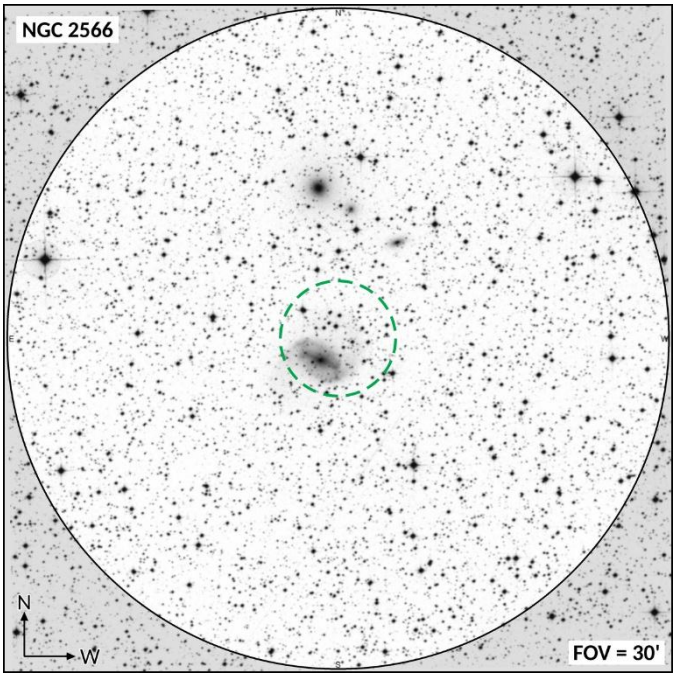
NGC 2559 (G || Mag=10.9 | Size=4.4'x2.3' | SB=22.0 | mBortle=5 | mApt=102mm | MC=SB(s)bc pec |) A barred spiral galaxy located 60 million light years away. This galaxy is approximately 90,000 light years across. NGC 2559 is the foremost galaxy in the NGC 2559 group including NGC 2566, IC 2311, NGC 2613 and ESO 563-13. It is part of the Puppis Wall that connects the Antlia Cluster with the Fornax Cluster. See map and description above.



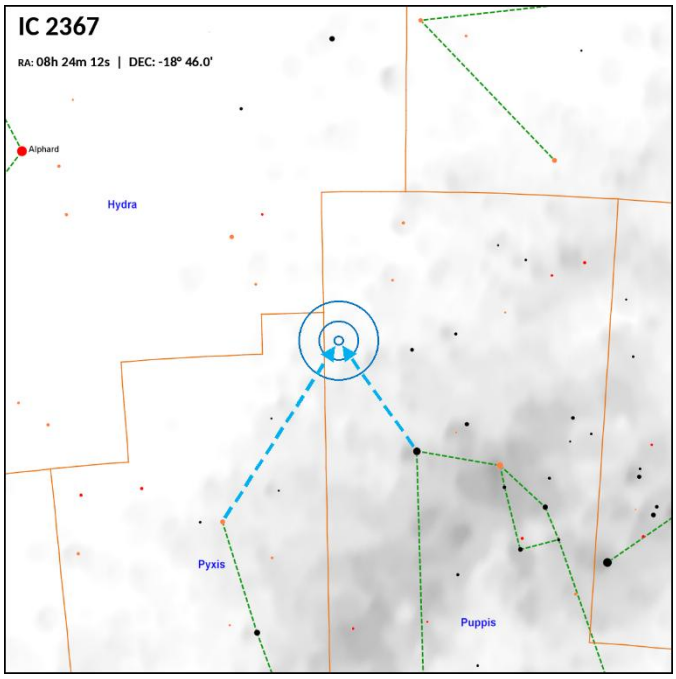


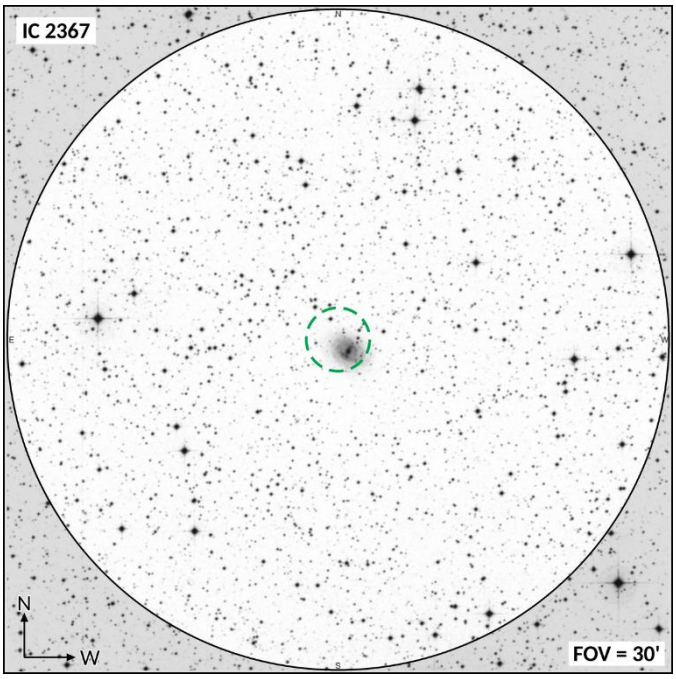
NGC 2566 (G || Mag=11 | Size=4.1'x2' | SB=21.9 | mBortle=5 | mApt=102mm | MC=(R')SB(rs)ab pec? |) A barred spiral galaxy with an estimated distance of between 35 and 91 million light years away. NGC 2566 is a member of the PGC 80593 Group, a group of 16 galaxies and is a part of the Puppis Wall.



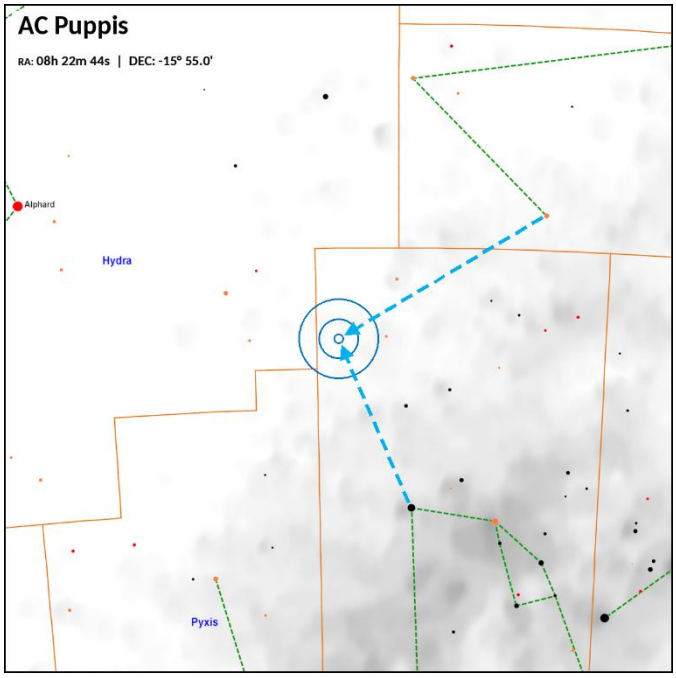


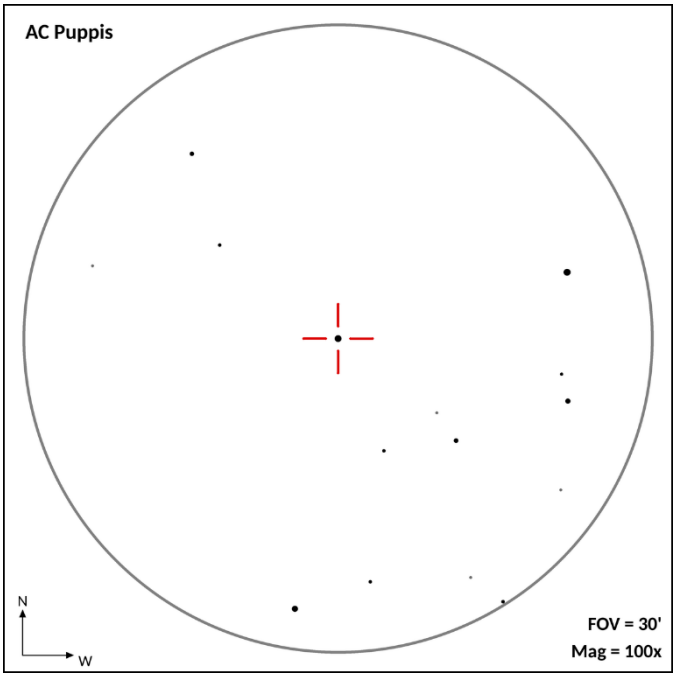
IC 2367 (G || Mag=12.5 | Size=2.3'x0.5' | SB=21.3 | mBortle=4 | mApt=150mm | MC=SB(r)b |) Located 79 million light years away with an estimated physical diameter of 56,000 light years. This is a spiral galaxy receding at about 0.8% of the speed of light.





AC Puppis (CS || Magnitude Range= 8.9 to 10.1 | Spec=C5,4 | BV=+3.04 | Color=red |) Located 4,700 light years away. A pulsating long-period variable star with an irregular or unknown period. BV=+3.04 indicating a color of Red.





Observation Log: Puppis (Pup)

Equipment Config A: _____ Config B: _____

Notes: _____

Date	Time	Config	Target	Notes

Date	Time	Config	Target	Notes

Observation Log: Puppis (Pup)

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