



TSP Advanced Observing – 2023: *Observing WITHIN!*

Observe ANY Internal Feature (s) within 20 Objects – Receive a PIN

Please be advised that the #” i.e. 20” is the size of the telescope used to observe and provide the comments for each object below.

<u>Name</u>	<u>2ND Name</u>	<u>Type</u>	<u>Coordinates J2000</u>	<u>Const.</u>	<u>Mag.</u>	<u>Size</u>	<u>*U-2</u>
NGC2366	KISO 5639	Galaxy	07 28 51.9 +69 12 31	Cam	11.39(V)	8.2. x 3.3'	21
<input type="checkbox"/> Markarian 71		H II	20"▲				
NGC2903	UGC5079	Galaxy	09 32 10.1 +21 30 03	Leo	9.07(V)	12.6' x 6.0'	143
<input type="checkbox"/> NGC2903 A		H II	20"▲/ 15"▼				
<input type="checkbox"/> NGC2903 B		H II	20"▲/ 15"▼				
<input type="checkbox"/> NGC2903 Arm		H II	20"▲/ 15"▲Fairly easily seen				
<input type="checkbox"/> NGC2905		H II	20"▲/ 15"▲Faint				
NGC2997	UGCA 181	Galaxy	09 45 38.8 -31 11 27	Ant	9.41(V)	9.2' x 7.4'	365
<input type="checkbox"/> NGC2997 A		H II	20"▲Stellar, Occasional				
<input type="checkbox"/> NGC2997 B		H II	20"▲Stellar				
<input type="checkbox"/> NGC2997 C		O.C.	20"▲				
Messier 82	NGC3034	Galaxy	09 55 52.4 +69 40 47	UMa	8.41 (V)	11.3' x 4.2'	23
<input type="checkbox"/> Dust Lane		Dust	20"▲Obvious /15"▲Fairly Easy				
<input type="checkbox"/> M82 A		O.C./SNR	20"▲Can separate A and B /15"▲Easy				
<input type="checkbox"/> M82 B		O.C./SNR	15"▲Easy				
<input type="checkbox"/> M82 C		O.C./SNR	20"▲Small /15"▲				
<input type="checkbox"/> M82 D		O.C./SNR	15"▲				
Sextans A	PGC29653	Galaxy	10 11 00.5 -04 41 30	Sex	11.93(V)	5.7' x 5.1'	234
<input type="checkbox"/> SF-A		O.C.	20"▲				
<input type="checkbox"/> Sex A-A		H II	20"▲				
<input type="checkbox"/> Sex A-B		H II	20"▲				
NGC3423	UGC5962	Galaxy	10 51 14.3 +05 50 24	Sex	12.1(B)	3.8' x 3.2'	190
<input type="checkbox"/> NGC3423 B		H II	20"▲Obvious Bump 318x, 254X				
<input type="checkbox"/> NGC3423 C		H II	20"▲				
<input type="checkbox"/> NGC3423 D		H II	20"▲Fleeting, 20% time 318x, 254X				
NGC3432	UGC5986	Galaxy	10 52 31.1 +36 37 08	LMi	11.67(V)	6.8' x 1.4'	105
<input type="checkbox"/> Nucleus		Core	20"▲Large and nebulous 318X				
<input type="checkbox"/> NGC3432 A		H II	20"▲318X				
<input type="checkbox"/> NGC3432 B		H II	20"▲318X				
NGC3448	UGC6024	Galaxy	10 54 39.2 +54 18 19	UMa	12.2(B)	4.8' x 1.4'	46
<input type="checkbox"/> Dust Lane Dust			15"▲Dust lane easy				
<input type="checkbox"/> NGC3448 A		H II	15"▲Pops in and out, averted vision				
NGC3627	M66	Galaxy	11 20 15.0 +12 59 29	Leo	8.92(V)	9.1' x 4.1'	191
<input type="checkbox"/> Dust Lane		Dust	20"▲Sharp side compared to opposite side / 15"▲Easy				
<input type="checkbox"/> NGC3627 A		H II	15"▲Difficult – Popped in and out				
<input type="checkbox"/> NGC3627 B		H II	20"▲Easy / 15"▲ Difficult – Popped in and out				
<input type="checkbox"/> NGC3627 C		H II	15"▲Difficult – Popped in and out				

NGC3627 D H II 20" ▲ Easy / 15" ▲ Fairly Easy

Name **2ND Name** **Type** **Coordinates J2000** **Const.** **Mag.** **Size** **U-2** ^{1.}

NGC3628 **UGC6350** **Galaxy** **11 20 17.0 +13 35 22** **Leo** **9.48(V)** **14.8' x 2.9'** **191**

Tidal Tail Tidal Tail 25" ▲ Averted vision object / 15" ▲ Extremely Dim

NGC3631 **UGC6360** **Galaxy** **11 21 02.9 +53 10 10** **UMa** **11.0(B)** **5.0' x 4.7'** **46**

- NGC3631 A H II 15" ▲ Difficult 216X
- NGC3631 B H II 20" ▲ Southern arm easily seen
- NGC3631 E Dust Ln. 15" ▲ Arm seen but not straight
- Warped Arm Arm

NGC3893 **UGC6778** **Galaxy** **11 48 38.2 +48 42 39** **UMa** **10.67(V)** **4.5' x 2.7'** **74**

- NGC3893 A H II
- NGC3893 B Arm/H II 20" ▲ Arm and HII region easy 254x / 15" ▲ Difficult
- NGC3893 C H II 20" ▲ Easy 254X / Difficult

NGC4027 **UGCA260** **Galaxy** **11 59 30.2 -19 15 55** **Crv** **11.10(V)** **2.8' x 2.5'** **327**

- NGC4027 A HII 20" ▲
- NGC4027 B HII 20" ▲
- Tidal Tail Tidal Tail 20" ▲ Obvious - Easy 318X / 15" ▲ Difficult

NGC4038 **Antennae** **Galaxy** **12 01 53.0 -18 52 03** **Crv** **10.9(P)** **3.7' x 1.7'** **328**

NGC4039 **Antennae** **Galaxy** **12 01 53.8 -18 53 05** **Crv** **11.1(P)** **4.0' x 2.2'** **328**

- NGC4038 A O.C. 20" ▲ / 15" ▲ Pops in and out
- NGC4038 B O.C. 20" ▲ / 15" ▲ Pops in and out
- NGC4038 C H II 20" ▲ / 15" ▲ Pops in and out
- NGC4038 D H II 20" ▲ / 15" ▲ Pops in and out
- NGC4038 E H II 20" ▲ Easy / 15" ▲ Pops in and out
- NGC4038 F H II 20" ▲ Separate from G / 15" ▲ Pops in and out
- NGC4038 G H II 20" ▲ Separate from E / 15" ▲ Pops in and out
- NGC4038 H H II 20" ▲ Easy 20-inch
- NGC4038 Core Nucleus 20" ▲ Easy
- NGC4038 Tidal Tail T. Tail 18" ▲
- NGC4039 Core Nucleus 20" ▲ Easy
- NGC4039 A H II 20" ▲ Easy

NGC4051 **UGC7030** **Galaxy** **12 03 09.6 +44 31 53** **UMa** **12.92(V)** **5.2' x 4.6'** **74**

- NGC4051 A H II 15" ▲ Easy
- NGC4051 B H II 15" ▼
- NGC4051 C H II 15" ▲ Easy
- Sy 1 Nucleus Nucleus 20" ▲ Easy / 15" ▲ Easy

NGC4178 **IC3042** **Galaxy** **12 12 46.4 +10 51 58** **Vir** **12.9(B)** **5.1' x 1.8'** **193**

- NGC4178 A H II 20" ▲ Easy – Seen as one elongated object
- NGC4178 B H II 20" ▲ Easy – Seen as one elongated object
- NGC4178 C H II 20" ▲ Blends with halo, seen as an arm extension

NGC4214 **NGC4228** **Galaxy** **12 15 39.2 +36 19 37** **CVn** **9.93(V)** **7.4' x 6.5'** **107**

- NGC4214 A Core 20" ▲ Brightest area / 15" ▲
- NGC4214 B H II 20" ▲ Easy / 15" ▲
- NGC4214 D H II 20" ▲ Easy Large / 15" ▲ fairly easy

NGC4214 E H II 15" ▲ Near stellar

Name **2ND Name** **Type** **Coordinates J2000** **Const.** **Mag.** **Size** **2.**
U-2

NGC4254 **Messier 99** **Galaxy** **12 18 49.6 +14 24 59** **Com** **9.87(V)** **5.4' x 4.7'** **193**

- NGC4254 A H II 20" ▲
- NGC4254 D H II 20" ▲ Seen 20% of time
- NGC4254 E H II 20" ▲
- Prominent Arm Arm 20" ▲ Easy

NGC4438 **UGC7574** **Galaxy** **12 27 45.7 +13 00 32** **Vir** **10.17(V)** **8.6' x 3.1'** **193**

- Tidal Tail Tidal Tail 20" ▲ Easy / 15" ▲ easy
- Dust Lane Dust 20" ▲ Nucleus shifted to the west / 15" ▲ easy

NGC4449 **UGC7592** **Galaxy** **12 28 11.1 +44 05 37** **CVn** **9.64(V)** **6.1' x 4.3'** **75**

- Nucleus Star Cluster O.C. 20" ▲ / 15" ▲ Easy
- NGC4449 A H II 20" ▲ / 15" ▲ Easy
- NGC4449 B H II 20" ▲ / 15" ▲ Easy
- NGC4449 C H II 20" ▲ / 15" ▲ Easy
- NGC4449 D H II
- NGC4449 G H II 20" ▲ / 15" ▲ G & H Look like one object
- NGC4449 H H II 20" ▲ / 15" ▲

NGC4485 **UGC7648** **Galaxy** **12 30 31.1 +41 42 04** **CVn** **11.93(V)** **2.6' x 1.9'** **75**

NGC4490 **UGC7651** **Galaxy** **12 30 36.4 +41 38 37** **CVn** **9.79(V)** **6.3' x 2.7'** **75**

- NGC4485 A H II
- NGC4485 B H II
- NGC4590 A H II
- NGC4490 B H II
- NGC4490 C H II

NGC4559 **UGC7766** **Galaxy** **12 35 57.6 +27 57 36** **Com** **10.01(V)** **10.8' x 4.3'** **149**

- NGC4559 A IC3555 H II
- NGC4559 C H II
- NGC4559 D H II
- IC3551 H II

NGC4631 **Arp 281** **Galaxy** **12 42 08.0 +32 32 29** **CVn** **9.19(V)** **15.4' x 2.6'** **108**

- NGC4631 B H II 20" ▲ Faint / 15" ▼
- NGC4631 C H II 20" ▲ Largest / 15" ▲
- NGC4631 D H II 20" ▲ / 15" ▼
- NGC4631 E H II 20" ▲ / 15" Maybe ?
- NGC4631 F H II 20" ▲ Seen as a ridge / 15" ▲
- NGC4631 G H II 20" ▲ Brightest, most pronounced / 15" ▲

NGC4656 **UGC7907** **Galaxy** **12 43 57.6 +32 10 13** **CVn** **10.52(V)** **9.1' x 1.7'** **108**

- NGC4656 A H II 20" ▲ 20% of the time
- NGC4656 D H II 20" ▲ Seen as two objects
- NGC4656 E H II 20" ▲

Messier 64 **NGC4826** **Galaxy** **12 56 43.7 +21 40 58** **Com** **8.52(V)** **10.1' x 5.4'** **149**

- NGC4826 A O.C. 20" ▲

NGC4861 IC3691 Galaxy 12 59 02.3 +34 51 34 CVn 12.32(V) 4.2' x 1.5' 108
 1 Zw 49 H II 20" ▲Spectacular - Knot has dimension

3.

Name 2ND Name Type Coordinates J2000 Const. Mag. Size U-2

M51 NGC5194 Galaxy 13 29 52.7 +47 11 43 CVn 8.36 (V) 10.3' x 8.1' 76

NGC5194 A H II 20" ▲
 NGC5194 B H II 20" ▲
 NGC5194 C H II 20" ▲

M83 NGC5236 Galaxy 13 37 00.9 -29 51 57 Hya 7.52(V) 12.8' x 11.4' 370

NGC5236 B H II
 NGC5236 C H II 20" ▲Visually nice
 NGC5236 E H II
 NGC5236 F H II

NGC5398 UGCA379 Galaxy 14 01 21.6 -33 03 50 Cen 12.39(V) 2.8' x 1.6' 371

NGC5398 A H II 20" ▲Subtle brightening

Messier 101 NGC5457 Galaxy 14 03 12.6 +54 20 56 UM a 7.86(V) 28.9' x 26.9' 49

NGC5447/5450 H II 20" ▲Visually elongated
 NGC5449 H II
 NGC5451 H II
 NGC5453 H II 20" ▲Visually small & faint
 NGC5455 H II 20" ▲Visually faint, stellar center
 NGC5458 H II 20" ▲Visually diffuse, large
 NGC5461 H II 20" ▲Visually easy
 NGC5462 H II 20" ▲Visually easy
 NGC5471 Galaxy? 20" ▲Visually different, easy & small

NGC5595 VV530 Galaxy 14 24 13.2 -16 43 23 Lib 12.6(B) 2.2' x 1.2' 287

NGC5595 A H II
 NGC5595 B H II
 Arm Arm 20" ▲Galaxy arm brighter on the northern side

NGC5829 Arp 42 Galaxy 15 02 42.0 +23 20 01 Boo 14.14(B) 1.5' x 1.0' 153

NGC5829 A H II
 NGC5829 B H II

JaFu 1 Palomar 6 Pl. Neb 17 43 57.4 -26 11 47 Sgr -- 8.0" 338

JaFu 1 P.N. 36" ▲

TC-20 M20-Trifid Dk Neb 18 02 29.3 -23 03 48 Sgr -- 26" x 36" 339

TC2-Cometary globule Com Glob 20" ▲Black on black background

The Dragon, M8- Lagoon Neb 18 04 48.4 -24 29 30 Sgr -- 50' x 40' 339

The Dragon Bok Glob 20" ▲Black on black background
 Barnard 89 Dk Neb 20" ▲Black on black background

Pillars of Creation - M16 Dk Neb 18 18 50 -13 50 01 Ser -- 1.4' x 1.2' 294

Pillars of Creation Bok Glob 15" ▲Black on black background

GJJC 1 Messier 22 Pl. Neb 18 36 22.8 -23 55 18 Sgr -- 9.0" 340

GJJC 1 PK9-7.1 P.N. 20" ▲Very Small

<u>Name</u>	<u>2ND Name</u>	<u>Type</u>	<u>Coordinates J2000</u>	<u>Const.</u>	<u>Mag.</u>	<u>Size</u>	<u>U-2</u>
NGC6822	Barnard Gal.	Galaxy	19 44 56.2 -14 47 51	Sgr	8.1(V)	15.6' x 13.5'	297
<input type="checkbox"/>	Hubble IV	H II/OB A.	20"▲/15"▲				
<input type="checkbox"/>	Hubble VII	G.C.	20"▲/15"▲				
<input type="checkbox"/>	Hubble X IC1308	H II/OB A.	20"▲/15"▲				
<input type="checkbox"/>	SC 6	G.C.	20"▲/15"▲				
<input type="checkbox"/>	SC 7	G.C.	20"▲/15"▲				
Pease 1	Messier 15 Pl. Neb.		21 29 59.4 +12 10 28	Peg	14.1 (V)	1.0"	210
<input type="checkbox"/>	Pease 1	P.N.	20"▲Responds to filter				
NGC7448	Arp 13	Galaxy	23 00 03.6 +15 58 49	Peg	11.6(V)	2.5' x 1.2'	213
<input type="checkbox"/>	NGC7448 A	H II					
<input type="checkbox"/>	NGC7448 B	H II					

Observation Notes:

15-inch, f/4.5 telescope – Amelia Goldberg

20-inch, f/5.0 telescope – Larry Mitchell

25-inch, f/5.0 telescope – Keith Rivich (K-2)

▲ – Successful Observation

▼ – Un-Successful Observation

Bok Glob – Bok Globule

Com Glob – Cometary Globule

Dk Neb – Dark Nebula

G.C. – Globular Cluster

H II – H II Region

O.C. – Open Cluster

OB A. – OB Stellar Association

P.N. – Planetary Nebula

SNR – Supernova Remnant

*U2 – "Uranometria 2000.0," Volume 1 - Reference Page Number

Good Luck



Larry Mitchell

T.S.P. Advanced Observing – 2023

