**2019 Binocular Observer’s Challenge:**

 If you came to the Table Mountain Star Party (TMSP) with your binoculars or have access to binoculars while at the TMSP this program is for you. This program will give you an opportunity to observe 60 or more showcase objects under the ideal conditions of the pristine Eden Valley skies. It’s not super challenging this year, but will get progressively harder each year. You will get a button for finding just 25of the objects on the list. All observations must be done during the TMSP.

You must find the objects yourself, without help from anyone else. Check off each object in the space provided. Enter required information and for at least three of the objects you must sketch what you see through your binoculars. This year the Binocular program is concentration on the Messier objects. Sixty-six of the one hundred and ten Messier objects will be visible during the 2019 Table Mountain Star Party.



*If you complete 50 of the 110 Messier objects with binoculars you could earn this pin from the Astronomical League.*

*If you have any questions about the Astronomical League Observing Programs ask Mark or Ron.*

Any size binoculars can be used. All objects are within range of small to medium sized binoculars, and are available for observation between 10:00PM and 4:00AM any time during the TMSP.

To receive your button, turn in your observations to ***Mark Simonson or Ron Mosher (Observation Challenge Coordinators)*** any time during the TMSP. If you finish the list the last night of TMSP, and we are not available to give you your button, just mail your observations to me at 1519 Ridge Dr., Camano Island, WA. 98282, or email your observations to me at marknilse@yahoo.com, and I will see that you get a button.

***THE LIST***

**Observer’s Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Binoculars\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **M #** | **NGC** | **Con** | **RA** | **Deg** | **Sec** | **Mag** | **Type** | **Comments** |
|  | **2** | **7089** | **AQR** | **21:33** | **0** | **-49** | **6.5** | **GC** |  |
|  | **3** | **5272** | **CVN** | **13:42** | **28** | **23** | **6.4** | **GC** | **1000 stars approx. 40,000 ly distant. 500 variable stars.** |
|  | **4** | **6121** | **SCO** | **16:23** | **-26** | **32** | **5.9** | **GC** |  |
|  | **5** | **5904** | **SER** | **15:18** | **2** | **5** | **5.8** | **GC** |  |
|  | **6** | **6405** | **SCO** | **17:40** | **-32** | **13** | **4.2** | **OC** | **Butterfly cluster** |
|  | **7** | **6475** | **SCO** | **17:54** | **-34** | **49** | **3.3** | **OC** |  |
|  | **8** | **6523** | **SGR** | **18:03** | **-24** | **23** | **5.8** | **DN** | **Lagoon nebula** |
|  | **9** | **6333** | **OPH** | **17:19** | **-18** | **31** | **7.9** | **GC** |  |
|  | **10** | **6254** | **OPH** | **16:57** | **-4** | **6** | **6.6** | **GC** |  |
|  | **11** | **6705** | **SCT** | **18:51** | **-6** | **16** | **5.8** | **OC** | **Wild duck cluster** |
|  | **12** | **6218** | **OPH** | **16:47** | **-1** | **57** | **6.6** | **GC** |  |
|  | **13** | **6205** | **HER** | **16:42** | **36** | **28** | **5.9** | **GC** | **Hercules cluster. 100,000 stars** |
|  | **14** | **6402** | **OPH** | **17:38** | **-3** | **15** | **7.6** | **GC** |  |
|  | **15** | **7078** | **PEG** | **21:30** | **12** | **10** | **6.4** | **GC** |  |
|  | **16** | **6611** | **SER** | **18:19** | **-13** | **47** | **6.0** | **DN** | **Eagle nebula** |
|  | **17** | **6618** | **SGR** | **18:21** | **-16** | **11** | **7.0** | **DN** | **Omega nebula** |
|  | **18** | **6613** | **SGR** | **18:20** | **-17** | **8** | **6.9** | **OC** |  |
|  | **19** | **6273** | **OPH** | **17:03** | **-26** | **16** | **7.2** | **GC** |  |
|  | **20** | **6514** | **SGR** | **18:02** | **-23** | **2** | **8.5** | **DN** | **Trifid nebula** |
|  | **21** | **6531** | **SGR** | **18:05** | **-22** | **30** | **5.9** | **OC** |  |
|  | **22** | **6656** | **SGR** | **18:36** | **-23** | **54** | **5.1** | **GC** | **Excellent.** |
|  | **23** | **6494** | **SGR** | **17:57** | **-19** | **1** | **5.5** | **OC** |  |
|  | **24** | **6603** | **SGR** | **18:16** | **-18** | **29** | **4.5** | **OC** |  |
|  | **25** |  | **SGR** | **18:32** | **-19** | **15** | **4.6** | **OC** |  |
|  | **26** | **6694** | **SGR** | **18:45** | **-9** | **24** | **8.0** | **OC** |  |
|  | **27** | **6853** | **VUL** | **20:00** | **22** | **43** | **8.1** | **PN** | **Dumbbell nebula** |
|  | **28** | **6626** | **SGR** | **18:25** | **-24** | **52** | **6.9** | **GC** |  |
|  | **29** | **6913** | **CYG** | **20:23** | **38** | **32** | **6.6** | **OC** |  |
|  | **30** | **7099** | **CAP** | **21:40** | **-23** | **11** | **7.5** | **GC** |  |
|  | **31** | **224** | **AND** | **0:43** | **41** | **16** | **3.4** | **SG** | **Andromeda galaxy** |
|  | **32** | **221** | **AND** | **0:43** | **40** | **52** | **8.2** | **EG** |  |
|  | **33** | **598** | **TRI** | **1:34** | **30** | **39** | **5.7** | **SG** | **Pinwheel galaxy** |
|  | **34** | **1039** | **PER** | **2:42** | **42** | **47** | **5.2** | **OC** |  |
|  | **39** | **7092** | **CYG** | **21:32** | **48** | **26** | **4.6** | **OC** |  |
|  | **40** |  | **UMA** | **12:22** | **58** | **5** | **8.0** | **dbl** | **Two separated faint stars - each same brightness** |
|  | **51** | **5194** | **CVN** | **13:30** | **47** | **12** | **8.1** | **SG** | **Whirlpool galaxy** |
|  | **52** | **7654** | **CAS** | **23:24** | **61** | **35** | **6.9** | **OC** |  |
|  | **53** | **5024** | **COM** | **13:13** | **18** | **10** | **7.7** | **GC** |  |
|  | **54** | **6715** | **SGR** | **18:55** | **-30** | **29** | **7.7** | **GC** |  |
|  | **55** | **6809** | **SGR** | **19:40** | **-30** | **58** | **7.0** | **GC** |  |
|  | **56** | **6779** | **LYR** | **19:17** | **30** | **11** | **8.2** | **GC** |  |
|  | **57** | **6720** | **LYR** | **18:54** | **33** | **2** | **9.0** | **PN** | **Ring nebula. Looks like smoke ring.** |
|  | **62** | **6266** | **OPH** | **17:01** | **-30** | **7** | **6.6** | **GC** |  |
|  | **63** | **5055** | **CVN** | **13:16** | **42** | **2** | **8.6** | **SG** | **Sunflower galaxy** |
|  | **69** | **6637** | **SGR** | **18:31** | **-32** | **21** | **7.7** | **GC** |  |
|  | **70** | **6681** | **SGR** | **18:43** | **-32** | **18** | **8.1** | **GC** |  |
|  | **71** | **6838** | **SGE** | **19:54** | **18** | **47** | **8.3** | **GC** |  |
|  | **72** | **6981** | **AQR** | **20:54** | **-12** | **32** | **9.4** | **GC** |  |
|  | **73** | **6994** | **AQR** | **20:58** | **-12** | **38** |  | **ast** | **Very difficult, small grouping of stars** |
|  | **74** | **628** | **PSC** | **1:37** | **15** | **47** | **9.2** | **SG** |  |
|  | **75** | **6864** | **SGR** | **20:06** | **-21** | **55** | **8.6** | **GC** |  |
|  | **76** | **650** | **PER** | **1:42** | **51** | **34** | **11.5** | **PN** | **Cork nebula** |
|  | **80** | **6093** | **SCO** | **16:17** | **-22** | **59** | **7.2** | **GC** |  |
|  | **81** | **3031** | **UMA** | **9:56** | **69** | **4** | **6.8** | **SG** | **Bodes nebula** |
|  | **82** | **3034** | **UMA** | **9:56** | **69** | **41** | **8.4** | **IG** |  |
|  | **92** | **6341** | **HER** | **17:17** | **43** | **8** | **6.5** | **GC** |  |
|  | **94** | **4736** | **CVN** | **12:51** | **41** | **7** | **8.1** | **SG** |  |
|  | **97** | **3587** | **UMA** | **11:15** | **55** | **1** | **11.2** | **PN** | **Owl nebula** |
|  | **101** | **5457** | **UMA** | **14:03** | **54** | **21** | **7.7** | **SG** | **101 is the same as 102** |
|  | **102** | **5457** | **UMA** | **14:03** | **54** | **21** | **7.7** | **SG** | **102 is the same as 101** |
|  | **103** | **581** | **CAS** | **1:33** | **60** | **42** | **7.4** | **OC** |  |
|  | **106** | **4258** | **CVN** | **12:19** | **47** | **18** | **8.3** | **SG** |  |
|  | **107** | **6171** | **OPH** | **16:33** | **-13** | **3** | **8.1** | **GC** |  |
|  | **108** | **3556** | **UMA** | **11:12** | **55** | **40** | **10.0** | **SG** |  |
|  | **109** | **3992** | **UMA** | **11:58** | **53** | **23** | **9.8** | **SG** |  |
|  | **110** | **205** | **AND** | **0:40** | **41** | **41** | **8.0** | **EG** |  |



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