

# *The Eldorado Star Party*

## *2019 Telescope Observing Club*

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### **Purpose and Rules**

Welcome to the Annual ESP Telescope Club! The main purpose of this club is to give you an opportunity to observe some of the showpiece objects of the fall season under the pristine skies of Southwest Texas. We have also included a few items on the observing lists that may challenge you to observe some fainter and more obscure objects that present themselves at their very best under the dark skies of the Eldorado Star Party.

The rules are simple; just observe the required number of objects listed while you are at the Eldorado Star Party to receive a club badge.

### **Gone Fishin'**

West Texas may be known for its dry climate and dry river beds, but in the fall after the sun goes down, the night skies over X-Bar Ranch provide an excellent opportunity to go fishing. Pisces (*the Fish*) and Pisces Austrinus (*the Southern Fish*) can be reeled in during most of the night. Delphinus (*the Dolphin*) is high in the sky just after sunset. The constellation Eridanus (*the River*) winds its way through the southern portion of the sky, and Cetus (*the Sea Monster*) can be seen dipping his front flippers into this magnificent winding river.

So given this great fall opportunity, the Telescope Observing Club program for the 2019 Eldorado Star Party is “**Gone Fishin’.**” The program is a list of 27 objects located in the five above mentioned constellations. You only have to reel in **22 of the 27** objects on the list with a telescope to qualify for the Telescope Observing Club badge.

### **Previous ESP Observing Clubs**

Please note that all previous observing programs offered at ESP from 2004 onward are still available. Club badges from these earlier programs (*with the exception of 2009 - Texas Hash*) are also available and will be awarded to anyone completing them at ESP. Check the Eldorado Star Party website at [www.eldoradostarparty.org](http://www.eldoradostarparty.org) to select one (or more!) of these observing lists.

### **Club Badges**

Any size telescope or binocular can be used to complete the observing programs. Again, all observations must be made at the Eldorado Star Party in order to qualify for an ESP observing badge. To receive your badge, please turn in your observations to Bill Flanagan any time during ESP. I will try to be available on the observing field as well as in the Lodge prior to the meals and talks. If you finish the list on the last night of ESP, or I am not available to give you your badge, just mail a copy of your observations to me at 815 Azalea, Houston, TX 77018, and I will send you your badge.

Good Luck and Good Observing!

## *Gone Fishin'*

Primary ID	Alternate ID	Type	Con	RA 2000	Dec 2000	Mag	Size	Distance	Date	Time
NGC 6891	PN G054.1-12.1	PNe	Del	20h15m09s	+12°42'16"	10.5	15"	7,800 ly		
NGC 6905	The Blue Flash	PNe	Del	20h22m23s	+20°06'17"	12.0	44"	7,500 ly		
NGC 6934	Caldwell 47	Glob	Del	20h34m11s	+07°24'18"	8.9	7.1'	50,000 ly		
NGC 7006	Caldwell 42	Glob	Del	21h01m29s	+16°11'18"	10.6	3.6'	135,000 ly		
Hickson 90	NGC 7172/73/74/76	GalCl	PsA	22h02m06s	-31°58'01"	10.1	7.4'	120 Mly		
NGC 7314	Arp 14	Gal	PsA	22h35m46s	-26°03'03"	11.6	4.4'x 1.9'	65 Mly		
HR 8619	HD 214599	Mstar	PsA	22h39m44s	-28°19'33"	6.3		470 ly		
IC 5271	MCG -6-50-19	Gal	PsA	22h58m02s	-33°44'32"	12.4	2.6'x 1.0'	75 Mly		
NGC 7541	MCG 1-59-17	Gal	Psc	23h14m44s	+04°32'02"	12.5	3.2'x 1.0'	112 Mly		
42 Psc	HR 86	Doub	Psc	00h22m26s	+13°28'57"	6.2		550 ly		
NGC 128	MCG 0-2-51	Gal	Psc	00h29m15s	+02°51'50"	12.7	3.0'x 0.8'	190 Mly		
NGC 157	MCG -2-2-56	Gal	Cet	00h34m47s	-08°23'47"	11.0	4.1'x 2.3'	63 Mly		
55 Psc	HR 167	Doub	Psc	00h39m56s	+21°26'18"	5.4		410 ly		
NGC 210	MCG -2-2-81	Gal	Cet	00h40m35s	-13°52'26"	11.7	5.0'x 3.1'	63 Mly		
NGC 246	Skull Nebula	PNe	Cet	00h47m03s	-11°52'19"	10.4	4.0'	1,600 ly		
NGC 488	MCG 1-4-33	Gal	Psc	01h21m47s	+05°15'24"	11.1	5.0'x 3.6'	94 Mly		
NGC 584	MCG -1-4-60	Gal	Cet	01h31m21s	-06°52'06"	11.3	3.7'x 2.4'	73 Mly		
M 74	NGC 628	Gal	Psc	01h36m42s	+15°47'00"	9.7	9.5'x 8.9'	30 Mly		
Hickson 16	NGC 835/33/38/39	GalCl	Cet	02h09m33s	-10°09'47"	11.4	6.4'	200 Mly		
66 Cet	HR 650	Mstar	Cet	02h12m48s	-02°23'39"	5.7		150 ly		
NGC 908	MCG -4-6-35	Gal	Cet	02h23m05s	-21°14'02"	10.8	6.2'x 2.8'	62 Mly		
NGC 936	MCG 0-7-17	Gal	Cet	02h27m37s	-01°09'20"	11.2	4.5'x 3.4'	57 Mly		
NGC 1187	MCG -4-8-16	Gal	Eri	03h02m38s	-22°52'03"	11.3	4.8'x 3.5'	59 Mly		
NGC 1291	MCG -7-7-8	Gal	Eri	03h17m19s	-41°06'29"	9.5	9.1'x 6.6'	35 Mly		
NGC 1421	MCG -2-10-8	Gal	Eri	03h42m29s	-13°29'17"	12.0	2.9'x 0.7'	94 Mly		
NGC 1532	MCG -5-11-2	Gal	Eri	04h12m04s	-32°52'27"	10.7	11.7'x 3.5'	50 Mly		
NGC 1535	Cleopatra's Eye	PNe	Eri	04h14m16s	-12°44'22"	9.4	20"	5,800 ly		

## *Gone Fishin' – Observing List Notes*

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**NGC 6891** A nice little planetary nebula in Delphinus about 7,800 light years distant. At 15" in size, you will need about 100x to identify it as a planetary nebula from the background stars. At 450x in a 14" telescope, the central star is visible, and the nebula appears slightly mottled.

**NGC 6905** At 7,500 light years from us, NGC 6905 is as a really interesting planetary nebula with a somewhat oval shape about 60" x 40" in size. It shows best at powers above 300x where the central star pops in and out with averted vision. It is nicely centered between two stars of magnitudes 10 and 12. The nebula shows some detail with the north and south sides having a somewhat irregular shape.

**NGC 6934** Situated in about 50,000 light years from us in the constellation Delphinus, NGC 6934 is one of the more distant globular clusters that is easily visible through amateur telescopes. Once located at low power, the cluster will show as a fuzzy patch of light about 4' in diameter. In a 14" scope the stars in the cluster are resolvable at 300x. Visually the core of the cluster seems to be elongated east to west.

**NGC 7006** At a distance of around 135,000 light years, globular cluster NGC 7006 is smaller and dimmer than its compadre in Delphinus, NGC 6934. In smaller scopes it appears as a dim round glow about 3' in diameter with irregular edges. Not really resolvable but having a grainy and mottled appearance. Telescopes larger than around 14" will begin resolving stars in the cluster at higher powers. A really neat globular considering that it is 135,000 light years away from us!

**Hickson 90** An interesting group of 4 galaxies in Pisces Austrinus about 120 million light years away. NGC 7173 and NGC 7176 are toward the south end of the field of view and are mostly round in shape, about 1' in diameter. NGC 7176 is slightly larger than NGC 7173 and about 2' southeast of 7173. The shape of NGC 7176 appears extended to the west, but this extension is actually another galaxy, NGC 7174. NGC 7172 is about 6' north of the NGC 7173 and shows as an oval glow oriented mostly east to west about 1.8' x 1' in size.

**NGC 7314** A spiral galaxy in Pisces Austrinus about 65 million light years distant and slightly edge-on to us. In modest-sized telescopes, the galaxy will show as a broad diffuse irregular oval about 3' x 1' oriented in a north to south direction. No real core concentration but with averted vision the glow of the galaxy shows some mottling.

**HR 8619** A pretty triple star in Pisces Austrinus about 470 light years away. At lower powers, two bright magnitude 6.3 and 7.3 stars are easily resolved at a separation of about 87". At higher powers the dimmer magnitude 7.3 star will split into two components about 3" apart. Make sure you increase the power until you can resolve all three components.

## *Gone Fishin' – Observing List Notes*

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**IC 5271** A spiral galaxy in Pisces Austrinus about 75 million light years from us. In moderately sized amateur scopes, IC 5271 will show as a dim elongated smudge about 2' x 1' oriented northwest to southeast. It appears to have a relatively smooth surface brightness without much core concentration.

**NGC 7541** A spiral galaxy in Pisces about 112 million light years away from us. Once you locate NGC 7541 you may also be able to glimpse its nearby companion galaxy NGC 7537 about 3' to the southwest. NGC 7541 is the bigger and brighter one of the two galaxies and is elongated mostly east to west, about 2' x 1' in size. Visually it doesn't seem to show much core concentration. NGC 7537 is smaller, about 1' x 0.5' in size but seems to have a more concentrated core than NGC 7541.

**42 Psc** A nice colorful double star with good brightness and color contrast about 550 light years away. Those familiar with the night sky will say it looks like a miniature Albireo. The two stars at magnitudes 6.3 and 10.3 with a separation of 28" are easy to split at most any power.

**NGC 128** An interesting little edge-on galaxy in Pisces about 190 million light years away with an apparent size of 2' x 0.7', oriented north to south. Its shape has been distorted by the gravitational interaction with nearby galaxies. Using high power with moderate-sized telescopes of 12" or more, the center of the galaxy may show a peculiar box shape. Photographs show the center to have an X-Bar shape. Quite appropriate for an object that is on our telescope program here at X-Bar ranch! Larger telescopes may show four more galaxies in the field of view. Two galaxies, NGC 130 and NGC 127, are interacting with NGC 128 and are located just adjacent to it on either side of the northern end. Galaxy NGC 125 is located about 6' to the west-southwest of NGC 128 and galaxy NGC 126 is located about 3.5' to the southwest of NGC 128. Spend some time and use some power to observe all four of these interesting galaxies.

**NGC 157** A face-on spiral galaxy in Cetus about 63 million light years away. It shows as a fuzzy oval about 4' x 2' in size, oriented northeast to southwest. The surface is mottled with some structure that appears like distorted spiral arms. A dim little foreground star is visible on the northeast end. Vary power and look carefully to see if you can detect the hooked spiral arm on the southeast side of the galaxy.

**55 Psc** A pretty double star located in Pisces about 410 light years from us. The primary is bright at magnitude 5.4 and shines with a yellow tint. The secondary is 6.6" from the primary and dimmer at magnitude 8.7, glowing with a white to greenish-white color.

**NGC 210** A barred spiral galaxy 63 million light years away in Cetus. It's a fairly easy object to sweep up in small to medium size telescopes. It has a somewhat oval shape about 2' x 1' and is oriented north to south. The core appears concentrated but not stellar, and the arms are not detectable in moderate-sized instruments. Try to find a friend with a large aperture telescope to see if you can detect the two faint arms sweeping out from the central bright portion of the galaxy.

## *Gone Fishin' – Observing List Notes*

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**NGC 246** A relatively big planetary nebulae when viewed through a telescope, having an apparent size of about 4'. Located in Cetus about 1,600 light years distant, it is visible in the telescope without any filter. Along with the central star there appear to be about 4 other (possibly foreground) stars embedded in the nebula. A UHC or OIII filter shows the mottled structure of the nebula in much more detail.

**NGC 488** A face-on spiral galaxy in Pisces about 94 million light years from us. Fairly bright and easy to sweep up in moderate-sized telescopes. It has a somewhat oval shape about 3' x 2' in size and oriented north to south. NGC 488 is located just north of a line of 4 stars running northeast to southwest and shining at magnitudes 10 to 13. Its tightly wound spiral arms are diffuse and very difficult to detect, blending into the background sky.

**NGC 584** An elliptical galaxy in Cetus about 73 million light years distant. It is a reasonably bright galaxy about 3' x 1.5' in size and oriented northeast to southwest. The core appears somewhat concentrated and almost stellar at the center and it seems to be elongated along the major axis of the galaxy. A companion galaxy, NGC 586, is located about 4' southeast of NGC 584. It is dimmer and smaller and oriented north to south but it shows easily with averted vision in a 14" telescope.

**M 74** A face-on spiral galaxy in Pisces around 30 million light years away from us. It shows initially as a round glow about 6' in diameter. Averted vision in a 14" scope shows the surface to be mottled with spiral arms arcing out from the core. The core of M 74 is concentrated and bright but not necessarily stellar.

**Hickson 16** Located in Cetus, Hickson 16 is a neat grouping of 4 galaxies arranged in a fan-like fashion just northeast of a magnitude 10 star that forms the base of the fan. It is composed of NGC 833, 835, 838 and 839. Although this compact group of galaxies is about 200 million light years distant, it is fairly bright and relatively easy to reel in.

**66 Cet** A nice bright double star about 150 light years away. The primary is yellowish and secondary is blueish-white. The two components of this double star point to an interesting asterism of 3 stars arranged in an arc just 3' to the northeast of the pair.

**NGC 908** A spiral galaxy in Cetus about 62 million light years distant. NGC 908 is fairly bright and easily visible in most amateur telescopes. It has an oblong shape about 5' x 2.5' and is oriented mostly east to west. In a 14' telescope, the surface appears mottled, and averted vision sometimes shows the core almost as a point of light or stellar. There are numerous stars in the field making for a nice interesting and pleasing view through the eyepiece.

## *Gone Fishin' – Observing List Notes*

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**NGC 936** A barred lenticular galaxy in Cetus, 57 million light years away from us. Through the telescope it shows as a mostly round glow about 3.5' diameter. There is some core concentration, almost stellar. NGC 941 is in the same field of view just 12.5' to the east of NGC 936. NGC 941 is dimmer and smaller with no core concentration. A third galaxy, UGC 1945, shines at magnitude 14 and may be visible 14.5' to the southeast of NGC 936. Try using averted vision and patience to see if you can also reel in UGC 1945.

**NGC 1187** A spiral galaxy located in Eridanus about 59 million light years away. NGC 1187 has a somewhat oval shape, about 4' x 3' in size and oriented northwest to southeast. The surface of the galaxy appears slightly mottled. At 250x in a 14" scope, the spiral structure is more visible particularly on the northwest and southeast ends of the glow.

**NGC 1291** An unusual ring galaxy with an inner bar structure located in Eridanus at a distance of about 35 million light years. The glow of the inner portion of the galaxy appears slightly oval, about 4' x 3.5' in size and oriented north to south. The surface brightness is smooth with increasing brightness toward the core. The core is concentrated but does not appear stellar. The ring is not visible in small to moderate-sized scopes. How much aperture do you need to see the ring? Challenge your buddy with the large telescope to see if the ring is visible.

**NGC 1421** A nearly edge-on spiral galaxy in Eridanus at a distance of about 94 million light years. It shows as a linear glow about 4' x 1', oriented north to south. The surface brightness is slightly uneven with some hints of a darker linear feature running the length of the galaxy. There is an interesting hook or distortion on the north end of the galaxy. No apparent core concentration is visible.

**NGC 1532** An edge-on barred spiral galaxy in Eridanus located about 50 million light years from us. NGC 1532 is interacting with companion galaxy NGC 1531 just adjacent to it on the northwest side. NGC 1532 is very elongated northeast to southwest about 8' x 2' in size. The core of NGC 1532 is distinct and concentrated, and the halo is mottled. It also seems to show a dark lane running along the major axis of the galaxy just southeast of the core. NGC 1531 is much smaller and less elongated, about 1' x 0.5' in size and oriented perpendicular to NGC 1532.

**NGC 1535** A nice bluish planetary nebula in Eridanus about 5,800 light years away. It has a round shape with an overall diameter of about 1'. At higher powers the center portion of the nebula appears brighter than the outer portion, and the central star appears to be surrounded by a dark ring. Make sure you check this one out with high power and spend some time studying the interesting concentric ring structure of this planetary nebula – the reason why some observers refer to it as “Cleopatra’s Eye”.