MONTHLY OBSERVER'S CHALLENGE

Las Vegas Astronomical Society

Compiled by:

Roger Ivester, Boiling Springs, North Carolina

&

Fred Rayworth, Las Vegas, Nevada

With special assistance from:

Rob Lambert, Las Vegas, Nevada

DECEMBER 2015

NGC-1023 (ARP-135)Barred Spiral Galaxy In Perseus

Introduction

The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It's open to everyone that's interested, and if you're able to contribute notes, and/or drawings, we'll be happy to include them in our monthly summary. We also accept digital imaging. Visual astronomy depends on what's seen through the eyepiece. Not only does it satisfy an innate curiosity, but it allows the visual observer to discover the beauty and the wonderment of the night sky. Before photography, all observations depended on what the astronomer saw in the eyepiece, and how they recorded their observations. This was done through notes and drawings, and that's the tradition we're stressing in the Observers Challenge. We're not excluding those with an interest in astrophotography, either. Your images and notes are just as welcome. The hope is that you'll read through these reports and become inspired to take more time at the eyepiece, study each object, and look for those subtle details that you might never have noticed before.

NGC-1023 (ARP-135) Barred Spiral Galaxy In Perseus

NGC-1023 is a barred spiral galaxy, located in Perseus. It was discovered by William Herschel in 1786 and he gave it the designation H-156-1. The galaxy lies approximately 30 to 64 million light years away and shines at a relatively bright mag. 10.3. This is a nice object for any size aperture.

Observations/Drawings/Photos

Elaine Osborne: Observer from Virginia

Elaine with her 14.5-inch reflector, and also a picture of her observatory

On January 2, 2011, I observed NGC-1023 from Southern Virginia using a 14.5-inch Dobsonian reflector. The transparency was excellent and seeing was poor. The galaxy was elongated E-W with a bright core and a stellar nucleus. As for the sketch orientation, north is at about 5:00 and west is at 8:00.

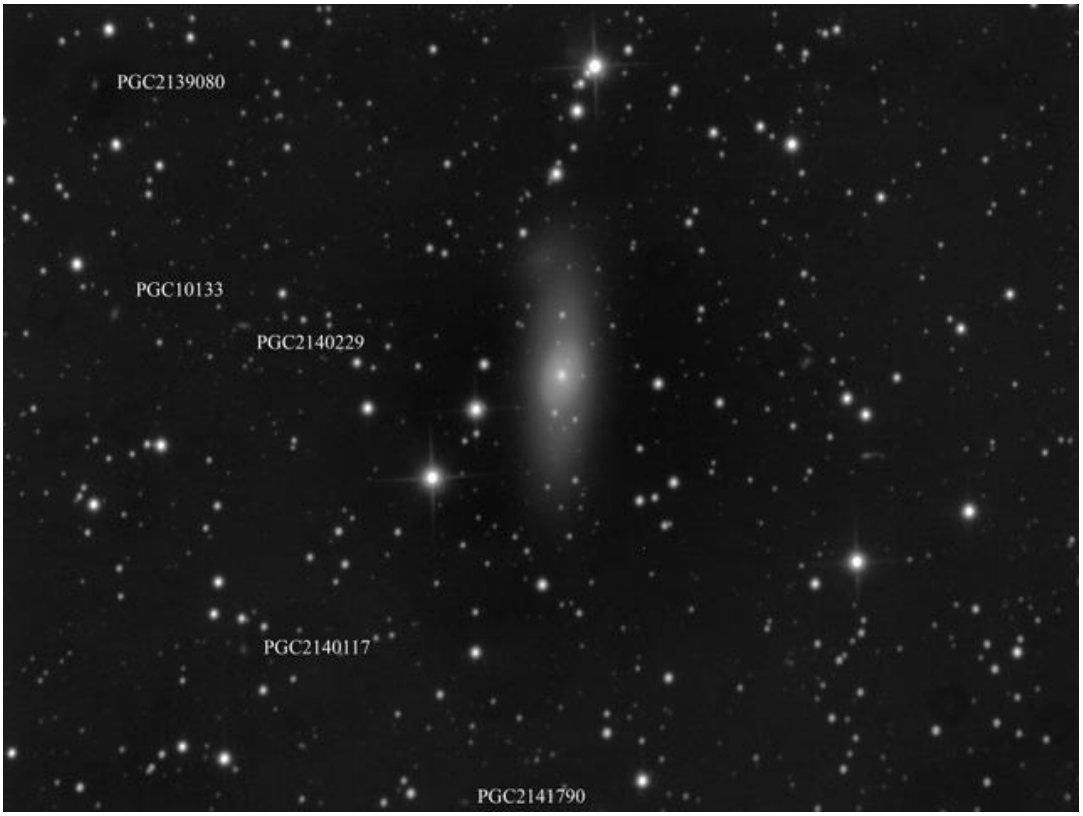
Jim Gianoulakis: LVAS Observatory Coordinator and Observer from Nevada

NGC-1023 is classified as a barred lenticular galaxy and is located in the constellation of Perseus. The apparent mag. is 9.5, with a surface brightness of mag. 12.7. It's known to be a part of the NGC-1023 Galaxy Group. The other members of the group include NGC-925, NGC-891, NGC-1239 and NGC-1058. This group is approximately 20 million light years from Earth.

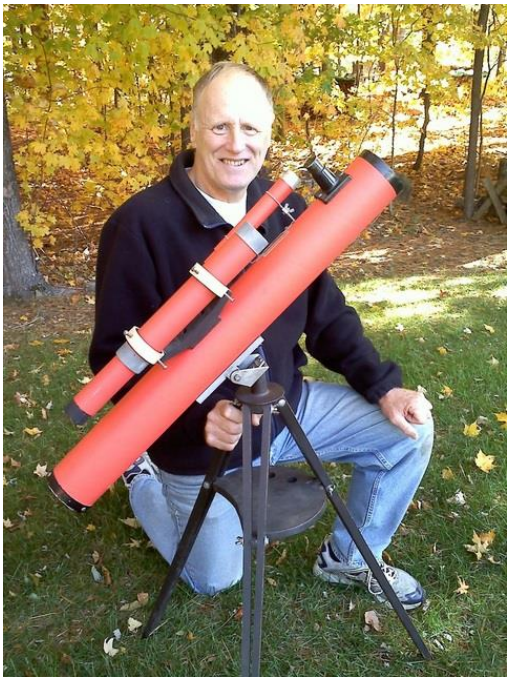
About the photo:

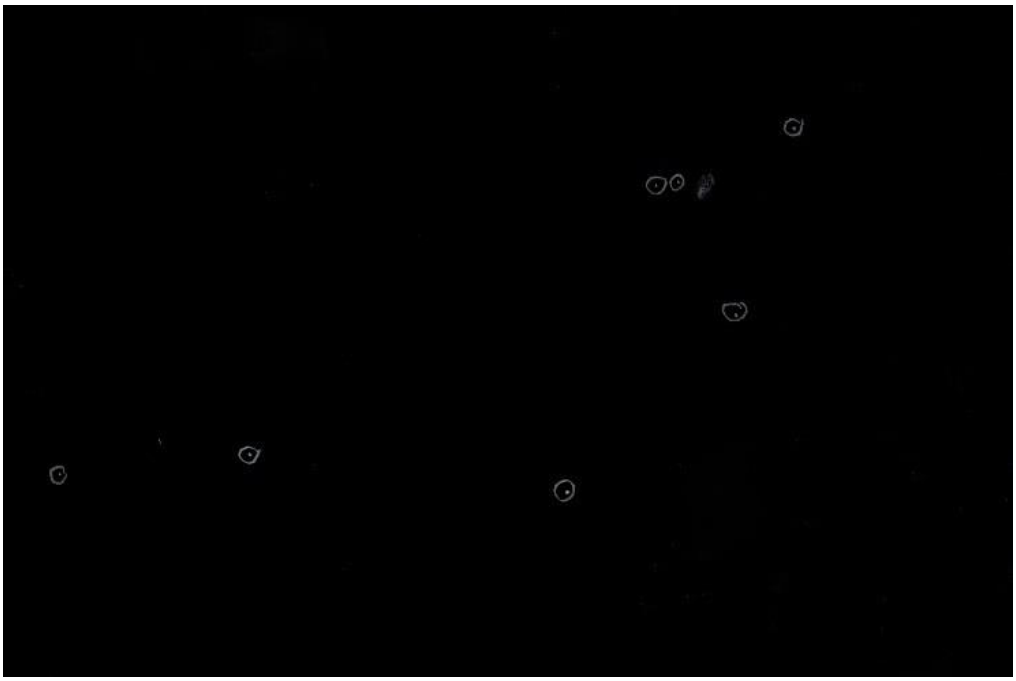
This is the first photo taken from Dome 2 of the observatory site. I got most of the equipment operational last week and was able to obtain 9 luminous images of the galaxy before weather came in, of which 6 were usable. This is a stack of those 6, 10 minute frames. The sub frames were calibrated with dark and bias frames and stacked using CCDSTACK 2. Levels and curves were applied in Photoshop.

Scope: 12.5-inch CDK. Camera: QSI-583 cooled to -20°. Guiding: Maxim DL. The annotations locate several mag. 17+ PGC-designated galaxies.


PGC2139080
PGC10133
PGC2140229
PGC2140117
PGC2141790

Glenn Chaple: Observer from Massachusetts





On March 7, 1978, I used a 3-inch f/10 reflector at 30X to observe NGC-1023. It was an intriguing object, small, with a stellar nucleus. It seemed to have some surrounding nebulosity, apparent with averted vision.

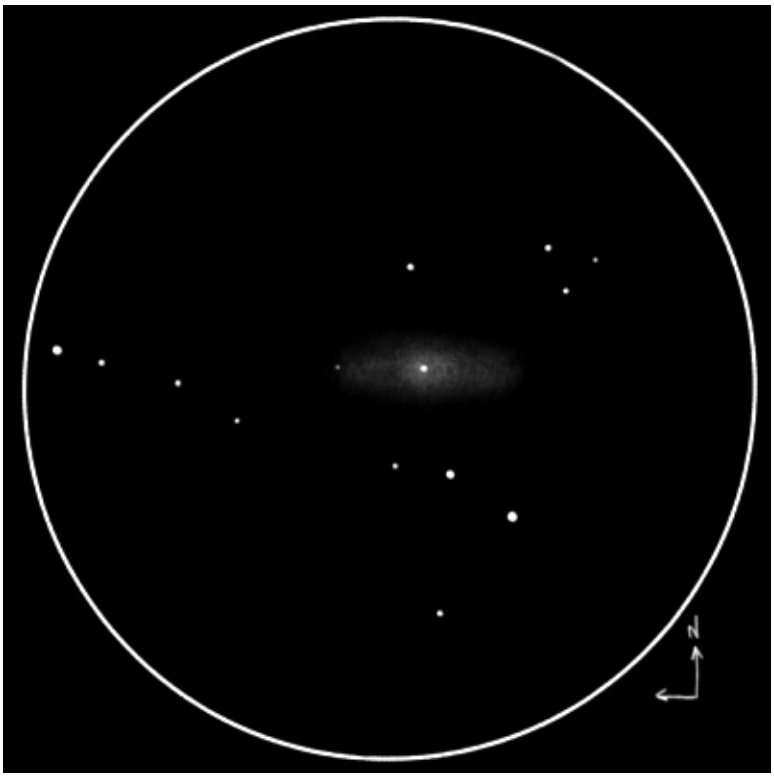
On December 5, 2015, I used a 4.5-inch f/8 reflector at 150X to observe NGC-1023. It was small and very slightly elongated. I saw some hint of a stellar nucleus.

Jaakko Saloranta: LVAS Friend from Finland

I felt a bit nostalgic drawing NGC-1023 on January 1, 2016, as the galaxy was one of the first ones I've ever observed, and at the same time this year, will be my 20th observing season. I still vividly remember the nights when I was just a kid observing the night sky with my grandpa's binoculars or a borrowed telescope. So, in the spirit of the old days and ways, this month's sketch is done the old way: completely outside, with just a HB-pencil and cotton swab. This was the way I did my sketches some 15 years ago.

Sky conditions left a lot to be desired, as at times, it was even snowing despite the nearly clear sky! Even with a thin snow cover, the sky conditions had deteriorated a lot since my last observing session in November. The SQM-L reading was only 18.50 (NELM ~5.2), seeing fairly turbulent and transparency and background brightness poor. Luckily, the temperature was still a cozy 14°F.

Using a 4.5-inch telescope @ 203X (15'), NGC-1023 appeared as an E-W elongated galaxy with a non-stellar nucleus surrounded by a fainter, roundish core. There was a very faint mag.14 star visible at times at the eastern tip of the halo. Also, a few times during observing, I could barely detect a faint stellar object just W of the core. The galaxy was roughly 4' x 2' in size. Several stars were visible in the field of view. I didn't bother looking for NGC-1023A.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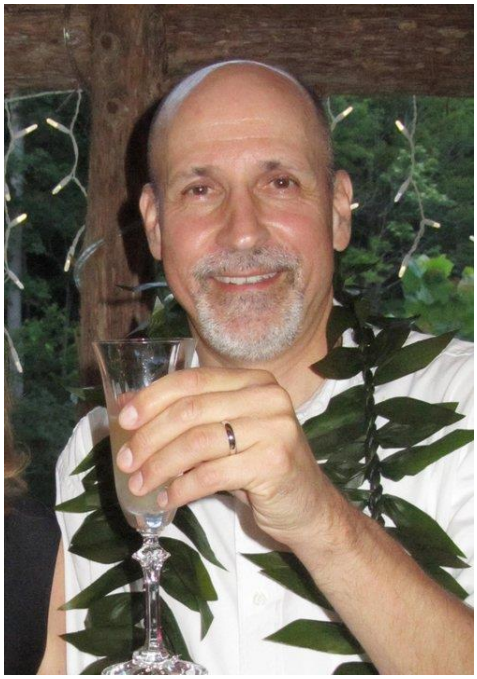
James Dire: Observer from Hawaii



NGC-1023 is a lenticular galaxy is Perseus. With a mag. of 8.6, it spans approximately 8 arc-minutes in length, and a width just under half its length. The major axis is almost due east-west. It lies 5.5° west-south-west of the bright variable star Algol. It's also 3.5° south of open star cluster M34.

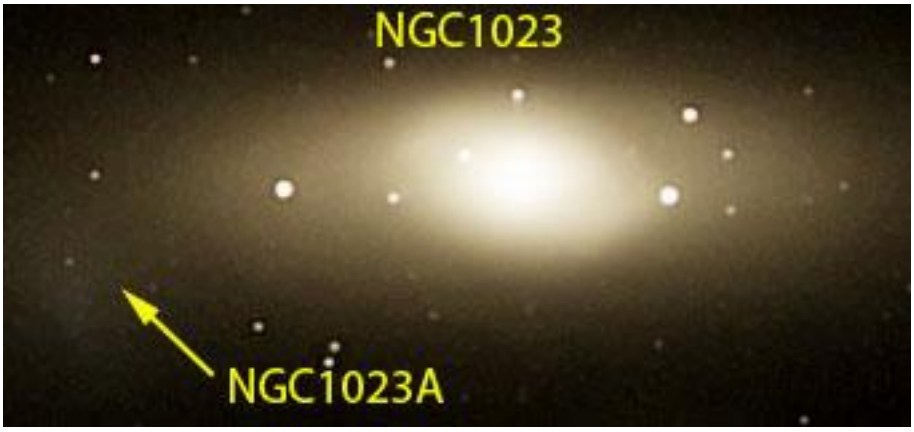
Lenticular galaxies are unique in that they're a cross between elliptical and spiral. They have a visible disk component and a prominent bulge component. They have much higher bulge-to-disk ratios than typical spirals and don't have the typical spiral arm structure of late-type galaxies.

NGC-1023 is 37.3 million light-years away. It's part of a galaxy group that contains NGC-891, NGC-925, NGC-1058, NGC-1239 and other fainter galaxies. This group is called the Canes Venatici Cloud and is part of the Virgo Supercluster of galaxies.

I viewed NGC-1023 on December 11, 2015 using a 6-inch f/6 Newtonian telescope with a 26mm eyepiece (35X). Two stars, one mag. 9 and one mag. 10, laid south of the galaxy a few arc minutes. The mag. 10 star laid between the galaxy and mag. 9 star and was equal distance from each. The three objects formed a 150° angle. East of the galaxy was a chain of faint stars terminating 5 arc minutes away at another mag. 9 star. I increased magnification to 70X with a 13mm eyepiece. Although very faint and small, the galaxy appeared as a faint edge-on spiral with a disproportionally large central bulge. No dust lanes or spiral arms were visible, giving it the characteristics of an elongated elliptical galaxy.

I took my image with a 10-inch f/6 Newtonian with a coma corrector using an SBIG ST-2000XCM CCD camera. The exposure was one hour. The galaxy has a featureless disk, bright core and a galactic bulge.

When I stretched the image excessively beyond what is normal, I noted an asymmetry on the east edge of the spiral disk, just below the disk. This asymmetry is actually another galaxy. It's a mag. 14.5 irregular galaxy given the designation NGC-1023A. NGC-1023A is thought to be co-located with NGC-1023. NGC-1023A is too faint to be seen in all but the largest telescopes.


NGC1023
NGC1023A

Gus Johnson: Observer from Maryland

In December, 1993 I observed NGC-1023 with a 6-inch reflector at 59X. I found it easily. It was fairly bright, oriented E-W with an elongated shape, a brighter concentrated middle and with faint halo extensions.

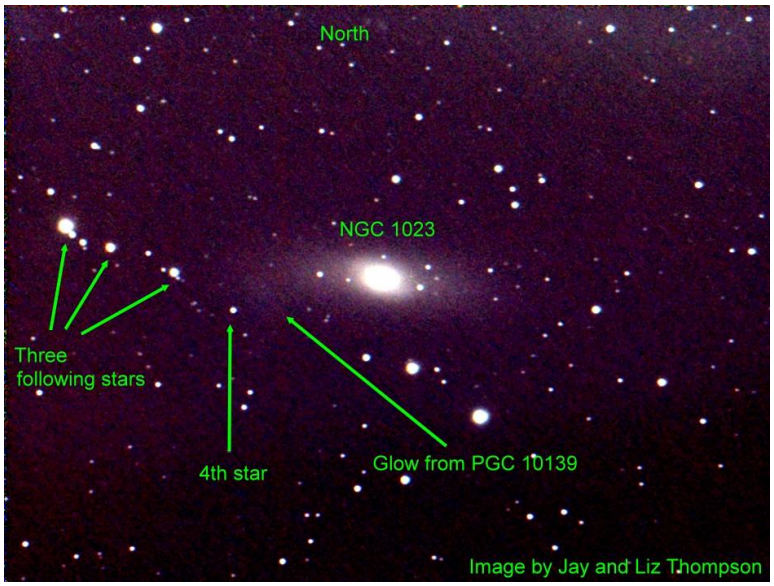
Jay and Liz Thompson: LVAS Members from Nevada

We viewed NGC-1023 from several locations with a 17-inch Newtonian telescope and imaged it with a 14-inch SCT at its Cassegrain focus.

From the dark skies of Meadview, Arizona, and Cathedral Gorge State Park in Nevada, NGC-1023 showed up well at 95X. At 227X, it was definitely elongated and looked pretty nice. There were a couple embedded stars at either end of the long axis. The bright core had a faint star on either side preceding and following. The distance to the following star was a little greater than the preceding star. Following the galaxy was a line of three relatively bright stars that, as they went toward the object, headed south. The brightest star was the farthest from the galaxy. In line with these was an additional fourth dim star at the edge. At 427X, the stars were a little

more evident. The glow extended out to about where the dimmer star was in line with the three bright stars. This subtle glow was from the contiguous galaxy PGC-10139 (NGC-1023A). We were also able to see the faint glow of PGC-10139 from the Redstone picnic area at 227X.

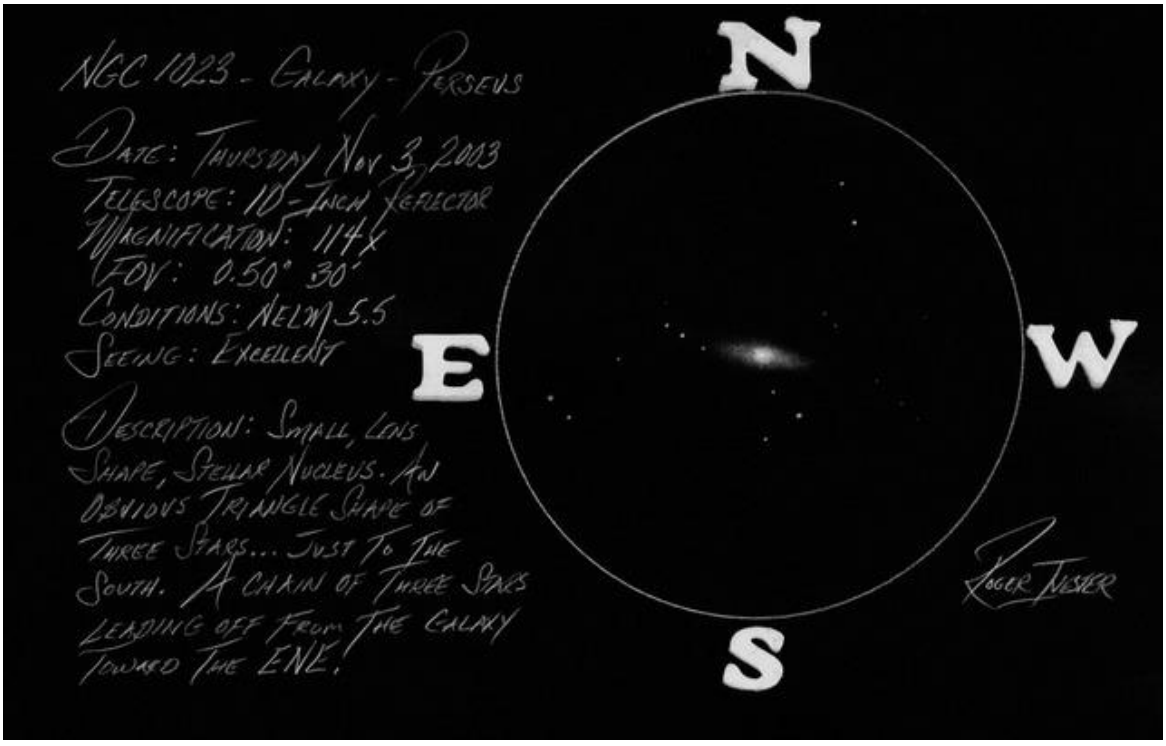
On November 29, 2015, we imaged NGC-1023 with a 14-inch SCT from our backyard in Henderson, NV. The two images are both from a 20 minute exposure. In the first, the data was processed to preserve the core of the galaxy. The second image was processed to bring out the faint glow of PGC-10139. North is to the top and west is to the right.



Roger Ivester: LVAS Member from North Carolina

I observed NGC-1023 on November 3, 2003 using a 10-inch Newtonian f/4.5 reflector at 114X (FOV 0.50°). The NELM was ~ 5.5, and seeing was excellent.

The galaxy was a small, lens shape, oriented E-W with a broad and well concentrated core, and a stellar nucleus. The halo extensions were very faint, but with well-defined edges. Three stars made a triangle, just SW of the galaxy, and a chain of three stars led off toward the NE edge.



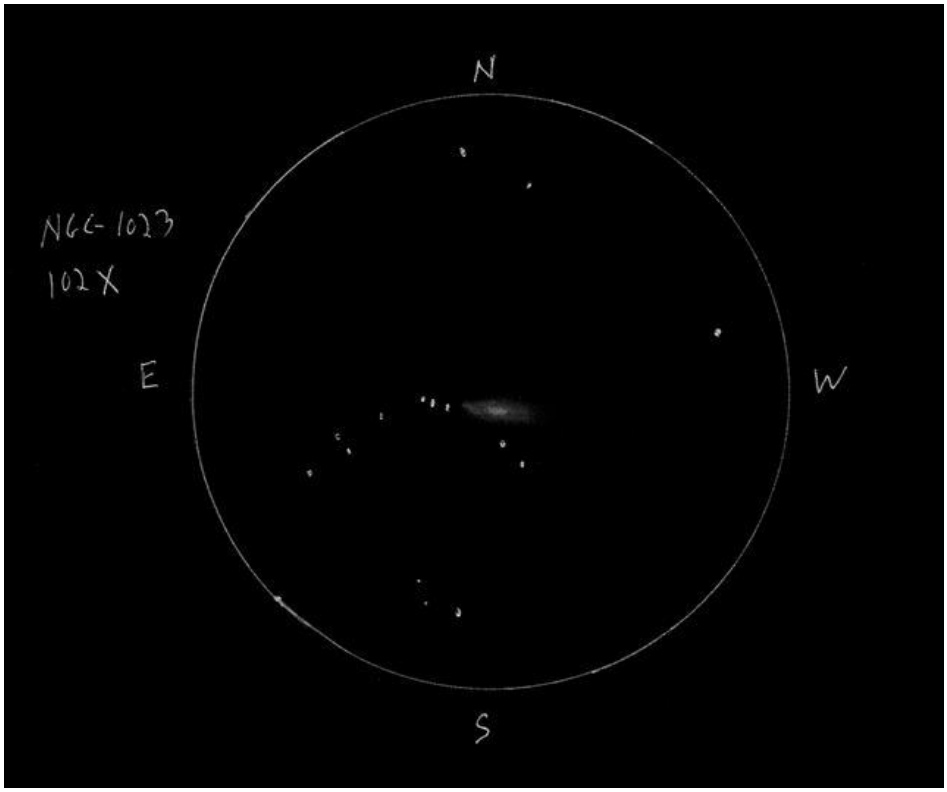
Fred Rayworth: LVAS Vice President and AL Coordinator from Nevada

I first observed NGC-1023 on October 2, 1997 at Okie-Tex at Lake Murray, Oklahoma. At an altitude of 872 feet, it was warm, dry (37% humidity according to Jason Ware) and a slight breeze. Using my home-built 16-inch f/6.4 and a magnification of 82X, the galaxy was an oval haze with a bright center. Medium-small.

The second time I peeked at it was on November 18, 2006 at the 21 mile marker on the North Shore Road at Lake Mead, Nevada. At an altitude of 2,500 feet, it was clear, cool, and calm. It stayed that way all night. Once again using my 16-inch f/6.4 and a magnification of 82X, it was a long oval with a small, bright core.

For this Challenge, I took my time and did a more detailed observation on September 11, 2015 from Cathedral Gorge State Park, in East-Central Nevada. At an altitude of 4,800 feet, it was a bit clearer than the night before and the transparency was much better. No puffy clouds, either. The mush was much lower to the horizon and the view was superb. However, seeing was terrible and Saturn looked miserable. However, that wasn't my concern. The air stayed calm except an occasional zephyr. The temp never dropped as bad as the night before. An outstanding night.

Using my commercial 16-inch f/4.5 and a magnification of 102X, I saw a nice UFO-shaped galaxy next to a line of stars. As before, I noticed the bright, stellar core. The halo extended quite a ways from the core though my drawing doesn't do that justice. I detected no spiral arms or any other features, though I thought I detected a "busy" center around the core. That might have been my imagination. This was a nice and easy galaxy and I'm kind of surprised Messier didn't spot it.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NGC-1023
102X
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