MONTHLY OBSERVER'S CHALLENGE

Las Vegas Astronomical Society

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&

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NGC-2903 Galaxy in Leo

Plus the winter supplemental

M-105, NGC-3384, NGC- 3389 Galaxy Trio in Leo

Introduction

The purpose of the observer's challenge is to encourage the pursuit of visual observing. It is open to everyone that is interested, and if you are able to contribute notes, drawings, or photographs, we will be happy to include them in our monthly summary. Observing is not only a pleasure, but an art. With the main focus of amateur astronomy on astrophotography, many times people tend to forget how it was in the days before cameras, clock drives, and GOTO. Astronomy depended on what was seen through the eyepiece. Not only did it satisfy an innate curiosity, but it allowed the first astronomers 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 is the tradition we are stressing in the observers challenge. By combining our visual observations with our drawings, and sometimes, astrophotography (from those with the equipment and talent to do so), we get a unique understanding of what it is like to look through an eyepiece, and to see what is really there. The hope is that you will read through these notes and become inspired to take more time at the eyepiece studying each object, and looking for those subtle details that you might never have noticed before. Each new discovery increases one's appreciation of the skies above us. It is our firm belief that careful observing can improve your visual acuity to a much higher level that just might allow you to add inches to your telescope. Please consider this at your next observing session, as you can learn to make details jump out. It is also a thrill to point out details a new observer wouldn't even know to look for in that very faint galaxy, star cluster, nebula, or planet.

NGC-2903 Galaxy in Leo

Plus the winter supplemental

M-105, NGC-3384, NGC- 3389 Galaxy Trio in Leo

NGC-2903 is a barred spiral galaxy in Leo. It was discovered by William Herschel on November 16, 1784. At approximate mag. 9.7, it provides an easy target for most any telescope. It's amazing that Charles Messier missed this galaxy as two of the comets discovered by him passed quite close to it.

Though it's face-on, it carries a slightly oblong appearance. It provides a wealth of features that can be seen, especially with larger backyard telescopes.

M-105, NGC-3384 and NGC- 3389 Galaxy trio in Leo

M-105, or NGC-3379 is the brightest galaxy in the Leo 1 M-96 group. At mag. 9.3, it dominates the field of view that also includes NGC-3384 and NGC-3389. Together they make a very interesting trio. If you are using an eyepiece with a wide enough field, you can also bring M-96 into the edge of the field. M-105 was a late addition to the Messier catalogue as it was actually discovered by Pierre Méchain in 1781. It's a bright elliptical galaxy known to house a super-massive black hole. NGC-3384 is a lenticular galaxy discovered by William Herschel in 1784 and comes in at a mag. 10.9. The faintest of the three is NGC-3389 which comes in at mag. 12.4 and is by far, the most challenging to see visually. It usually requires a 10-inch scope or larger to see.

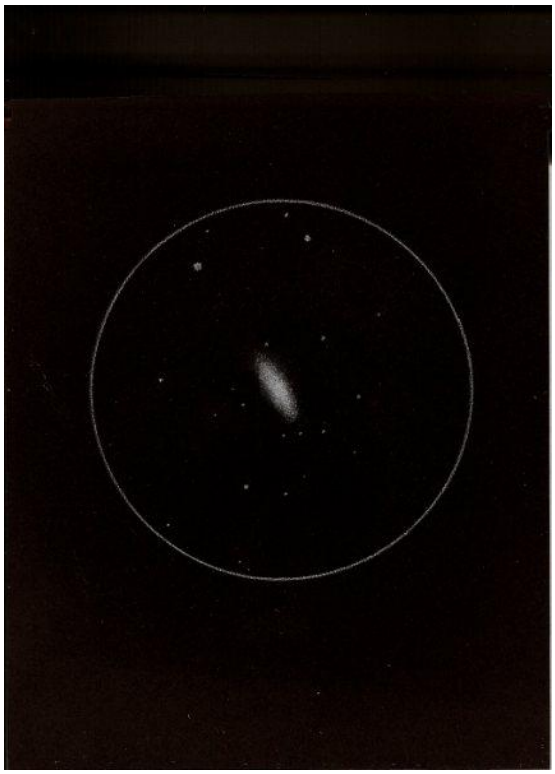
Observations/Drawings/Photos

Roger Ivester: Observer from North Carolina

NGC-2903

Observations using a 10-inch reflector at 142X in my moderately light polluted backyard from the foothills of western North Carolina, presented NGC-2903 as bright, very elongated with a brighter core. The orientation was NNE-SSW. The texture of this galaxy was very uneven with mottling noted. Conditions on this night didn't allow me to observe of the bright patch just north of the central region for certain. This bright patch carries the designation of NGC-2905.

Please see the sketch using 142X with a field of 0.46° / 28' arc minutes. I made the sketch using a white charcoal pencil on black card stock.

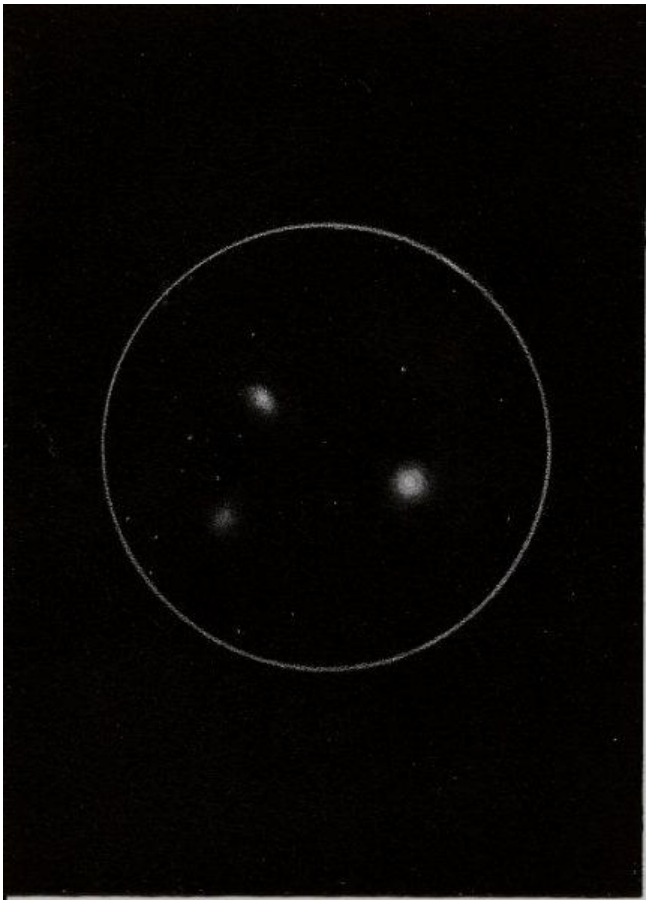


M105

M-105 appeared very bright, round, and brightening toward the central region and a stellar nucleus when observed with my 10-inch. A faint surrounding halo was very easy to see.

This galaxy was well concentrated and the overall texture was very even. M-105 was the brightest of the group which included NGC-3384 and NGC-3389, and was the most western of the three galaxies.

Please see my sketch using 142X with a FOV of 0.46° / 28' arc minutes. I made the sketch using a white charcoal pencil on black card stock.



NGC-3384

When I observed it through the 10-inch at 142X, the second brightest galaxy of this group, NGC-3384, appeared bright and was elongated NE-SW. This galaxy was NE of M-105 and had a similar appearance, but was smaller and fainter. The core or central region of NGC-3384 was well concentrated, and with careful attention I could see a stellar nucleus and a faint halo.

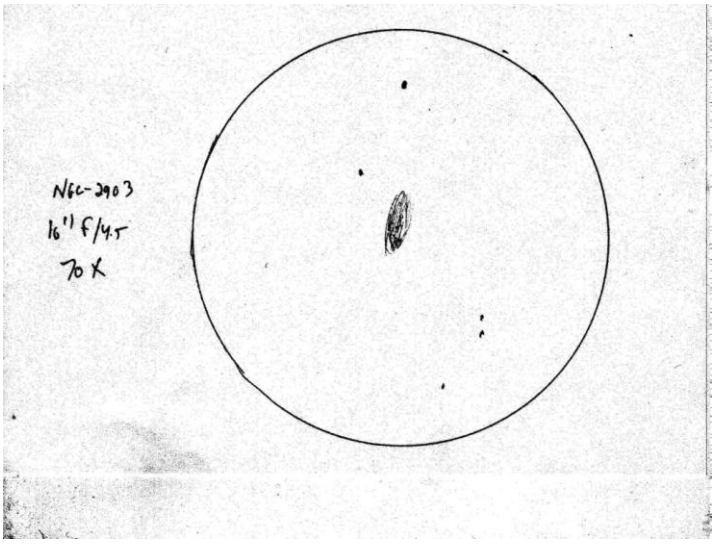
NGC-3389

NGC-3389 lay SE of M-105 and was the faintest of the trio of galaxies. When I observed it with the 10-inch at 142X, this galaxy was poorly concentrated and I could tell it would be difficult to see if conditions were not good. It was also elongated with an orientation of SE-NW. I could see little or no central brightness. This galaxy appeared as a mostly faint elongated glow.

Fred Rayworth: Observer from Nevada

I first observed NGC-2903 in 1984 with my home-built 8-inch f/9.44 Newtonian. I was even able to see it through streetlights in the neighborhood near Torrejon Air Base, Spain where I lived at the time. For this challenge, I observed from Valley of Fire State Park Visitor's Center. The skies were iffy at best. Though I could see all the brightest stars in Leo, when I looked through the eyepiece, the background was not black, and everything in that part of the sky appeared dim and unremarkable. I observed the challenge supplemental under the same conditions.

It was a nice, medium-sized oval that appeared mostly round and face-on, but had a slight oval appearance to it. It had a concentrated center with just a touch of lumpiness. I noticed no significant stars in or around the galaxy and saw no distinctive sign of NGC-2905. With the very bright background, the galaxy appeared drab as if I were looking at it through a heavy haze from downtown Las Vegas (even though Las Vegas was a good 30 miles in the opposite direction, as the crow flies).



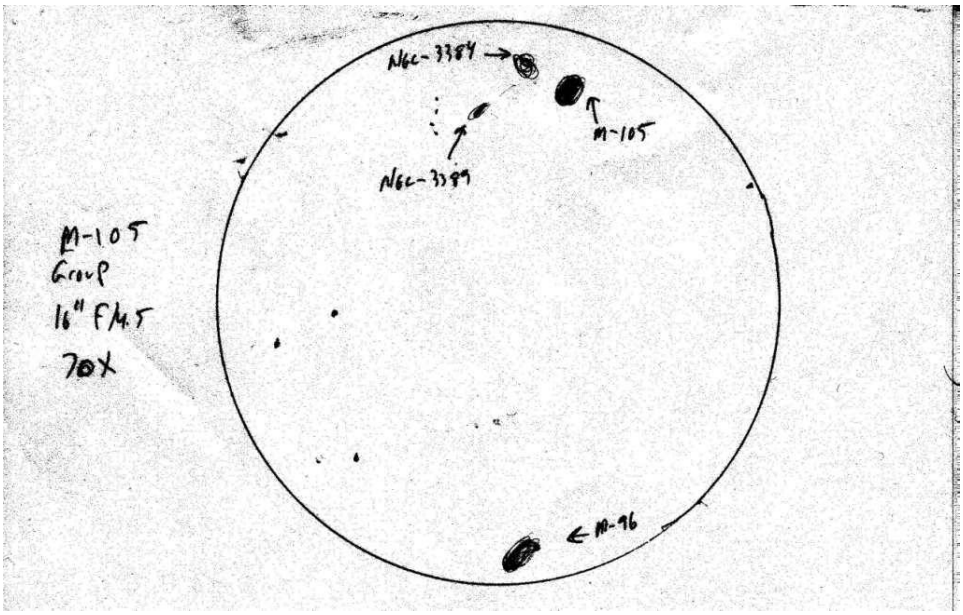
The M-105 trio was much more interesting. The first time I'd seen M-105 was in 1987 and that was right after I built my 16-inch f/6.4 Dobsonian. With a brand new enhanced coating

on the mirror, I was able to cut through some serious atmosphere despite being at 50' above sea level, and located on Incirlik Air Base in Turkey.

For the Challenge, I observed it from Valley of Fire under the same conditions as NGC-2903. However, in this case, not only did I get M-105, NGC-3384 and NGC-3389, in the same field I was also able to squeeze in M-96. That was, as I'd call it, a "four bagger" and I accomplished it with a wide angle eyepiece.

M-105 was a bright, dense oval with no distinguishing features. NGC-3384 was almost as bright, but had a more distinct oval shape. NGC-3389 was very hard to pick out as just a shapeless gray ghost of a smudge. At the other side of the field, M-96 seemed almost a twin to M-105, but had a slightly narrower oval shape to it.

Overall, despite being a poor night in that part of the sky, I had a great time and was glad for the opportunity to go out. The last time I'd been out was around Thanksgiving, 2009.



Rob Lambert: Observer from Nevada

I first observed NGC-2903 on February 21, 2009 and then again almost a year later on February 13, 2010. Using my Mallincam VSS astro-video camera, I observed this month's challenge object through my 5-inch refractor and 10-inch SCT. The 5-inch refractor with focal reduction to f/2.5 presented a 1.5° FOV at 32X. The 10-inch SCT with focal reduction to f/3.2 presented a 0.5° FOV at 100X and at f/5.0 presented a 0.3° FOV at 160X. Although the skies were clear at the Valley of Fire observing site just outside of Las Vegas, the transparency wasn't all that great due to the recent rains and higher than normal humidity in the air. In the accompanying images, north is toward the bottom right corner with west toward the bottom left corner.

Through the 5-inch refractor at approximately 32X, NGC-2903 hinted at being a barred spiral with a counterclockwise rotation. It had an obvious bright core with somewhat less brighter bars extending NNE and SSW from the core. The NNE bar appeared to be brighter than the opposite bar and may be the location of the star forming region known as NGC-2905. At this lower magnification, there wasn't much detail to be seen in the spiral arms.

At 100X in the 10-inch SCT, NGC-2903 presented a very bright elongated irregular core and mottled halo with more detail in its spiral arms and bar. The central bar cut diagonally across the galaxy's NNE-SSW axis at almost a 45° angle. The northern bar had a large bright nodule at the end of it and two smaller ones that followed the curve of the spiral. It must be this area that is the star forming region recognized as NGC-2905. The southern bar appeared to have

only one smaller bright nodule near the end of the arm. The galaxy had two distinct major arms radiating from each end of the bar.

At 160X, a couple of fainter minor arms squeezed in between the two major ones and began to become more distinct. All of the arms were more tightly wound than in other spiral galaxies the group has observed. They were fairly distinct closer in to the body of the galaxy, but became diffuse and fainter as they extended away from the galaxy. The arms were more prominent on the east side of the galaxy than on the west.

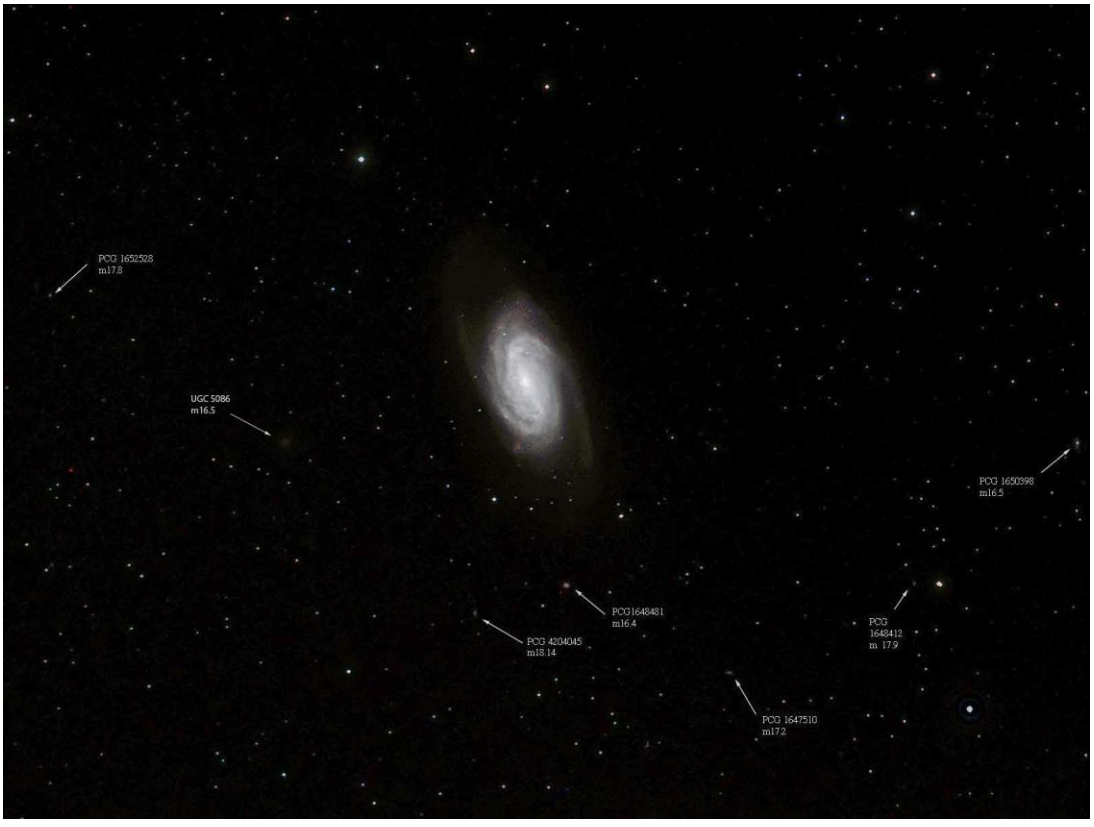
On the next trip to a dark site, I'll see if less focal reduction will reveal more distinction in the minor arms of the galaxy.

Dave Blanchette: Observer from Nevada

I've included a 12 minute exposure of NGC-2903. No stacking, just some contrast adjustment. Taken through my 12-inch SCT, f/6.3 focal reducer. I did try without the focal reducer, but the seeing really wasn't up to it.

Dr. James Dire: Observer from North Carolina

NGC-2903 is a fine barred spiral galaxy located to the west of the sickle of Leo. The galaxy is 1.5° due south of the mag. 4 red star Lambda Leonis. This mag. 9 galaxy measures 11.8 by 5.1 arcminutes. I took the image shown here with a 190mm (7.5-inch) f/5.3 Maksutov-Newtonian using an SBIG ST-2000XCM CCD camera. The exposure was 40 minutes. Even with this short focal length, the galaxies' central bar is quite apparent. As usual for barred spiral galaxies, the spiral arms tend to originate at the ends of the bar. There are roughly two spiral arms coming from each end of the bar, however only one spiral arm from each end appears distinct and wrapped 180° around the galaxy. The galaxy lies 34 million light years away. It has significant star formation occurring in the spiral arms as evident by the abundant number of short-lived blue giant stars and bright red hydrogen gas regions.



A great trio of galaxies in constellation Leo consists of M-105 (mag. 9.27, size 4.8 x 4.2 arcmin), NGC-3384 (mag. 9.96, size 5.3 x 2.4 arcmin) and, NGC-3373 (mag. 12.05, size 2.7 x 1.2 arcmin). M-105 is visually the brightest and largest of the three galaxies, but not by much over NGC-3384. Both M-105 and NGC-3384 are elliptical galaxies. These galaxies tend to exhibit a bright central core with a halo of starlight surrounding them. M-105 is a relatively spherical elliptical galaxy, while NGC-3384 is very elongated. Both of these galaxies are between 34 and 38 million light years away and are part of the Leo I galaxy group. The third galaxy in the group, NGC-3373, is a spiral galaxy. This galaxy is fainter than the other two since it is located roughly twice as far away.

I took the trio image with a 190mm (7.5-inch) f/5.3 Maksutov-Newtonian using an SBIG ST-2000XCM CCD camera. The exposure was 30 minutes. The faint stars located in the halos of the two elliptical galaxies and within the spiral arms of NGC-3373 are actually faint foreground stars located in our galaxy. The trio can be found in the middle of Leo, slightly more than 1.5° south of 5.5 mag. star 52 Leonis.

Frank Barrett: Observer from North Carolina (*www.celestialwonders.com*)

On Feb 19, 2010, I took this photo of NGC-2903 from my observatory in Gastonia, NC. I used a 10-inch SCT, with a 2800mm focal length, at f/11. The exposure was four hours of luminance along with three hours of color using an SBIG STL-11000M camera. My mount was a Losmandy G11 with an Ovision worm upgrade.