MONTHLY OBSERVER'S CHALLENGE

Las Vegas Astronomical Society

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&

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NGC-1569 Dwarf Irregular Starburst Galaxy In Camelopardalis

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. However, again 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-1569 Dwarf Irregular Starburst Galaxy In Camelopardalis

NGC-1569, also known as ARP-210, was discovered by William Herschel on November 4, 1788 and also carries the Herschel moniker H-768-2. It shines at a mag. 11.9 or thereabouts, depending on the source. The galaxy is known as an irregular dwarf and is also called a starburst galaxy due to the highly unusual starburst formation that is very often studied by astronomers.

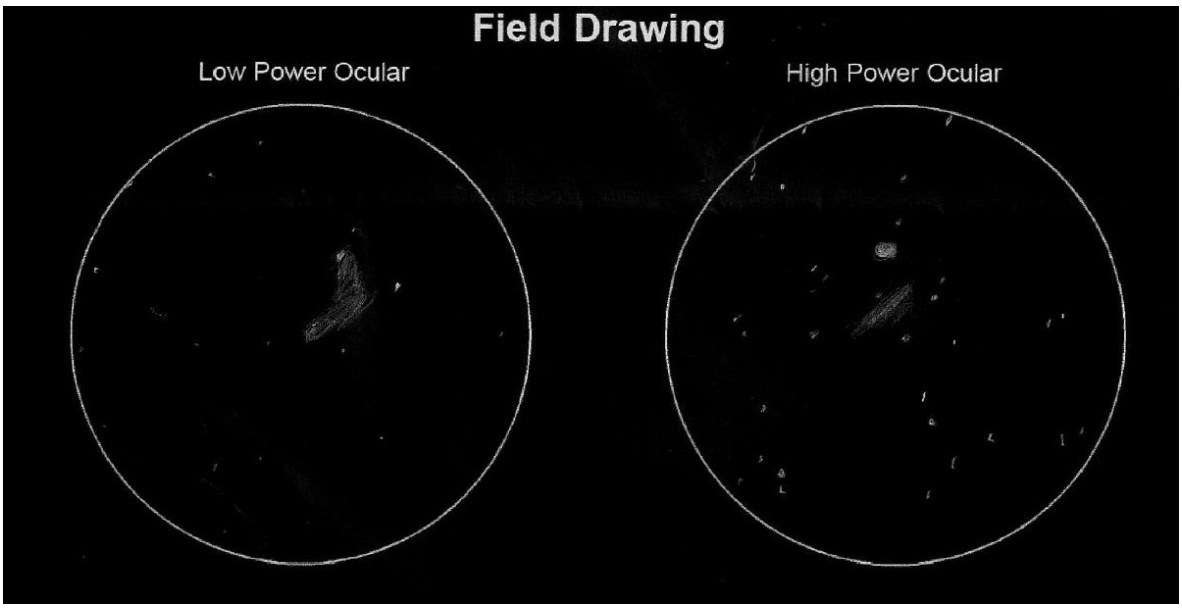
The "Starburst" makes for a challenging but rewarding target for all size apertures. The darker and more transparent the skies, the better are the chances to spot it as well as the skill and eyes of the observer.

Observations/Drawings/Photos

Francisco Silva: Observer From Nevada

On 10 January, 2015, I observed NGC-1569 from Exploration Peak Park in Las Vegas, Nevada. I used an 8-inch f/5.9 reflector (focal length: 1198mm).

Notes: It was fairly difficult to locate, especially using a 25 mm EP for a low magnification of 48X. When using a 40 mm EP and a 2X Barlow (60X) as my sketch indicates, the galaxy was elongated with a slighter broader middle and with greater concentration in the oval shaped core. I used a light pollution reduction filter. One of my biggest problems was how high it was in the sky.



Jim Gianoulakis: Observer From Nevada

NGC-1569 is a dwarf irregular galaxy in Camelopardalis. This relatively faint galaxy has been studied by professional astronomers extensively as it's a prime object for study of star formation. In 2008, scientists studying images from Hubble calculated the galaxy's distance at nearly 11 million light-years away, making it a member of the IC-342 group of galaxies.

The most notable feature is its powerful starburst. It has formed stars at a rate 100 times greater than that of our galaxy during the last 100 million years. It contains two prominent super star clusters. Super star cluster A, located in the northwest of the galaxy and actually formed of two close clusters (NGC-1569 A1 and NGC-1569 A2), contains young stars formed less than 5 million years ago (in NGC-1569 A1) as well as older red stars (in NGC-1569 A2). Super star cluster B, located near the center of the galaxy, contains an older stellar population of red giants and red supergiants. Both of these star clusters are thought to have masses equivalent to the masses of the globular clusters in the Milky Way. Numerous smaller star clusters have also been identified. These results, along with the results from other dwarf galaxies such as the Large Magellanic Cloud and NGC-1705, demonstrate that star formation in dwarf galaxies does not occur continuously but instead occurs in a series of short, nearly instantaneous bursts.

NGC-1569's starburst its believed to have been triggered by interactions with other galaxies of the IC-342 group, most notably a nearby cloud of neutral hydrogen. More recent studies suggest the presence of tidal tails linking this galaxy with IC-342 and the dwarf galaxy UGCA-92, whose nature, however is unclear and may actually be structures within our galaxy.

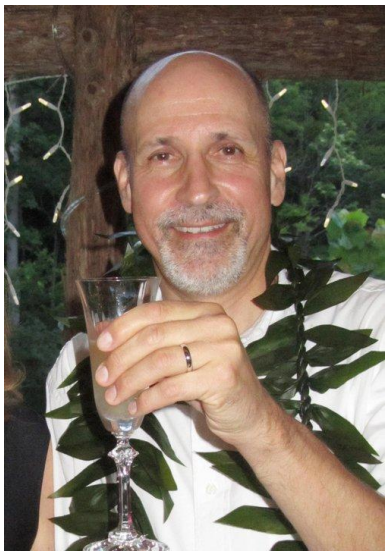
Courtesy of Wikipedia

About the Photo: Camera – QSI 583. Telescope: 8-inch Ritchey–Chrétien.

The photo is a stack of 30, ten-minute exposures. Ten each through red, green and blue ASTRODON filters. The photo was taken on January 22, 2015 from the Las Vegas

Astronomical Society observing site and observatory on Mt. Potosi. The sub frames were registered and stacked using CCD Stack 2 and levels and stretching applied in PhotoShop.

Dr. James Dire: Observer From Hawaii



NGC-1569 is a small mag. 11 galaxy in Camelopardalis that only measures 4 by 2.2 arc minutes in size. The galaxy is an irregular galaxy that has Hubble classification IB. It's thought to be 3 million light years away. I found it quite easy to find by star hoping to it with my 14-inch f/6 Dobsonian telescope on the night of January 18, 2015. With mag. 6 skies, I noted that Alpha Camelopardalis was the middle of a grouping of stars that formed a big Y high above Polaris. The stars besides Alpha were Beta, Gamma and HR2209. All four of these stars are between mags. 4 and 5 (why Gamma and HR2209 don't have Flamsteed numbers when fainter stars in the constellation do is beyond me.) I pointed my red dot finder about 3° southwest of Alpha along the line passing through HR2209 and Alpha to the spot where NGC-1569 was located. There it was in my 26mm (82X) eyepiece.

The galaxy was just south of a mag. 9.8 star. It appeared elongated in shape along a NW-SE line with the center much brighter than the rest of the galaxy. I couldn't make out any details in the galaxy at any magnification.

I took an image that same night using an SBIG ST-2000XCM CCD camera on an 8-inch f/8 Ritchey–Chrétien telescope using a 0.8X field flattener/focal reducer yielding an f/6.4 system (1321mm focal length). The exposure was 90 minutes.

The brightest star in the image is SAO 13168 at mag. 9.0, located below (south) and slightly left (east) of the galaxy, halfway to the edge of the field of view. The field of view is 32 X 24 arc minutes. The faintest stars in the image are below mag. 18 (how much below is anyone's guess). There's a fainter galaxy in the image, 4 arc minutes to the right (west) of SAO 13168. I couldn't find any information or catalog number for this galaxy. It's probably

somewhere between mag. 16 and 17. Some of the faintest objects in the image may be more distant galaxies.

The contrast between the mag. 9.8 star adjacent to NGC-1569 is striking in the eyepiece and on the photograph. All of the bright star-like regions on the galaxy in the image are superimposed foreground stars.

Gary Bruno: Observer From Nevada

I observed NGC-1569 using 10-inch reverse binoculars @ only powers of 41X & 65X. The object was located in the center of what appeared to be an upside down "T" star configuration in my scope. It had a very bright center although not as large as other galaxies we viewed. The best part of the challenge is looking around at what else is there. To the East is a cool configuration and to the West, at the higher power there are quite a few, what appeared to be, (although there not listed as such) double stars. Looking around not only helps me become familiar with the area but helps as a guide when working with my 4-inch non computerized scope. Although, the configurations in the 4-inch do appear different as the dimmer stars are not apparent. But if I can find my way the next night without the aid of a computer, than I know the challenge for my purpose was a success.

Sue French: Observer From New York

Through a 10-inch reflector at 70X, NGC-1569 is a little, oval, fuzzy spot, brighter in the center, sitting just south of a mag. 9.8 star. At 118X it has an oval profile with a ratio of 5:2, running west-northwest to east-southeast. I see a faint star near the east-southeastern tip at 170X. The galaxy looks slightly mottled and possibly brighter on the west-northwestern end. At 219X the brighter west-northwestern end is confirmed. Possible involved star. Star-like nucleus? My 105mm (4-inch) refractor at 87X shows a little slash of light, with the view hindered by the nearby bright star.

Jay And Liz Thompson: Observers from Nevada

We observed NGC-1569 with a 17-inch Newtonian and a 14-inch SCT during December, 2014 and January, 2015.

From our backyard in Henderson, NV, the galaxy appeared as a small glow next to a moderately bright field star at 279X in the 14-inch SCT. Viewing was awkward given the northerly declination of the object when viewing with the fork-mounted equatorial scope. At 391X, we noted some asymmetry in brightness along the long axis, as well as an almost embedded faint star at one end.

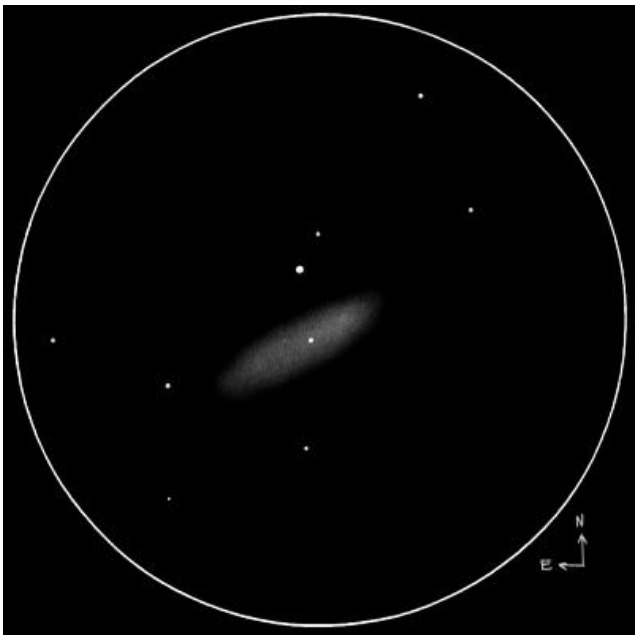
Visibility of NGC-1569 improved greatly with using the 17-inch under the dark skies of Meadview, AZ. At 125X, it was evident and close to a moderately bright field star. More details were visible at 227X.

Besides the bright star north of the galaxy, there was another fainter star on the opposite side of the galaxy from the bright star. There was also either a foreground star or supernova in

the following dimmer region of the galaxy. It's definitely squashed and asymmetric in brightness on the long axis. At 426X, the asymmetry was very noticeable. With averted vision there were hints of texture.

Jaakko Saloranta: Observer from Finland

Under darker skies I've seen it with a 3-inch refractor without much effort. Under suburban skies (NELM ~5.3) back in 2001, with an 8-inch Dobson, I described it as "38X easily shows a clear irregular glow near a mag. 9 star. A bit elliptical, but just as much irregular. Even brightness, no nucleus". I revisited it back in 2013 under dark skies (NELM ~7.0) with the 8-inch Dobson and my notes say: "South of bright mag. 10 star [TYC 4073-365-1]. Pretty bright, fairly bright surface brightness [12.9], size roughly 1.5' x 0.5'. Even brightness, elongated in NW-SE direction and shape somewhat irregular. @ 343X (9') a stellar brightening is visible on occasion slightly NW from the center. Mag. 14 star visible on the E edge of the galaxy, another, fainter one visible just S of the galaxy".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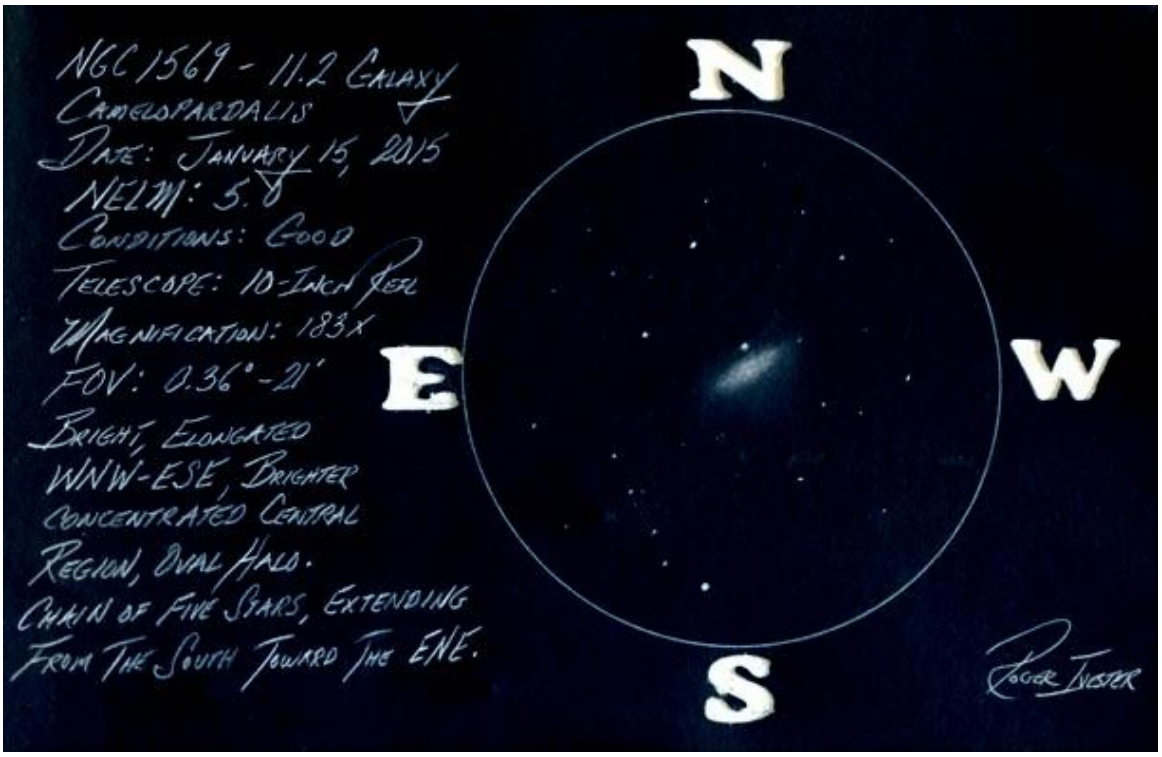
Roger Ivester: Observer from North Carolina

From my backyard, using a 10-inch reflector, NGC-1569 is very easy, located just south of a mag. 9 star. I was actually surprised how bright and easy the galaxy was to see using a low magnification of only 57X. It's elongated WNW-ESE with a brighter well-concentrated central region and an oval halo.

There's a chain of five stars located about 10 arc minutes to the south of the galaxy, and then extending from the south toward the ENE.

The moderately high surface brightness and overall concentration of the galaxy allows for the effective use of high magnification, with some unevenness of texture. Some observers report a faint stellar nucleus, but I didn't see it.

The following sketch was made with a No. 2 pencil and a blank 5 X 8 note card with the colors inverted using a computer.


NGC 1569 - 11.2 Galaxy
Camelopardalis
Date: January 15, 2015
NELM: 5.8
Conditions: Good
Telescope: 10-Inch Dob
Magnification: 183x
FOV: 0.36° - 21'
Bright, Elongated
WNW-ESE, Brighter
Concentrated Central
Region, Oval Halo.
Chain of Five Stars, Extending
From The South Toward The ENE.
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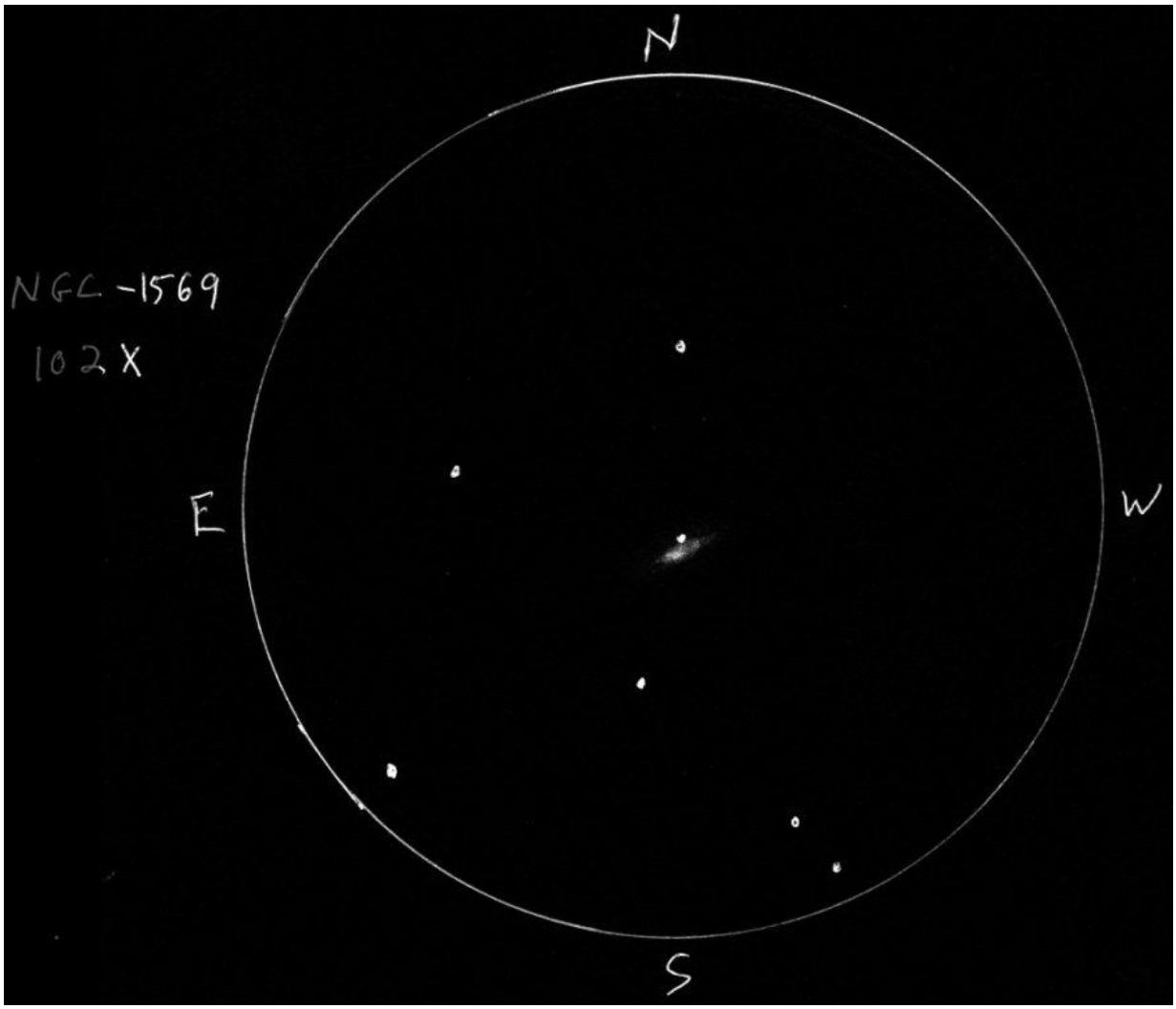
W
S
Roger Ivester

Fred Rayworth: Observer from Nevada

I finally got a crack at this one for Challenge purposes on February 14, 2015. Though I've seen it twice before, I wanted to check it out with fresh eyes. I went out to my usual dark sky site at Redstone Picnic Area on the North Shore Road of Lake Mead and set up with a couple of observing buddies on an very impromptu session that we called at the last minute. We were sweating on the weather, plus I was getting over a bout of food poisoning that sent me to the ER the day before. Luckily, it was a quick case and I survived the night's observing session, which turned out to be well worth it.

The night was cool, with a slight breeze that died off at dark. There were some high, thin clouds that drifted across the sky and I thought they would affect the transparency, and they did, to some effect. However, when the holes opened up, they did, and the sky became awesome in spots. I found a lot of Herschel galaxies in some areas to the east, while some areas I could barely pull anything in. Some bright stars had nebulae around them while others were clean. Same old stuff, yet I picked up some beauts. Still not the best night, but not bad in the long run. It was the most productive observing session in quite a while. I finally got too tired to go on, partially because of the food poisoning, but I still had a great time and packed up at 22:15.

NGC-1569 was a very small, narrow and ragged oval. The core was off-center. It appeared grainy and took magnification well. It didn't fade or lose much detail even at 229X or 390X. I was looking for foreground stars others have said they've seen, but no matter what magnification, all I saw was some graininess, mainly toward the western side which seems to be foreground stars along the edge. Also, it appeared kind of lumpy versus mottled, which is more apples versus oranges by definition. Usually I describe something like this as mottled, but it really DID look lumpy versus mottled. Quite a fascinating, though very small galaxy.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NGC-1569
102X
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