

MONTHLY OBSERVER'S CHALLENGE

Las Vegas Astronomical Society

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&

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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.

JANUARY 2014

NGC-1491 (SH2-206 & LBN 704) – Bright Nebula In Perseus

NGC-1491, also known as SH2-206 or LBN 704 is a bright or diffuse nebula in Perseus. It was discovered by William Herschel on December 28, 1790 and also carries the Herschel designation H-258-1. Though magnitudes are not often listed for diffuse/bright nebulae, some sources list it at mag. 11.3. The gasses of the nebula are being lit up by a spectral type B0 star, which is blue and very hot.

Due to the delicate nature and low surface brightness, this nebula takes dark skies and filters to see it properly. It can be glimpsed with smaller scopes under ideal conditions, but a UHC or O-III filter is needed to spot it. It takes larger aperture to glimpse it without a filter.

Observations/Drawings/Photos (Contributors are listed in alphabetical order.)



James Dire: LVAS Friend from Hawaii

Approximately 1° north-northwest of Lambda Persei, or $6 \frac{1}{3}^\circ$ east of the star Mirfak (Alpha Persei), lies the bright emission nebula NGC-1491. The nebula spans roughly 9 arcminutes of declination and is approximately 3 arcminutes wide in right ascension. It appears to be wrapped around a mag. 11 star embedded in a large region of much fainter nebulosity.

I viewed NGC-1491 on January 30, 2014 using my 102mm (4 inch) f/8 APO under very transparent skies, with 2 arcseconds seeing.

The nebula was visible as a faint colorless triangular-shaped patch, best seen using averted vision.

My image was a 80-minute exposure using an SBIG ST-2000XCM CCD camera on a 10-inch f/4 Newtonian with a coma corrector (making it an f/4.6 optical system) on a German equatorial mount.



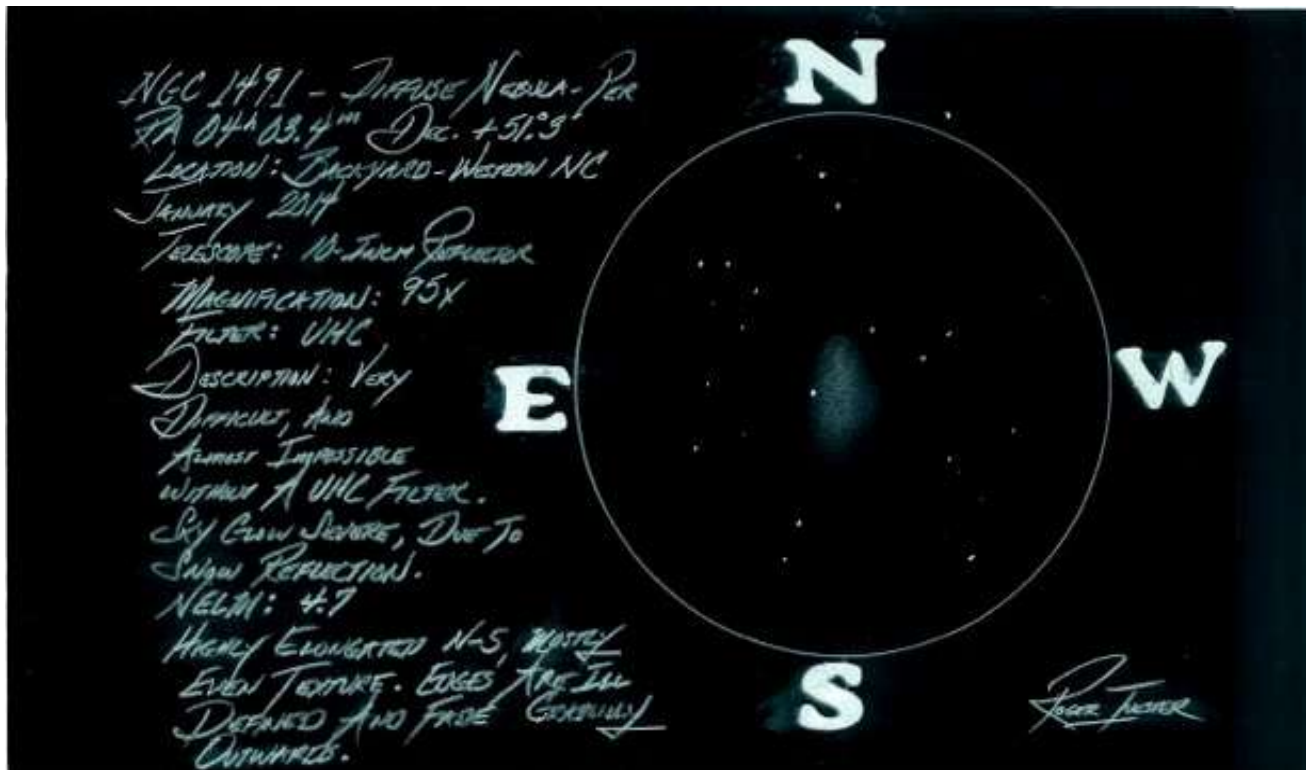
Sue French: LVAS Friend and Author from New York

Through my 105-mm (4.1-inch f/5.8) refractor at 47X, NGC-1491 is a fairly bright nebula about $4'$ long (elongated north-south) involving a mag. 11 star, offset to the east. Both O-III and narrowband filters improve the view and bring out fainter nebulosity eastward. Using the narrowband filter with my 10-inch f/5.9 reflector at 43X, the bright area covers $3 \frac{1}{4}' \times 4'$, while broad swaths of fainter nebulosity reaching north, east, and southeast to stretch the nebulosity to about $\frac{1}{4}^\circ$. The nebula grows even larger through an O-III filter, with indistinct borders that gradually fade into the background sky.



Roger Ivester: LVAS Member from North Carolina

Using my 10-inch reflector at 95X, the nebula was almost impossible to see without the use of a UHC filter. A mag. 11 star was situated on the eastern edge. The nebula was elongated N-S, with a mostly even texture. It has been very difficult to observe this month's Challenge object due to clouds and generally poor conditions. On the night of this observation, the NELM was very low at about mag. 4.7, due to snow reflection. It was my intentions to attempt again under better conditions, but unfortunately the clouds and poor weather have prevailed.



Rob Lambert: LVAS President from North Las Vegas

NGC-1491 in Perseus is recognized as a diffuse emission nebula. My Mallinacam was able to pull out the emissive nature. North is up in the accompanying photo. The red/pink detail in the core of the cloud definitely indicates the presence of H-II gas. The mag. 11 star in the central region provides the ultraviolet radiation that excites and ionizes the Hydrogen atoms in the cloud. The cloud is actually more extensive than what the photo is able to portray, but the photo probably more closely resembles what the visual observer might see, minus the color. The cloud extends outward, with less density, to mostly encompass the two bright stars that are above and left of

the central star. There appears to be several pairings of stars that are dimmer in magnitude than the central star and an interesting pentagon arrangement of stars are out to the left of the central star.

This image was captured with a 127mm (5-inch) apochromatic refractor (APO) using the Mallincam VSS+ with an MFR-3 focal reducer and 20mm of extensions, producing a magnification of approximately 60X. The integration/exposure time for this single-frame shot was 20 secs. There was no post-processing of the image.

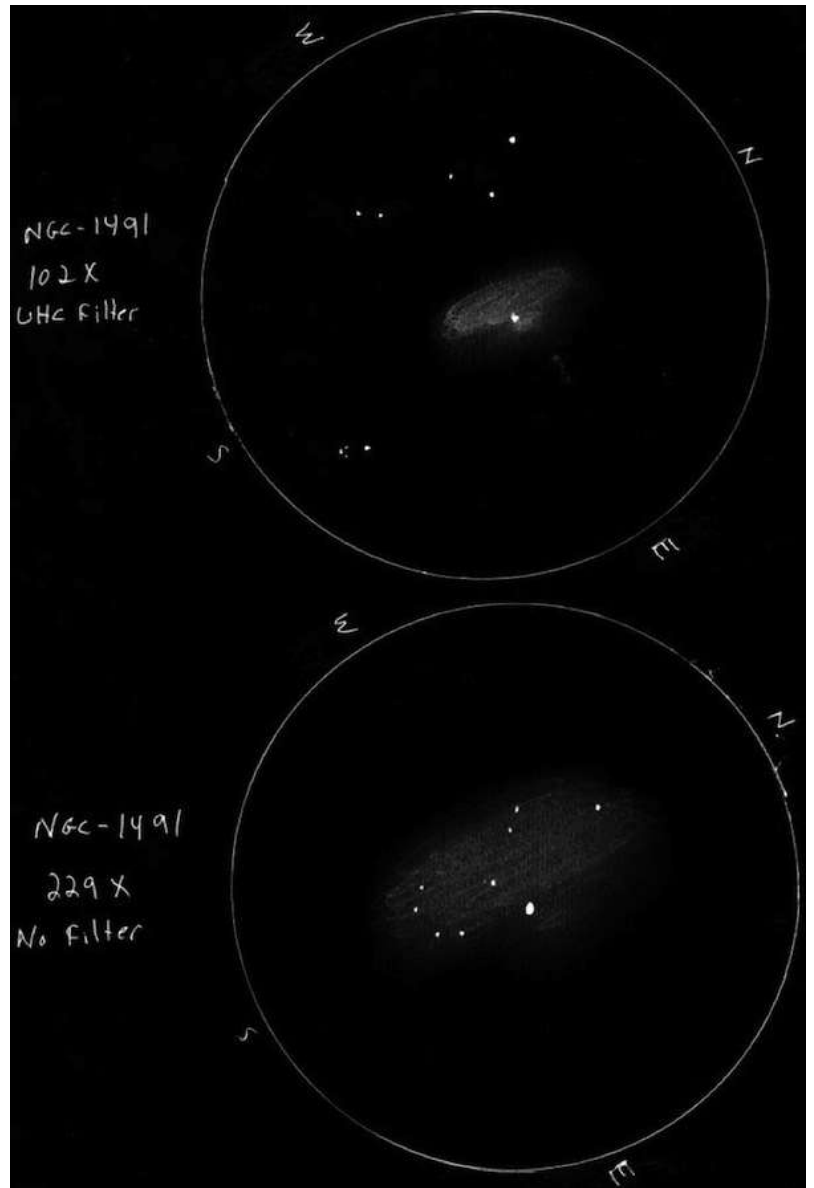


Fred Rayworth: LVAS Vice-President and AL Coordinator

The first time I tried for this object was on October 25, 2008 from Redstone Picnic Area, on the north shore of Lake Mead, Nevada. At 2,100 feet, it was a beautiful, clear and calm night. The temperature barely required a long-sleeved shirt. It stayed that way until I left at 22:30 (that's 11:30 PM for all you civilians).

Using my 16-inch f/4.5 and a magnification of 70X, I saw an almost round, featureless glow. It really jumped out with my O-III filter. At that time, I didn't have any other notes.

My second crack at it came on February 1, 2014 from Furnace Creek Ranch Airport in Death Valley. At -190 feet (below sea level), this site is surprisingly pristine when the weather cooperates. Our Friday night was overcast and a complete washout for the time I was out there. However, Saturday the 1st opened up and the skies were superb up until midnight, with clear, calm air that brought out the best the sky gods had to offer.



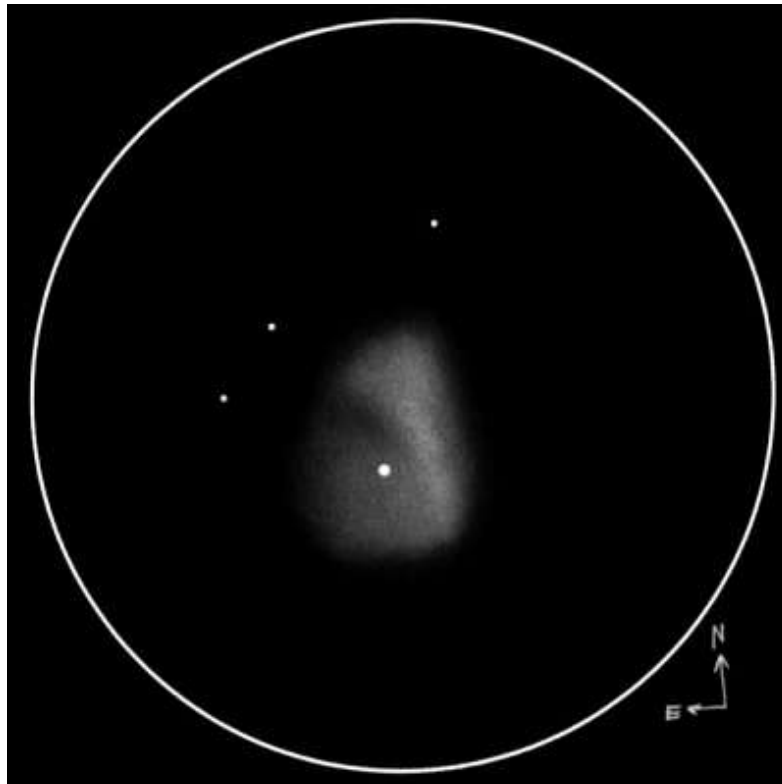
Using the same 16-inch f/4.5, I filed these initial observations: It had a nice flattened oval shape at first glance, without any filter. There was almost a grainy appearance, but I couldn't see any individual stars within it at 102X. However, at 229X, I counted 8 stars for sure and saw 3 to 4 more probables that faded in and out. With the UHC filter at 102X, the shape was a softer and more distinct oval with only a slight distortion at the edges, especially on the edge abutting the bright star. When I changed to an O-III filter, the oval became more ragged and less oval-like, both around the edge opposite the bright star and especially on the side involving the bright star. The nebulosity seemed to extend beyond the bright star and faded out, losing shape as well.

My two drawings show first, the view through the UHC filter. The second one is unfiltered at 229X, showing the star pattern. My cardinal directions may be off a bit. Since it was almost straight up, I got a bit twisted around. I tried to orient things based on my Megastar software.



Jaakko Saloranta: LVAS Friend from Finland

After re-observing the recent supernova 2014J, I remembered NGC-1491 in Perseus was LVAS's Challenge object for January. Despite the poor sky conditions (NELM ~5.0 - SQM-L 18.30), NGC-1491 was only fairly faint using an 8-inch Newtonian @ 38X ($1^{\circ} 23'$) without filters. The nebula was best seen with an O-III filter and at a magnification of 133X, but as the object was only $4' \times 2'$ in size, I decided to push the magnification a bit more and sketched it @ 200X ($12'$). When combining all the details I could see with different magnifications, I came to the conclusion that the object appeared as a slightly comet-shaped puff of nebulosity, west of a bright mag. 11 star. The brightest section of the nebulosity was elongated roughly in N-S direction, followed by some very faint nebulosity visible E of it. I meant to observe it again under better skies, but the winter weather in Finland has been nearly unusually bad and foggy.



Jay and Liz Thompson: LVAS Members from Henderson, Nevada



Observations by Jay Thompson: I observed NGC-1491 on January 03, 2014 under the excellent skies of Meadview, AZ with a 17.5-inch f/4.5 Newtonian and a 5-inch f/10 SCT spotting scope.

The nebula was easy with the 5-inch SCT spotting scope at 50X, both with and without an O-III filter, as a hazy patch around a star. It was easier to see with the 5-inch under Meadview skies than with the 14-inch SCT in Henderson.

With the 17.5-inch, the nebula was apparent at 63X and 125X. An O-III filter helped to bring out detail. One side of the nebula was notched noticeably.



Observations by Liz Thompson: On December 28, 2013, I observed NGC 1491 with a 14-inch SCT from Henderson, NV. I located the associated mag. 11 star, but no nebulosity was apparent at 98X. I switched to a 32mm (122X) eyepiece with an O-III filter and saw a haze visible to one side of the star. The best view was with a 25mm eyepiece (156X) with an O-III filter. The nebula was also faintly visible with the 25mm eyepiece and H-beta filter. I tried a magnification of 279X, but this was too much power.

All observations were made using a black observing hood to block ambient light. Viewing this nebula was quite brutal under the moderately light-polluted sky of my back yard.