MONTHLY OBSERVER'S CHALLENGE

Las Vegas Astronomical Society

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&

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NGC-1333 Diffuse Nebula In Perseus

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-1333 Diffuse Nebula In Perseus

NGC-1333 is a diffuse patch of nebulosity in the constellation of Perseus, discovered by Eduard Schonfeld in 1855. It glows at a mag. of approximately 5.6 but this can be a tricky measurement as sky conditions greatly affect what's seen visually. Though it is generally easy to see something in even small scopes, what's seen is the trick.

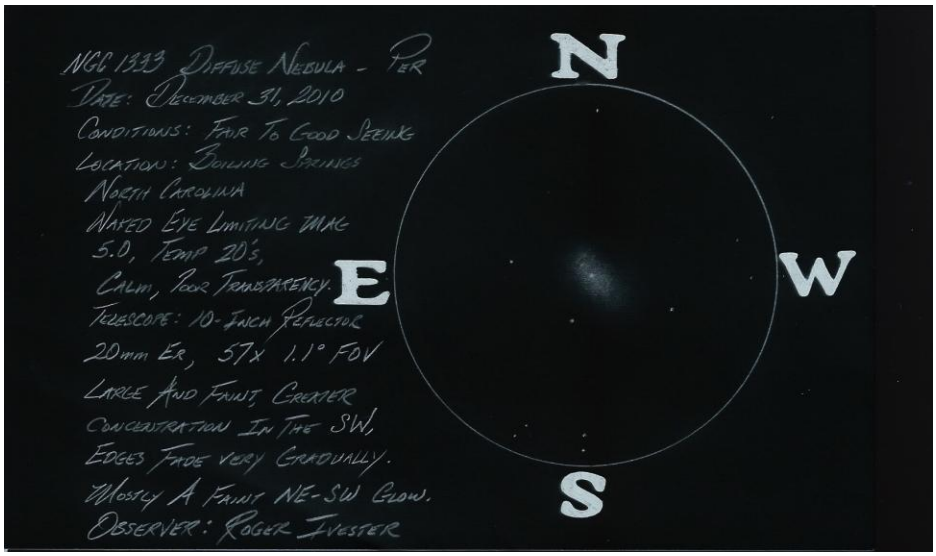
As part of the Perseus molecular cloud, it's approximately a thousand light-years distant. It's said the stars that are forming within it are less than a million years old. Outside of IC-348 and NGC-1333, the cloud is mostly invisible to us here on Earth.

The challenge lies in what you can see, from just a faint smudge to distinct shapes. It all depends on the individual, your equipment and you observational skills. Astro-images will bring out even more detail. There are also some nearby stars that may show various colors, so be on the lookout for them.

Observations/Drawings/Photos

Roger Ivester: Observer from North Carolina

The Observer's Challenge for January, 2011 is NGC-1333, a seldom observed reflection nebula located in the constellation of Perseus. This object is very faint and associated with a mag. 10.5 star. All observations were made from my moderately light-polluted backyard located in Boiling Springs, North Carolina, using a 10-inch reflector at low magnification. At first glance, the nebula appeared mostly round. However, with averted vision and very careful viewing, it became elongated with a NE-SW orientation. The brightest part of the nebula was SW of the mag. 10.5 star with the NE section being much more faint where I noted some mottling. The overall surface brightness was very low and the nebula became invisible with higher magnification. This object proved to be very difficult, best observed under a very dark sky with excellent transparency.

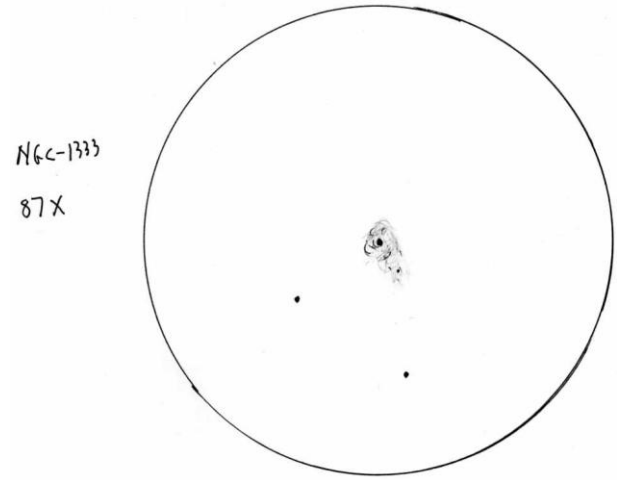


Fred Rayworth: Observer from Nevada

I've seen a lot of deep sky objects over the years but this one was a first. I had the opportunity to observe it for the first time at Furnace Creek Ranch in Death Valley using my 16-inch f/4.5 Dobsonian. That Friday night, the conditions were, for the most part, pristine, or so it seemed. Despite that, when I aimed my telescope at the steep angle required to see this object, it was quite a challenge just to glimpse the rather obscure haze. I finally spotted just a haze around a bright star bleeding off onto another dimmer one. It seemed to have a bit of an oval shape to it, but the shape was so vague that I couldn't be certain of it. My Megastar chart later confirmed that the shape of the nebulosity was roughly oval. There wasn't much at all to see and if I didn't know exactly where to look, I would've missed it altogether. What I might have noticed, if not for the nebula, was the bright red star nearby. I would have thought it was kind of cool.

The nebula looked best at 86X. At higher power, it washed out completely. For a while, I wasn't even sure it was the right spot until I verified it in Rob Lambert's Mallincam. The O-III filter didn't help at all. In fact, it made things worse, completely obscuring the nebulosity and the dimmer of the two stars that were buried within that nebulosity.

At best glimpse and at 86X unfiltered, I caught just the slightest hint of mottling in the fattest area of nebulosity, somewhere between the two stars and closest to the brighter one.



Rob Lambert: Observer from Nevada

NGC-1333 lived up to the idea of being a Challenge Object. I almost didn't see it through my 4 1/2-inch refractor at 33X. It appeared as a little bit of fuzz around the mag. 10.5 blue/white star in that area of the sky. I wasn't able to see any of the nebulosity that extends down and around the red star to the south. The view through the 4 ½-inch was so unremarkable that I didn't even try to image it at that magnification. Contrary to what Skiff and Luginbuhl claim, I'm not sure how anyone would've been able to see NGC-1333 visually through a 60mm (2.4-inch) scope on this particular night. The transparency must have been less than what I thought, because it definitely was not obvious in my 4 ½-inch refractor.

In fact, I went to Fred's observing station just to make sure he was in the right area. Fred came back and looked at the image being displayed on the monitor and confirmed that it was on target. Fred seemed to be somewhat relieved at seeing the image on the monitor, because he, too, had a difficult time seeing it visually in his 16-inch Dobsonian.

The view through the 10-inch SCT, at approximately 200X, revealed more nebulosity around both of the brighter stars. This nebulosity appeared to have a mottled kidney-bean shape that curved down and to the right away from the blue/white star to envelop two dimmer stars before swinging back to the left to envelop the red star. The pattern of the enveloped stars looked somewhat like a fuzzy connect-the-dots semi-colon with the blue/white star being the dot of the semi-colon and the other dimmer stars forming the tail. I'll obviously have to go back and try to get a better image of this object.

This image required 40 seconds of exposure/integration, thus the slight star trails I was beginning to get. I forgot to take a dark image so that I could extract the hot pixels. Oh well, I'll do better next time.

Buddy L. Barbee: Observer from North Carolina

This observation was made Saturday, January 22, 2011 from my home in light-polluted Winston-Salem, NC. I used a 4-inch refractor and a 19mm eyepiece with an O-III filter, for a magnification of 46X. It was a cold 26°F with a calm wind and low humidity. The sky was beautiful, although very bright in town, having a naked-eye limiting magnitude of 4.0.

I was really excited about looking at NGC-1333 for the first time, once I learned it was discovered by Eduard Schonfeld in 1855 with a 3-inch refractor. Then I read in David J. Eicher's (now out of print) book, *Deep-Sky Observing With Small Telescope*s that a 2-inch telescope shows a bright nebular complex right in the midst of dark nebula Barnard 1. To think, somehow I have never looked at this bright nebula!

With the weather and all that has been going on in my life, I have not had a chance to get out to a dark site and observe any in the last two months. When the weather cleared up Saturday, I decided to try and look at it in my light polluted sky at home. I set up my scope in the back yard, hoping it would stay clear, and it did. When it was as dark as it was going to get, before moonrise, I star-hopped from Omicron Perseus to the nebula using a 24mm eyepiece. This eyepiece gives an almost 2° wide field-of-view. I was not really surprised that I didn't see anything with the bright sky but I was a little disappointed. Next I tried a 19mm eyepiece with an O-III filter, at a magnification of 46X and was able to see some faint nebulosity around two dim stars. The haze around the northernmost of the two stars was the brightest and largest of the two hazy spots. It was a little disappointing that I didn't get a better view of this nebula, but was satisfied that I got to see anything at all with the severe light pollution in town. I look forward to observing this nebula again from a dark sky site. It's on the top of my list of objects to see.

DEEP SKY OBSERVATION FORM

CONSTELLATION : Perseus

OBJECT: NGC 1333

Day & Date: Jan. 22, 2011, Sat.
Time (local): 9:37
Time (UT):
Observer: BLB
Location: Home

Seeing (1-5): 3
Transparency (1-7): 4
Limiting Magnitude: 4.0
Temp: 26°F Wind: 0-3 mph
Humidity: 35%

INSTRUMENT
Telescope: TV 102
Aperture: 102mm (4")
Focal Length/Ratio: 880mm f/8.6
Eyepiece: 19mm
Magnification: 46×
Field of view: 01°28'
Filter: OIII

OBJECT
RA: 03 hr. 29.3 min.
Dec: +31 d. 25 min.
Type: Bright Nebula
Listed Magnitude:
Listed Size: 9'×7'
Altitude of Object: 80°±

NOTES

Very faint, with OIII filter and averted vision I could see a misty spot around two dim stars. The misty fog around the northern most of the two stars was brighter and larger of the two spots.

Jim Gianoulakis: Observer from Nevada

NGC-1333 is seen as a reflection nebula in visible light images, sporting bluish hues characteristic of starlight reflected by dust. This area and its chaotic scene likely resemble the environment where our own Sun formed over 4.5 billion years ago. NGC-1333 is a mere 1,000 light-years distant in the constellation Perseus. It's a region that harbors newly formed stars that are less than 1 million years old. The density of gas and dust in this region is great enough to cause many different effects of illumination and emission. Infrared images show a large number of stars in this region that are obscured by dust in the visible wavelengths.

About the image:

The image was taken using an 8-inch RC astrograph and an Orion Star Shoot Pro V2 OSC camera. A Hutech IDAS light pollution suppression filter was used. The image is composed of 25 X 10 light frames, calibrated with darks, flats and bias frames. It was stacked with Deep Sky Stacker and processed in PhotoShop. The shot was taken from my backyard in Las Vegas, Nevada.