

# **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*

**OCTOBER 2016**

### **NGC 7479 (Caldwell 44) Barred Spiral in Pegasus**

#### **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 7479 (Caldwell 44) Barred Spiral in Pegasus**

NGC-7479 is a barred spiral galaxy discovered by William Herschel in 1784. It lies 105 million light-years away. It contains two supernovae, SN-1990U and SN-2009jf. It's also recognized as a Seyfert galaxy undergoing starburst activity in the nucleus and the outer arms. Polarization studies of this galaxy indicate it recently underwent a minor merger and that it is unique in the radio continuum with arms opening in an opposite direction to the optical arms.

With a visual mag. of 11.6, it can be a real challenge. Seeing the core is relatively easy and in many scopes may give the appearance of an edge-on galaxy. Seeing that the edge-on part is actually the bar in the center is more difficult. The arms can be quite faint and it may take patience and excellent seeing to spot them.

## Observations/Drawings/Photos

We would like to introduce and welcome two new participants this month, Mario Motta and Craig Sandler. Both are members of the (ATMoB) Amateur Telescope Makers of Boston.

Welcome, Mario and Craig!

**Mario Motta:** Observer from Massachusetts



The top photo is me next to my 32-inch scope. The bottom one is a shot of the observatory at my home. The telescope is a homemade 32-inch F/6 “relay” design.

The image below was taken with an SBIG STL 1001E camera. The exposure was about 1 hour, stacked total.



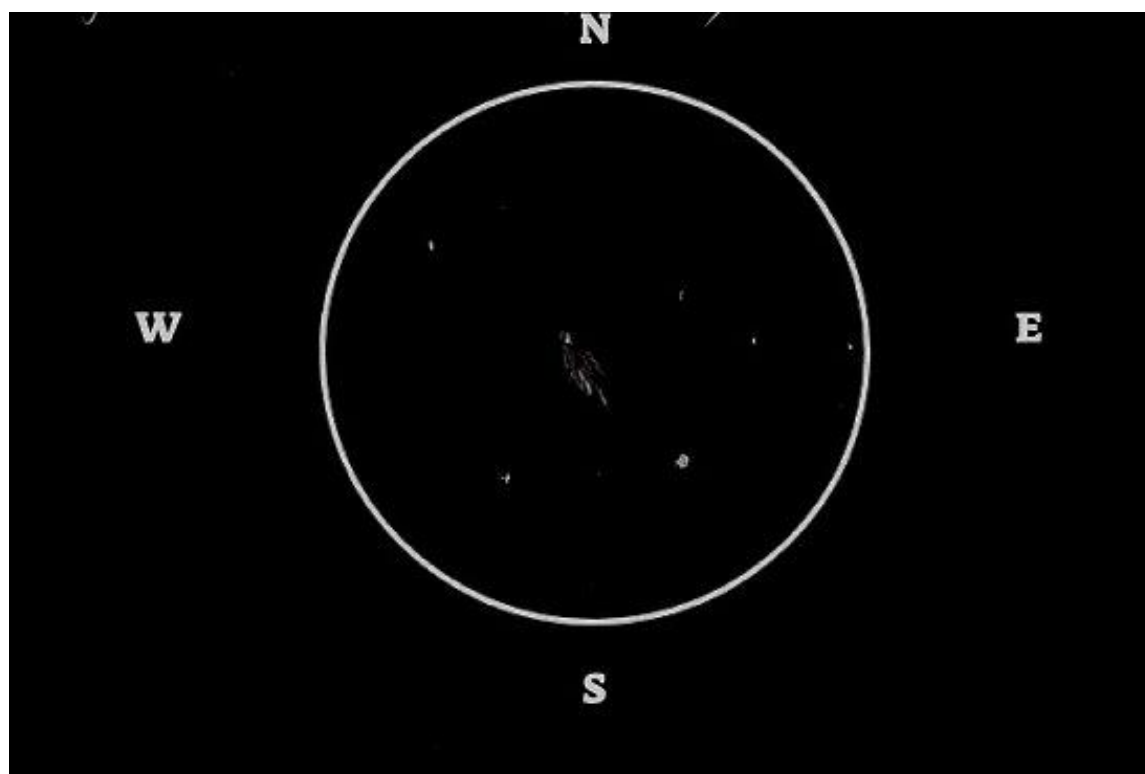
**Craig Sandler:** Observer from Massachusetts



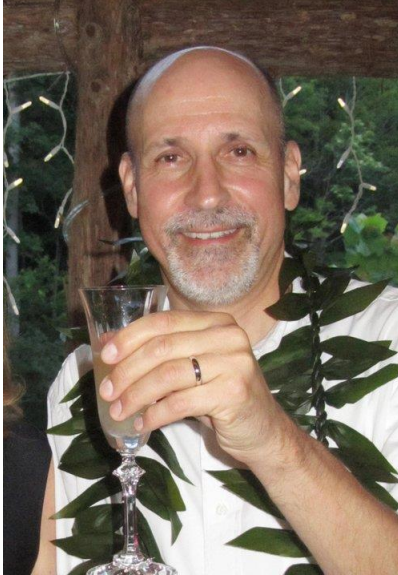
I observed NGC-7479 on October 25, 2016 at 10:30 PM, EDT, from Petersham, MA.

I used an 8-inch SCT with a zoom EP at 95X, FOV.6°. The NELM was 5.5. The sketch was at 20mm or 95X.

The galaxy was elongated, fairly dim, brighter center region, however, very subtle and wispy. Brighter on the western edge.



**Dr. James Dire:** Astronomy Professor & Observer from Hawaii



NGC-7479 is a nearly face-on barred (SBc) spiral galaxy in the constellation Pegasus. It was discovered by William Herschel in the year 1784. The galaxy is approximately  $3^\circ$  due south of the star Markab. The galaxy is visual mag. 11 and is 3.6 by 2.7 arc-minutes in size. Distance estimates place the galaxy 105 million lightyears away!

The galaxy has a very bright core and bright long bar structure. One major spiral arm starts at each end of the bar and appear to extend  $180^\circ$  around the galaxy. Visually, in most amateur telescopes, the central budge and bar structure are all that's seen as they're much brighter than the spiral arms.

NGC-7479 is classified as a Seyfert galaxy due to extensive starburst activity in the core and spiral arms. Radio studies indicate the galaxy may have recently (when the light left the galaxy) undergone a galactic merger.

I imaged it a month ago with a 10-inch f/6.9 Newtonian and an SBIG ST-2000XCM CCD camera. The exposure was 210 minutes. The clumps visible in the spiral arms are the regions of starburst activity. My second image was taken in November 2009 using the same camera and a 190mm (7.5-inches) f/5.3 Maksutov-Newtonian. The yellow arrow in this image shows a then supernova stellar explosion whose light had just reached Earth. Of course, the star actually exploded 105 million years ago.



**Gus Johnson:** Observer from Maryland



I observed NGC-7479 in September, 1982 with an 8-inch reflector at 94X.

The galaxy was dim, elongated, with a bright star to the south, and a faint mag. 12.5 star in the northern halo.



**Glenn Chaple:** Astronomy Columnist & Observer from Massachusetts



On October 22, 2016, I observed NGC-7479 from Townsend, MA at 10:00 PM, EDT. Seeing was IV, limiting mag. 5. I used a 10-inch f/5 reflector at 80X, 1° field.

It required a lot of patience. Early in October, I made a superficial search and gave up after 15 minutes. The other night, I rolled up my sleeves and gave it a serious attempt. Using an Astro Card, I found the location and again saw nothing. This time, I remained patient. After 15 minutes, I detected a faint, pulsing glow with averted vision. After another 10 minutes, the glow became steady. The galaxy was extremely faint. I could have begun my sketch, but waited another 10 minutes. At first, it appeared as a pulsing glow with averted vision, and a lot of patience. By now, the glow had taken on a definite elongated form and I finally made out a N/S elongation with a faint star at one end. It was then that I began my sketch. In all, it took me the better part of an hour to locate, get a satisfactory visual “fix,” and make a sketch.

Kudos, by the way, to fellow ATMob members Mario and Craig for their contributions.



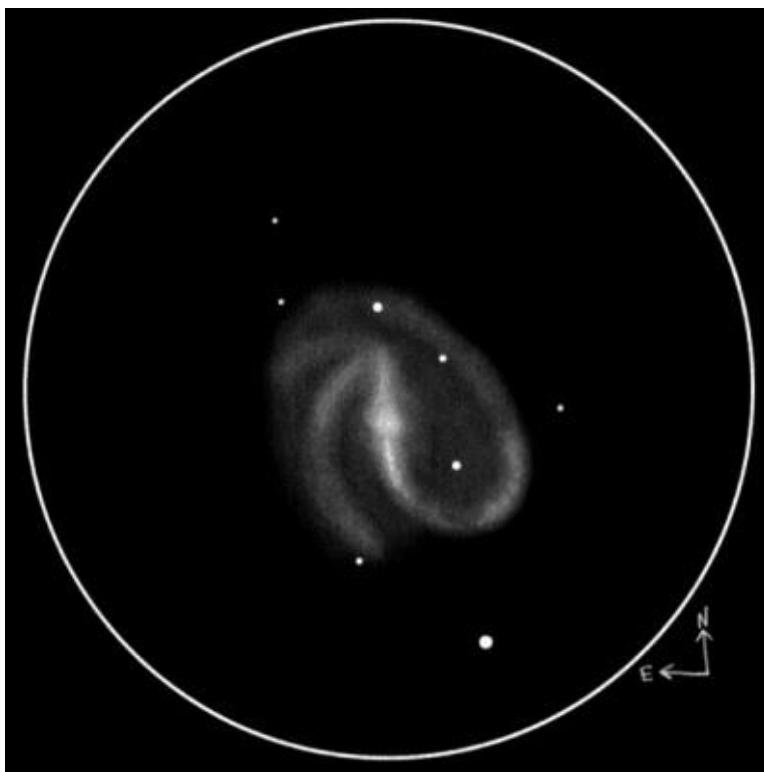
**Jaakko Saloranta:** Observer from Finland



My small 3-inch refracting telescope showed the galaxy easily as a N-S elongated blob with a brighter nucleus @ 64X. I could see no additional detail.

With an 8-inch Dobsonian, NGC-7479 appeared as a somewhat low surface brightness object with a brighter nucleus. Under dark skies and at 244X, I saw a bar running N-S and vague spiral structure emerged from the background using averted vision.

With a 22-inch Dobsonian, it displayed a beautiful spiral with a bright, non-stellar core and three separate spiral arms that were fairly easily visible. The southern spiral arm was the brightest. A handful of stars were visible within the halo as well as some brighter knots and HII regions.



**Jay And Liz Thompson: LVAS Observers from Nevada**



We observed NGC-7479 with telescopes from 10-inches to 24-inches under dark skies. With a 10-inch telescope at 63X from Cathedral Gorge State Park, we could only make out the central bar.

We also observed it using a 17inch telescope from Meadview, AZ and a location close to Lake Mead in Nevada. At 95X, it was an elongated glow. At 227X, it showed up well. There were embedded stars on the preceding side in one of the arms and to the north. There were darker areas before and after the nucleus, defining arms.

The attached image was taken with a 14-inch SCT at its f/11 Cassegrain focus. Total exposure time was five minutes. The image has been processed to approximate the view through the 17-inch telescope.

The best view was with the 24-inch f/4 Newtonian at Meadview with the galaxy near the meridian. At 116X, it was asymmetrical. At 152X, the central area of the galaxy stood out and the preceding arm was much brighter than the following arm. There was a star on the preceding arm and one at the north end of the galaxy. At 277X, it was quite elongated. The brighter arm that was preceding and south had a star after the hook that roughly preceded the galaxy central bar. There was a fainter following arm that started peeling off around where the star to the north was.



**Roger Ivester:** LVAS Observer from North Carolina



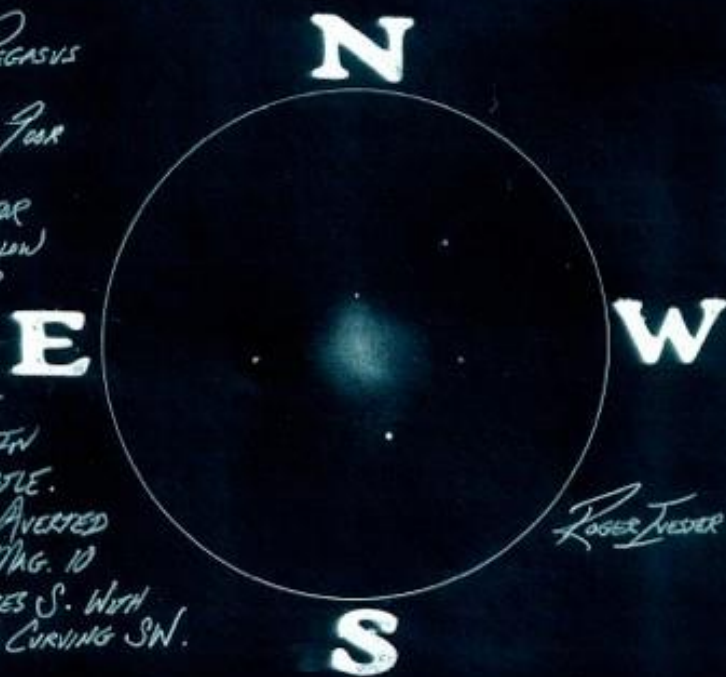
I observed NGC-7479 in October, 2016 with a 10-inch f/4.5 reflector at 114X. The seeing was fair, transparency poor and NELM ~4.9 – 5.0. I used a 20mm EP & a 2.0X Barlow to get the 114X.

The galaxy was very faint, elongated with a brightening and greater concentration in the central region, however, subtle. There was a mag. 13 star on the north tip in the halo, which required averted vision. There was also a bright mag. 10 star about 5 arc minutes south of the southern tip. With extreme difficulty and using averted vision, I could see the southern tip curving toward the SW. This feature was fleeting and I could not hold it constantly.



NGC 7479 - Galaxy - Pegasus  
DATE: OCTOBER 2016  
SEEING: FAIR TRANSMISSY: FAIR  
NELM: 4.9-5.0  
TELESCOPE: 10-INCH REFLECTOR  
SCOPE: 20mm + 2.8X BARLOW  
MAGNIFICATION: 114X - 0.5°

DIFFICULT DUE TO MOISTURE AND HUMIDITY. VERY FAINT, ELONGATED, BRIGHTENING IN CENTRAL REGION VERY SUBTLE. MAG. 13 STAR ON N TIP. AVERTED VISION REQUIRED. BRIGHT MAG. 10 STAR ABOUT 5 ARC MINUTES S. WITH AVERTED VISION SOUTH TIP IS CURVING SW.





**Fred Rayworth:** LVAS AL Coordinator and Observer from Nevada



I've only observed this galaxy three times, all since living in Nevada. The first time was on September 28, 2003 from the Lee Canyon Weather Station site on Lee Canyon road at 6,500 feet near Mt. Charleston to the northwest of Las Vegas. It was cool and breezy. The wind was a problem with my eyes watering. For this earliest observation, I used my home-built 16-inch f/6.4 at 82X. NGC-7479 was a very faint cigar shape with star at the edge. I never saw either of the arms.

The second time, which was the first stab for this Challenge, was at Cathedral Gorge State Park in east-central Nevada on September 2, 2016. At 4,800 feet, it started a bit windier but clearer and a tad cooler than the previous evening. I had to put the shirt and then, finally a coat on by 11:00. The skies were much clearer, though transparency was on and off. Maybe a few thick areas drifted by, but for the most part, it was pretty much overall clear.

Using my 16-inch commercial f/4.5 Dobsonian at 102X, I saw a faint, but distinct oval between a bright and dim star. The dim one was within the outer halo of the galaxy. I saw some structure within a very weak core. There was a slight spiral, just a hint of it, but there may be more. Transparency was iffy right then.

The final observation was at Redstone Picnic Area on the north shore of Lake Mead, Nevada at 2,100 feet on September 24, 2016. It was clear, cool and calm. No significant clouds ever showed up that we could detect, though some lingered a bit to the far east-southeast. Heavy winds were supposed to come up later in the evening but they never hit by the time we quit at 22:15. Transparency wasn't super great, but it was good enough for some very faint galaxies to cut through, barely. A very nice night.

Once again, using the 16-inch f/4.5 at 102X, I saw a very vague open spiral. One arm extended between a bright star on one side and a dim star that was touching the other edge. A slightly concentrated core with the one brighter arm extending out and a much dimmer and tighter one on the other side.

