

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

NOVEMBER 2016

NGC-206 Bright Star Cloud in M31 Andromeda Galaxy

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-206 Bright Star Cloud in M31 Andromeda Galaxy

NGC-206 is the brightest patch, or lump in the great Andromeda Galaxy, M31. It's located in one of the spiral arms of the galaxy. It contains over 300 stars bright enough to be detected with earth-based telescopes, the brighter ones through larger amateur instruments, and was actually mistaken for a star cluster by Edwin Hubble back in the day. It was identified as a separate object by William Herschel and given the designation H-036-5. The region contains several H-II regions and lies approximately 2.2 million light-years away.

Observations/Drawings/Photos

We would like to introduce new LVAS contributor William Taylor.

William Taylor: LVAS Observer from Nevada



On November 25, 2016, I photographed NGC-206, located in a spiral arm of the Andromeda Galaxy at approximately 20:30 hours, local time from my backyard in Henderson, NV. The seeing was very good as it was a brisk 55° F with no wind. However, I'm located under a Bortle 4.6-5.0 sky. The Andromeda Galaxy is located 2.5 million light-years from us and has an apparent mag. of 3.4. By comparison, NGC-206 has an apparent mag. of 12.8, although the cluster itself contains greater than 300 stars brighter than magnitude -3.6. This photograph was a 30 minute exposure consisting of 30 X 1 minute sub-frames. The telescope used had an aperture of 70mm (2.75-inches), and effective focal length of 336mm (f/4.48) with the use of a flattener/reducer. The camera used was a Starlight Express 814C, one shot cooled color camera. Looking closely, you'll notice a bright spot on the left edge of Andromeda. That's NGC-206. I didn't plan on capturing NGC-206, specifically. I actually was just trying to gather data so that I could improve my imaging by learning how to utilize more sophisticated image processing software. The capture of NGC-206, and actually being able to see it with only 70mm of aperture was quite a surprise to me.



Greg McKay: LVAS President and Observer from Nevada



On January 15, 2015, I used a 5-inch f/3.64 Schmidt-Newtonian and a Canon 5D Mark II, ISO 3200, 60-second exposure to capture NGC-206. I processed the image in Adobe Lightroom.

While this is an old image of mine, I've managed to observe the area visually twice this month. I can't honestly say if I've been able to see it while observing the entire M31 area, but I know the photons from this region have hit my eyes in November. On Friday, November 18, 2016, while observing with LVAS member Bryan Burns at the LVAS Observatory, we were both able to see M31, M32 and NGC-205.



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.

Okay, last night I took images of NGC-206 with my 32-inch.

The field of view with my SBIG STL 1001E camera is 17X17 arc minutes.

The image is 16 subframes 5 minutes each, no filter, total exposure 1 hour, 20 minutes. In the past, I’ve had my images calibrated, so that when I go 1 hour or longer, I generally get

down to mag. 22. I attached a shot of a close-up of V1 in M31 with my 32 so you can see the difference in scale. If it clears up, will get a much better close up of NGC-206.



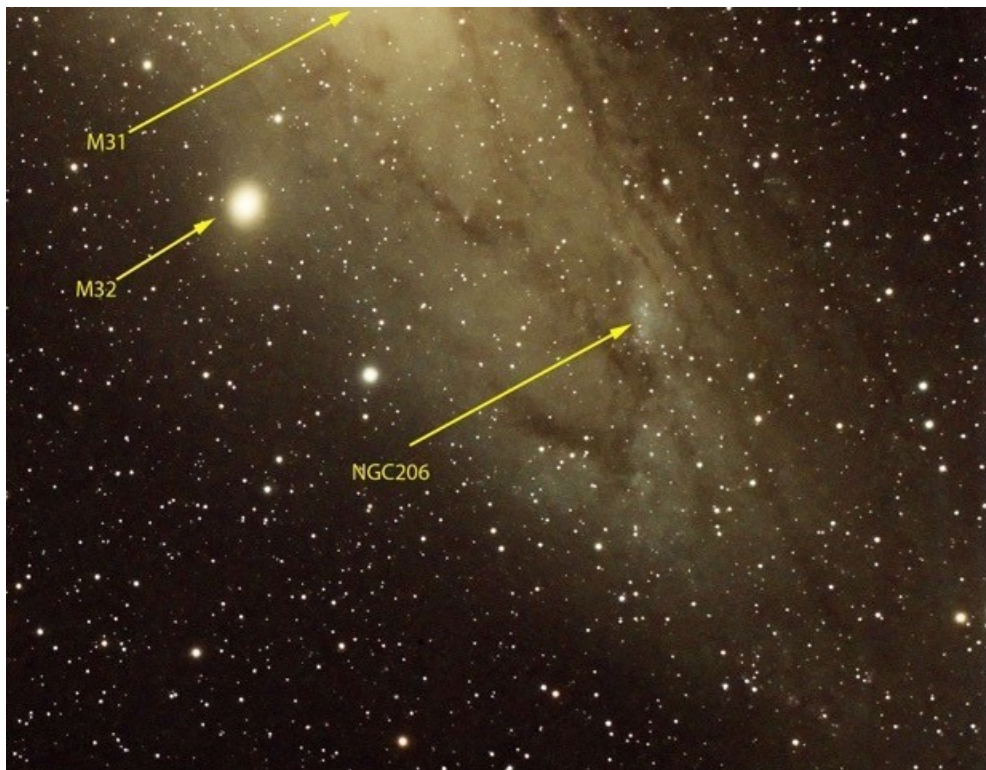
The wide field image was taken with my 6-inch refractor, in a 2-frame mosaic. You can see NGC-206 as a bright patch on the left in this photo.



Dr. James Dire: Astronomy Professor & Observer from Hawaii



The close-up image was taken with a 10-inch f/6.9 Newtonian with an SBIG ST-2000XCM CCD camera 18 X 10 min. The wide-field image was taken with a 71mm f5.9 APO with an SBIG STF-8300C CCD camera, 6 X 10 min.



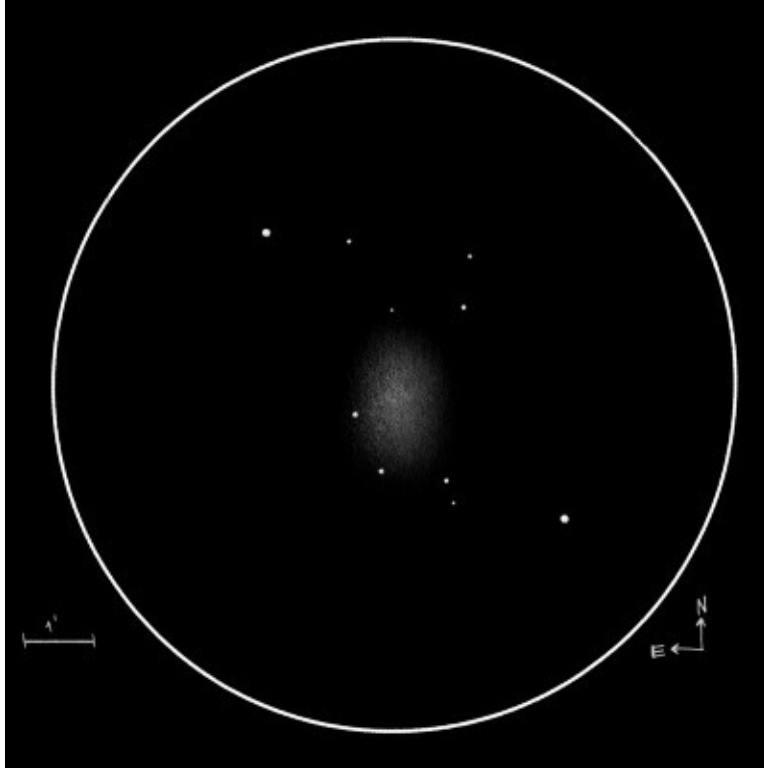


Jaakko Saloranta: Observer from Finland



Under NELM 5.8 skies, NGC-206 can remain invisible even with 8-inches of aperture. Only during the best of nights with good transparency and background brightness, the OB association can just be discerned as a slight brightening in the background sky in the SW section of M31. I also failed to observe it with a 10-inch reflector a few months back from my backyard, despite SQM-L reading of ~ 20 (NELM ~ 6).

However, under dark skies, it becomes quite a prominent feature in the SW spiral arm of Andromeda galaxy even with a small aperture telescope. Using a cheap 3-inch refractor, it was visible even with a low quality 6.3mm eyepiece (63X with FOV 47'). It appeared as a 2' X 1' elongated patch of light in the SW spiral arm of the Andromeda galaxy. Using a 10 inch telescope, NGC-206 became slightly larger, but remained as a N-S elongated glow of even brightness. During moments of good seeing and while using high magnification, I had the distinct feeling of mottling as well as an extremely faint star in the northern section. This might have finally been the star #12 from the 1987 paper "A photometric survey of the rich OB association NGC-206 in M31" by Stephen Odewahn that I've tried to see many times using smaller apertures. The star labelled as #12 is the brightest single star in the entire Andromeda galaxy! Seeing a single star from another galaxy is no easy task (if you discount the SMC and LMC) and my observation still remains dubious.



Jay And Liz Thompson: LVAS Observers from Nevada



NGC-206 is a brighter star cloud in one of the arms of the Andromeda galaxy. It's pretty far away from the nucleus of the galaxy. At 227X with the 17-inch at Cathedral Gorge State Park, with NGC-206 is at one edge of the field of view, the core of the galaxy was still outside the other edge of the EP. Using digital setting circles to get to the object was helpful. It appeared as a brighter oblong area in one of the spiral arms and we could easily see it.

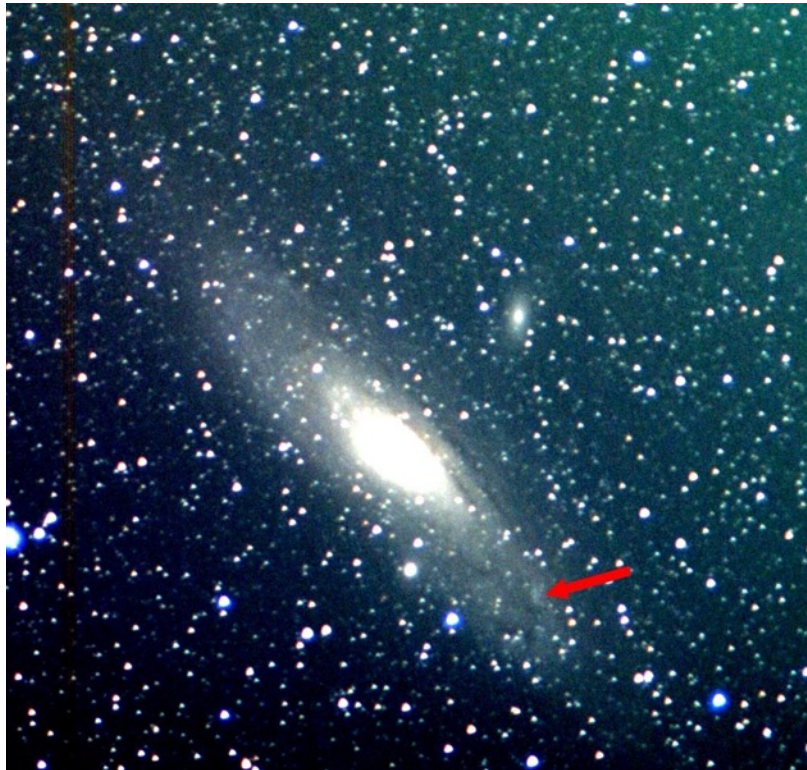
At 95X, NGC-206 was somewhat more discernible as a definitely brighter area in one of the spiral arms. The core of the galaxy was 1° away from it and both were visible in the field of

view at 95X at the same time, along with M32. M32, M110, and the core of M31 could just be squeezed in the field at 95X using an eyepiece with a 100° apparent field of view. However, NGC-206 was too far away from the center of M31 to get all four of them in at the same time.

From Meadview, AZ and from an area close to Lake Mead, we obtained similar views with the 17-inch. At 227X, NGC-206 showed up well, especially with averted vision, though it was evident with direct vision.

With the 24-inch at Meadview, it was very evident at 116X and 152X. We still discerned it easily at 277X, though it was a little less defined.

NGC-206 is visible in the attached image. The image was taken from the edge of Henderson, NV with a CCD camera coupled to a 200 mm focal length lens working at f/3.5 (57 mm clear aperture) and is a 20 minute exposure.



Roger Ivester: LVAS Observer from North Carolina



NGC-206 can be visually observed with a 10-inch reflector and I feel certain it can also be seen with an 8-incher, and probably a 6-inch.

Current observations: M31 star cloud, or NGC-206, without success on two nights last week (November 2016). The cloud was a bit too low in the east, and was involved with sky glow as I had mentioned earlier. I'm going to wait till the moon is out of the way this month, and allow it to be at its highest point, and hopefully with excellent transparency.

I was pleasantly pleased to find three sketches and numerous notes from years past of M31, which also included NGC-206. The following "rough" field sketch was made using my 10-inch reflector and a 32mm EP. The magnification was 36X with a 1.7° FOV.

November 3, 1996: Extra supplemental notes for this sketch describing NGC 206: Very faint, fuzzy patch with a NS elongation. Faint, small, with very low surface brightness. Averted vision required, very difficult, but easier when using 71X.

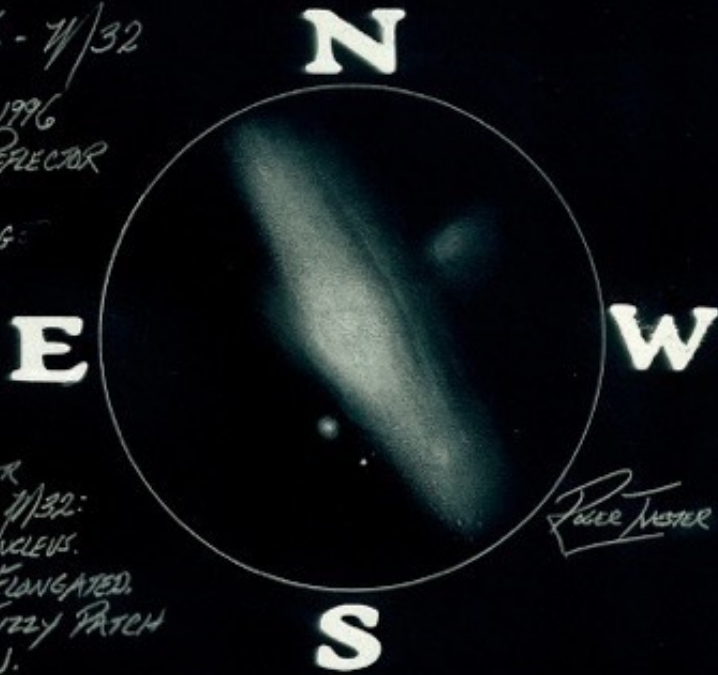
January 11, 1997: 10-inch reflector at 57X. Averted vision required to see both the NW dark lane and NGC-206, which was a very faint, nebulous spot, with an irregular shape.

A Sky-Glow filter seemed to improve the visibility of the M31 dark lane.

Note: NGC-206 is located in the SW section of the spiral arm. This is an older sketch and I was never able to get out to do a better one. Not my best work.

M/31 AND NGC 206 - M/32
AND M/110
DATE: NOVEMBER 3, 1996
TELESCOPE: 10-INCH REFLECTOR
NELM: 5.5
EYEPIECE: 32mm KONIG
MAGNIFICATION: 36X
FIELD OF VIEW: 1.7°

M/31: BRIGHT CENTER,
HIGHLY ELONGATED, VERY
CONCENTRATED MIDDLE, SPARK
AT HIGH MAGNIFICATION. M/32:
BRIGHT, ROUND, BRIGHTER NUCLEUS.
M/110: DIM, LARGE, LSB, ELONGATED.
NGC 206: VERY DIM, FUZZY PATCH
REQUIRED AVERTED VISION.



Fred Rayworth: LVAS AL Coordinator and Observer from Nevada



I've observed NGC-206 several times with mixed results. The first time was with my home-built 16-inch f/6.4 at 82X back in 2006. Then, I just saw an unevenness in the fringe of the Andromeda Galaxy. I verified it, but that was about it.

The next time I spotted it was on January 28 & 29, 2011 from Furnace Creek in Death Valley. That time, I used my commercial 16-inch f/4.5 from a much darker location, but the magnification was quite low at 48X and I was doing outreach both nights, so my observation was peripheral to why I was there. Both nights, I just noted it as a bright spot in M31, not much different from what I'd seen in 2006.

For this Challenge, I did a more detailed observation from Cathedral Gorge State Park in east-central Nevada on September 2, 2016 at 4,800 feet. The night started a bit windier, but clearer and a tad cooler than the night before. 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.

At 102X, NGC-206 was a grainy/hazy patch at edge of the most visible part of the halo of the Andromeda galaxy. Sort of square with a protrusion on one corner. Could see twinkling indicating some individual extragalactic stars, some brighter ones probably foreground stars.

In my drawing, I tried to be as accurate as possible, but for instance, the nebulosity and arms within the galaxy are just scribbles that don't show up quite like I wanted them to. That's just the "artist" in me showing through! Also, the graininess I saw within the nebulous patch is exaggerated somewhat. The stars were not near that prominent and were more like glitter than as

they show. I had to exaggerate them due to the pen I was using and my artistic skills. Still, you get the idea.

