MONTHLY OBSERVER'S CHALLENGE

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With

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MARCH 2019

Report #120

NGC 2300 Galaxy In Cepheus

"Sharing Observations and Bringing Amateur Astronomers Together"

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 2300 Galaxy In Cepheus

NGC 2300 is a lenticular galaxy located in Cepheus. It was discovered in 1871 by French astronomer Alphonse Borelly. It shines at a mag. 12.0 or thereabouts and is also known as ARP 114.

A more prominent companion, NGC 2276 is an intermediate spiral galaxy that lies right next to NGC 2300 and is larger and brighter. It shines at a mag. 11.4, or thereabouts. It also goes by another designation, ARP 25. It was discovered by Friedrich August Theodor Winnecke in 1876.

Neither galaxy was picked up by the Herschels, though they're bright enough that they should have.

It’s a crowded area, and those with larger instruments and darker, more transparent skies may pick up a few IC and UGC companions lurking about in the field of view.

Observations/Drawings/Photos

Eric Riens: Observer from Vermont

NOTE: We'd like to introduce new observer Eric Riens from Vermont. Welcome Eric!

I observed NGC 2300 and NGC 2276 using a 12-inch f/5 Dobsonian @ 115×. North is up and east is to the left in the drawing.

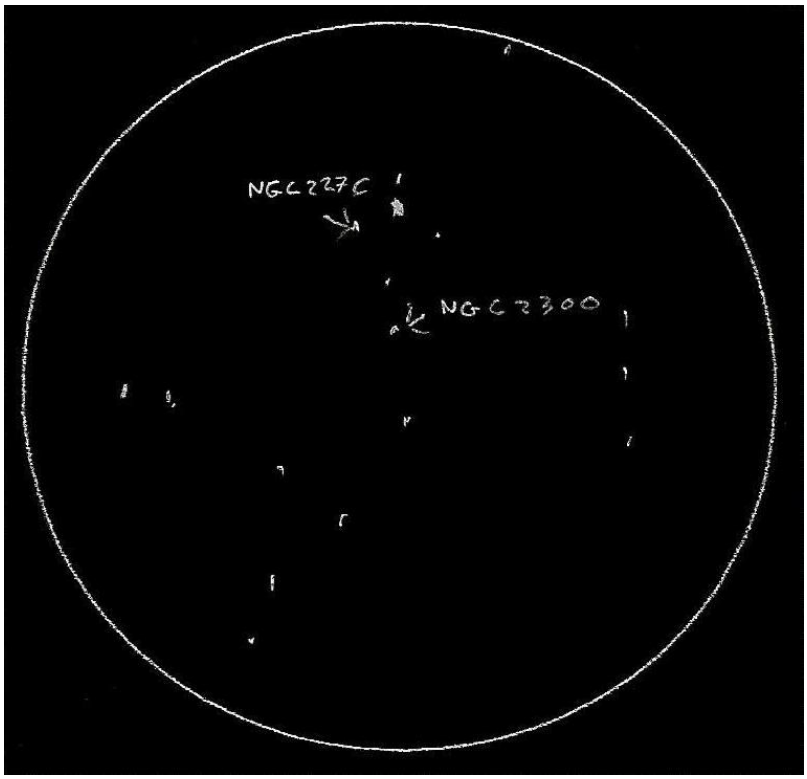
I also observed it at 230× (13mm EP with 2× Barlow). NGC 2300 was spread out in both directions in line with stars on either side and had a bright center. I couldn't see NGC 2276 at all, due to poor sky transparency.


Eric Reines
Putney, VT
03/09/19 9:00 PM EST
12" F/5 - 115x
NGC 2300

Francisco Silva: Observer from Nevada

On March 29, 2019, I observed NGC 2300 & NGC 2276 in an 8-inch reflector at 80×. The temperature was 57°F, transparency was 4 out of 5 and seeing was 2 out of 5.

NGC 2300 was discovered in 1871 by French astronomer Alphonse Borrelly. I was able to see something, but not sure what. I also saw something strange in the top of the field of view and it was the galaxy NGC 2276.



Corey Mooney: Observer from Massachusetts

On February 2, 2019, I captured NGC 2300 and NGC 2276 from Sherman Maine (~ Bortle 2), during a snowmobiling trip. I set up my remote EAA rig outside the motel room door, and I was able to comfortably operate the system inside during that cold -5°F night.

I was using a RisingCam IMX224 color camera in a 114mm (4.5-inch) f/4 Newtonian on an equatorial mount controlled by a mini PC running Sharpcap 3.2.

I live stacked 49 8-second exposures at max gain for a total of 6m32s. Both galaxies were readily apparent in the first frame, but NGC 2276's detail improved significantly as the live stack progressed. By the end, a half dozen fainter background galaxies were also visible.

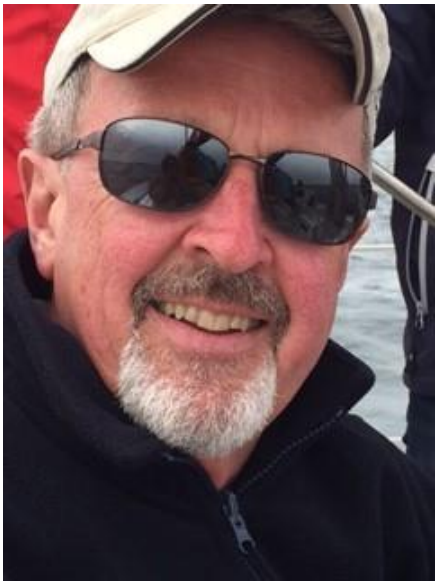
NGC 2300 showed no detail. It had a bright core, evenly feathering out to be very slightly elongated east-west.

NCG 2276 showed a lot of detail. Its structure appeared fractured and matted with bright and dark knots. It was very intriguing, and it became more so as new frames live stacked, slowly teasing out finer detail.

On March 6, 2019, I live-streamed a live stacking session to YouTube. During the session, I re-shot the challenge galaxy using my monochrome IMX290 camera from my Bortle 5 Maynard MA driveway. I ended up stacking 103 8-second exposures at max gain for a total of 13m44s. The increased light pollution put up a fight for the more sensitive monochrome camera, but by the end, its higher spatial resolution showed even more detail in NGC 2276.

I wanted to try to image it with my UHC filter, to see if NGC 2276's intense star forming regions would be accentuated, but I didn't get a chance.

John Bishop: Observer from Massachusetts



On April 6, 2019, I observed NGC 2300 from the ATMoB Clubhouse in Westford, MA. I observed with an 8.25-inch reflector at 48×, 80×, 100×, 133×, and 196×, all without filters.

Conditions were favorable. The sky was clear, and seeing was fair. During the evening, high thin clouds passed through intermittently, which affected transparency. Temperature at sunset was about 50°F, dropping to 38°F by midnight.

This was my third attempt to observe NGC 2300. I was hindered initially by difficulty in maneuvering my equatorially-mounted OTA near the polar axis. It was surprisingly difficult to focus on spotting a faint object in the eyepiece view while also wrestling with the tube!

On my second attempt, I made a low tech fix. I set up the telescope off the polar axis. I lost some tracking accuracy, but could sweep the target area easily. I still could not see the object, however, because I was using insufficient magnification. My 50mm 2 inch eyepiece, at 48×, which usually gets me where I want to go, was not up to this task. My finder showed that I was on the field, but I could not see the object. Clouds rolled in before I could work with increased magnification.

For the third attempt, I confirmed the alignment on the finder - all okay. 48× still showed no NGC 2300 (that I could see). Sweeping at 80×, finally, I saw momentarily, a small, faint circular patch, which came in and out of visibility. This proved to be NGC 2300. Locking in on this dim spot, I increased magnification to 100×, 133× and 196×.

At 100×, the object became more steadily visible. At 133× and 196×, the galaxy was larger and brighter (but only in relative terms). The galaxy had a brighter center with a diffuse halo. As power increased, the galaxy was less circular. The halo fluctuated in size and shape,

becoming somewhat elongated. I assume this fluctuation was a product of the seeing, and my varying visual sensitivity. Overall, the object was diffuse. I could see no structure or detail other than the brighter center.

After viewing at higher power, I went back to the 2-inch 50mm eyepiece at 48×. I could see NGC 2300, only intermittently, as a very small, faint patch.

I looked for NGC 2276, but cannot report that I saw it. I did see a brightening in the area between NGC 2300 and the nearby bright field star, where I knew it should be. I watched for some time, but 2276 would not pop out for me.

This was a faint object for my scope. Averted vision was helpful.

Ed Fraini: Observer from Texas

I completed this observation of NGC 2300 and NGC 2276 on March 27, 2019 between 0400 and 0500 UTC at the Houston Astronomical Society Dark Site as part of a visual observation training session held for the club's Women's SIG. The seeing was estimated to be a four on the Pickering Scale where we noted consistent airy discs. Seeing was average and we logged it at 4.5 based on naked eye observation of all the stars in the handle of Ursa Minor. The temperature was in the 50's with low humidity. Our first view was at 87.5× in a 14-inch SCT. We could see NGC 2300 as a prominent disc with a strong center and an even, flat field around it. With an increase in power to 205×, the core became very bright with an apparent but slight east-west bulge. At low power, NGC 2276 was a broad, translucent patch, which to some younger eyes in the group seemed to be made up of three separate fuzzy objects. The mag. 8 star GSC 4622:897 definitely affected the detection of NGC 2276, but the interference was not much of a challenge to the observation. At the higher power of 205×, NGC 2276 was much dimmer, and appeared hollowed out, marginally brighter at the edges.

We used an unevenly spaced line of three mag. 10-11 stars on the western edge of the field of view as a marker to try to tweak out some of the other more dim galaxies noted by MegaStar. With averted vision, we could see some of the dimmer galaxies sporadically, but none met our three pops in the one-minute rule, so no positive observations were logged.

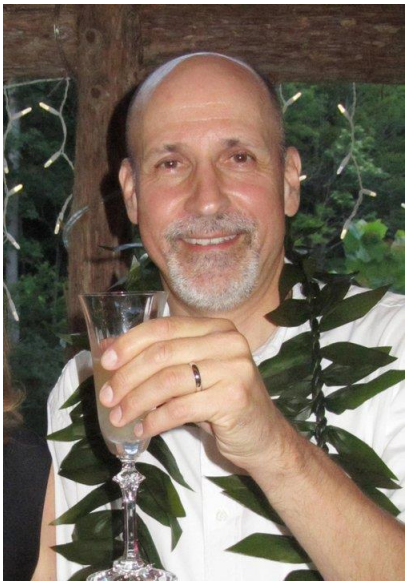
The group was very pleased with their collective observations, and used the session to demonstrate to the trainers they were ready to man the telescope and make good visual observations on their own.

Derek Lowe: Observer from Massachusetts

I used an 18-inch Dobsonian to observe NGC 2300 from Boxborough, MA. At 439× (5mm EP) it leaped out immediately. However, I can't say that there was much detail. There was definitely not a stellar core – it was bright, but did not come to a point, just a gradual concentration. Overall the galaxy had a bit of a non-circular shape, a lightly flattened oval. If you had told me that it was a distant globular, though, I probably would've believed you, because of the gradual brightening of the core.

NGC 2276 was, to me, about the size of 2300's nucleus. I was able to put them both in the same FOV in the 5mm EP (439×). It certainly helped to get the bright nearby star (mag. 8 HD 51141) out of the way. This one had more of a stellar core than 2300, although overall it was much fainter. It came across as a non-stellar bright point with just a bit of fuzz around it, which I could see with averted vision and/or by shaking the tube. Certainly no detail apparent, though.

James Dire: Observer from Hawaii



NGC 2300 and NGC 2276 are among the closest NGC objects to the north celestial pole. They reside at declinations 85°43.6′ and 85°43.3′, respectively. Alphonse Borrelly, a French astronomer, discovered NGC 2300 in 1871 using a 7.2-inch refractor at the Marseille Observatory. NGC 2276 was discovered by the German astronomer Friedrich August Theodor Winnecke in 1876 using a 6.4-inch refractor when he was a professor of astronomy in Strasbourg.

NGC 2300 is a mag. 11 lenticular galaxy measuring about 3.0 × 2.3 arcminutes in size. The galaxy has a very small redshift, implying it is not too far from our galaxy. I couldn't find a distance for NGC 2300 in the literature. NGC 2276 is a nearly face-on spiral galaxy shining at mag. 11.8. The galaxy measures 2.3 × 1.7 arcminutes and is 120 million light-years away.

I viewed and photographed the galaxies this month from Kauai. Unfortunately, the galaxies never rise more than 22° above the horizon from Kauai. So I was capturing them through a very large air mass with poor seeing.

My image of the galaxies was taken with a 10-inch f/6.9 Newtonian using an SBIG ST-2000XCM CCD camera. The exposure was 110 minutes. The exposure displays the inner regions of NGC 2300 and barely brings out the spiral nature of NGC 2276. However, the image does a good job of recreating the view of the galaxies I saw through a 20-inch f/4.5 Dobsonian reflector.

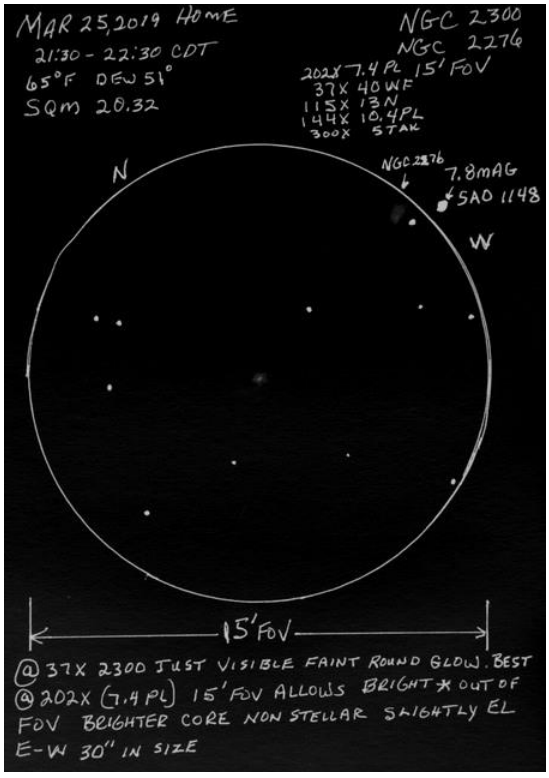
I centered my image on NGC 2300. North is up and east is to the left. About 1/3 of the way from bottom to top on the left edge of the image there is a mag. 17 galaxy, PGC 2790046. In hindsight, I should have place NGC 2300 near the lower left corner of the image, which would have brought a trio of mag. 15 galaxies into the field of view from the west. I didn't look for the

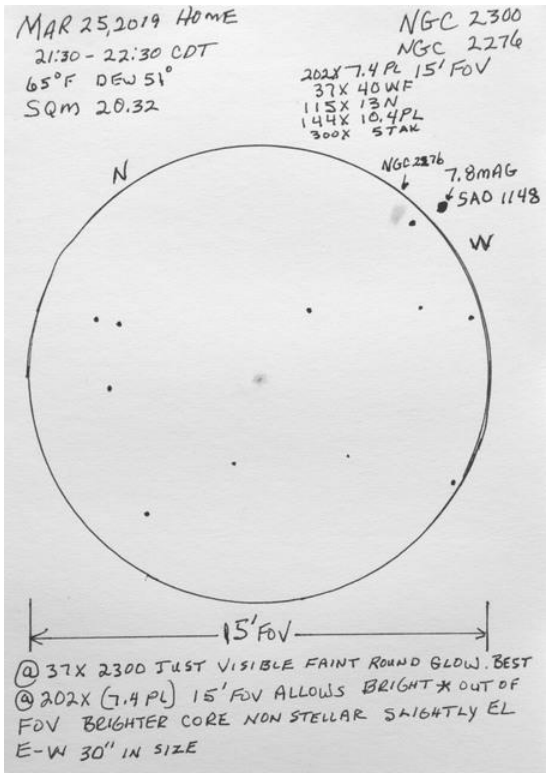
mag. 15 galaxies in the 20-inch Dob, because I didn't know about their proximity to NGC 2276 until writing this article.

I also viewed NGC 2276 and NGC 2300 from the same location using a 6-inch refractor. In the refractor, NGC 2300 looked like a faint elliptical galaxy with a bright (relatively speaking) core. I could barely make out NGC 2276, but with averted vision I could tell it was an extended faint galaxy. In the 20-inch Dob, NGC 2276 was obviously a face on spiral galaxy. I look forward to viewing these from 42°N this spring, where I hope to see more detail since I won't be looking through as much atmosphere.

Kenneth Drake: Observer from Texas

I had a rare clear night on March 25, 2019 with moonrise just before 1AM on the 26th. SQM 20.32. I decided that this might be my only chance to view the March Observers Challenge, so I rolled out the 13-incher. The field was easy to locate being ~4° south of Polaris, and only a little over a degree south of a mag. 5 star (SAO 1168). The galaxy's location lies just 8′ east of the mag. 8 star SAO 1148. At low power, NGC 2300 was just barely visible as a faint round fuzzy about 1/2′ in size. Using over 200× allowed the mag. 8 mag star to be kept out of the FOV, and showed 2300 to have a slightly brighter core that was non-stellar, but did not increase the overall size much. The 15′ field only showed 8 field stars. Using 300×, I was able to detect, with difficulty, three more very faint stellarings, with an averted vision sweep of the field. My stellar limit was approaching mag. 14. I could barely detect NGC 2276 6′ NW as a very soft oval glow, elongated N-S 30" × 60" if the mag. 8 star was out of the FOV. If not for MegaStar, I would've never noticed this very faint patch of a galaxy. Both of these are Arp galaxies, but I don't understand why 2300 is?? Arp's notes say for NGC 2300 (Arp114): "Spiral somewhat pec. May be perturbed. It looks pretty featureless to me."




MAR 25,2019 HOME
21:30 - 22:30 CDT
65°F DEW 51°
SQM 20.32
NGC 2300
NGC 2276
202X 7.4 PL 15' FOV
37X 40 WF
115X 13N
144X 10.4PL
300X STAR
N
NGC 2276
7.8MAG
SAO 1148
W
15' FOV
@ 37X 2300 JUST VISIBLE FAINT ROUND GLOW. BEST
@ 202X (7.4 PL) 15' FOV ALLOWS BRIGHT * OUT OF
FOV BRIGHTER CORE NON STELLAR SLIGHTLY EL
E-W 30" IN SIZE

Keith Caceres: Observer from Nevada

I attempted to observe NGC 2300 in Cepheus on the second night (March 30, 2019) of our rescheduled Death Valley Star Party. I snapped a photo and saw a beautiful little, slightly irregular looking spiral galaxy at the top of the frame (and a whole bunch of tiny faint-fuzzy galaxies nearby). Upon doing further research when I got home, and plate solving the photo, I can now see what I mistook for my target was actually NGC 2276 (I also see now that NGC 2300 is an elliptical galaxy, not a spiral). Unfortunately, NGC 2300 is just out of frame in the top center edge of my photo. This is due to my alignment having some pointing problems in certain parts of the sky that evening.

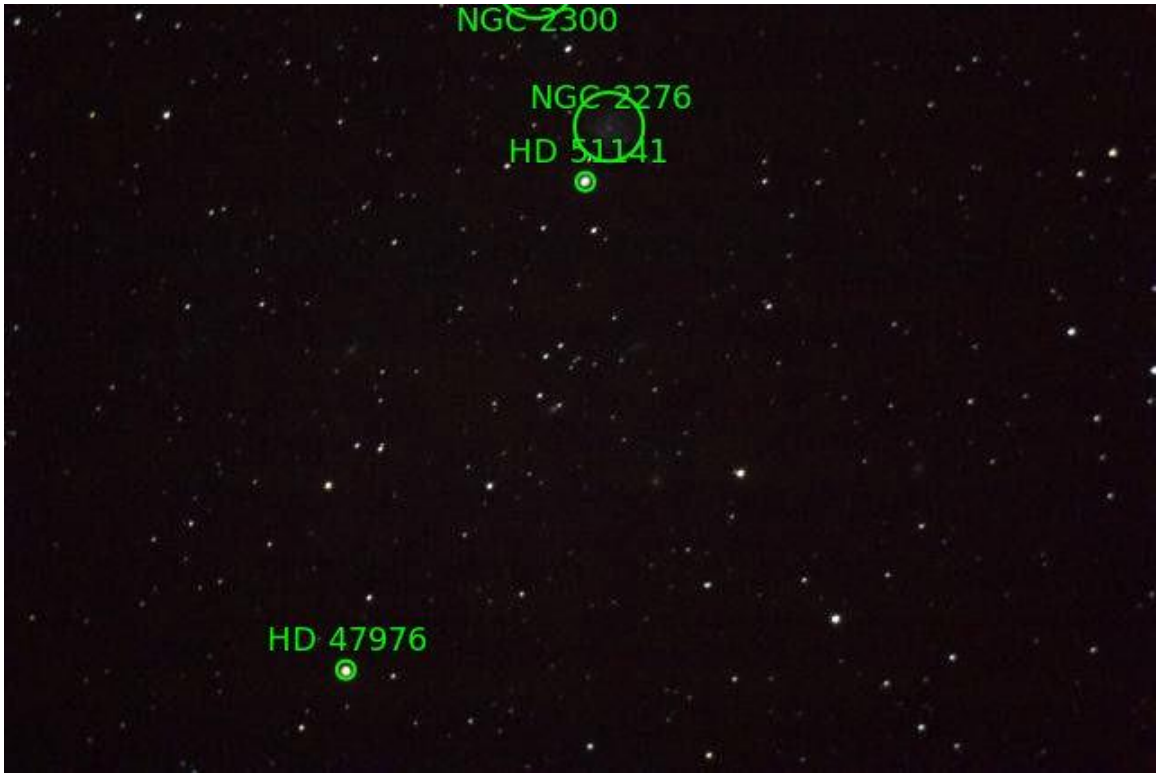
NGC 2276 however does appear to be the more interesting galaxy of the pair. Both galaxies are 110 to 120 million light-years away. They appear to be gravitationally bound, and interacting, with the irregularity of 2276's spiral arms and their starburst activity likely caused by 2300's gravity, similar to M81's effect on M82 (an alternate theory is that a collision with a dwarf galaxy is the cause). NGC 2276 also has an intermediate mass black hole of 50,000 solar masses in one of its spiral arms, and has been home to six supernovae in the last 60 years.

From my photo, you can clearly see that NGC 2276's bright core is offset from the center of its long spindly arms, which trail behind it. Several dense regions can be seen in the arms that seem to correlate with intense starburst activity and H-alpha regions when I view professional photos of it. The bright star off the 7 o'clock position of the galaxy is HD 51141 from our own galaxy. In the lower region of the photo are numerous faint distant UGC and PGC galaxies with indiscernible features (I count at least five of them in the cropped photo).

The galaxy is about 2.8 × 2.7 arcminutes in size with an apparent mag. of 11.8. The attached photo is a crop taken with an 8-inch SCT, a 0.8× focal reducer, and Canon 70D, giving a 1600mm focal length at f/8. Plate solving indicates a pixel scale of 0.478 arc-seconds/pixel

and that the upward direction is 271° E of N. The original uncropped photo had a 43.6 × 29.1 arc-minute field of view.

An uncropped photo with plate solving annotations from astrometry.net.


NGC 2300
NGC 2276
HD 51141
HD 47976

Doug Paul: Observer from Massachusetts

NGC 2300 was pretty easy to locate by star hopping from Polaris. It's only 5° away and there are two intermediate stars that were bright enough to see on the camera screen using live view.

I started taking subs just after the (91%) moon had risen and continued for an hour and a quarter. (I usually take ~80 subs in about an hour, but took 20 more due to the moonlight.) However, due to the target being so close to the pole, all subs were okay. I usually had to discard up to half due to tracking errors when using that drive (I've since upgraded).

Image: NGC 2300 is left of center and NGC 2276 is right of center. The object to its right is a star. IC 455 is at the bottom left and 2 unidentified galaxies are on the right edge. **EDITOR'S NOTE:** The narrow slash in above center at the right edge is UGC 3661 and smudge at the lower right edge is UGC 3670.

Technical: Canon 80D, 400mm f/2.8 lens (142mm aperture), ISO 800, 100 subs × 30 sec = 50 minutes. North is up.

Sue French: Observer from New York

This sketch was made with my 254/1494mm (10-inch f/5.8) Newtonian at 166× on March 25, 2019. North is up, and west is to the right.

NGC 2300 shows a faint halo surrounding a bright, relatively large interior with a tiny nucleus. The galaxy is very slightly oval, tipped a bit north of east, and spans about 1.4′.

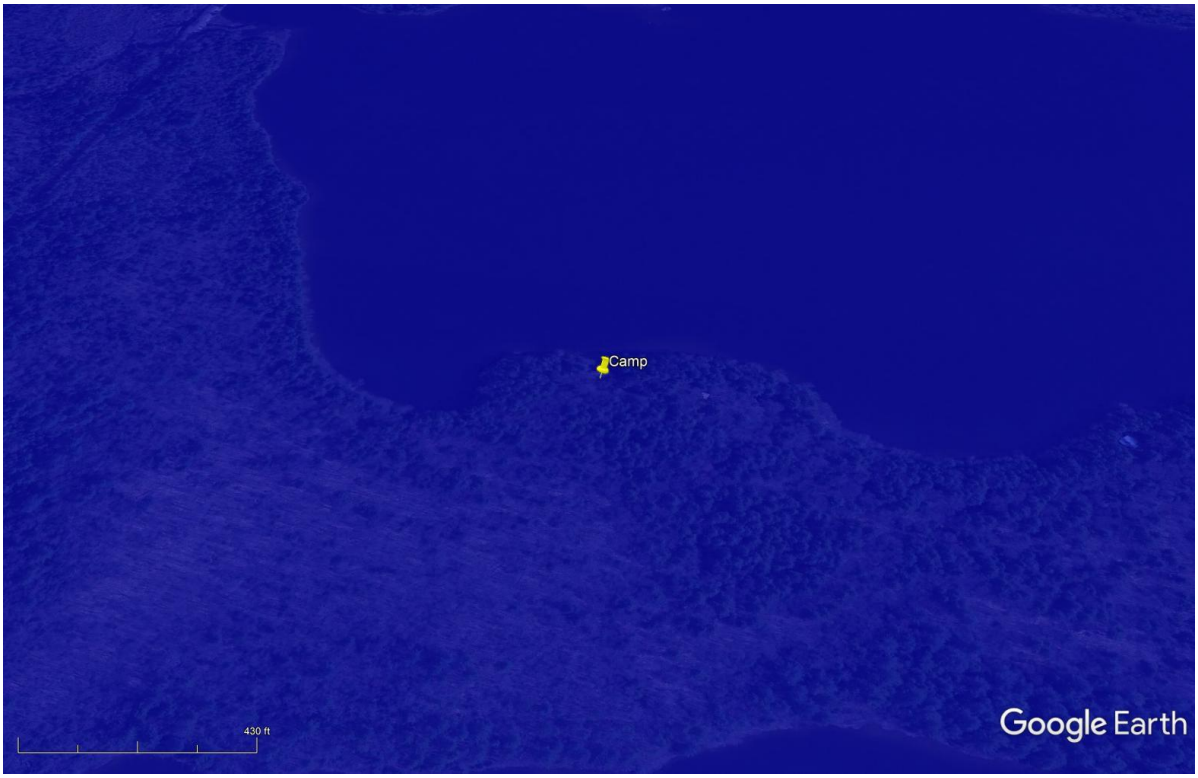
NGC 2276 appears larger at roughly 1.9′ and has low surface brightness that's fairly uniform. The western side is a tad brighter than the rest, and there's a small, very elusive nucleus that's offset southwest of center.

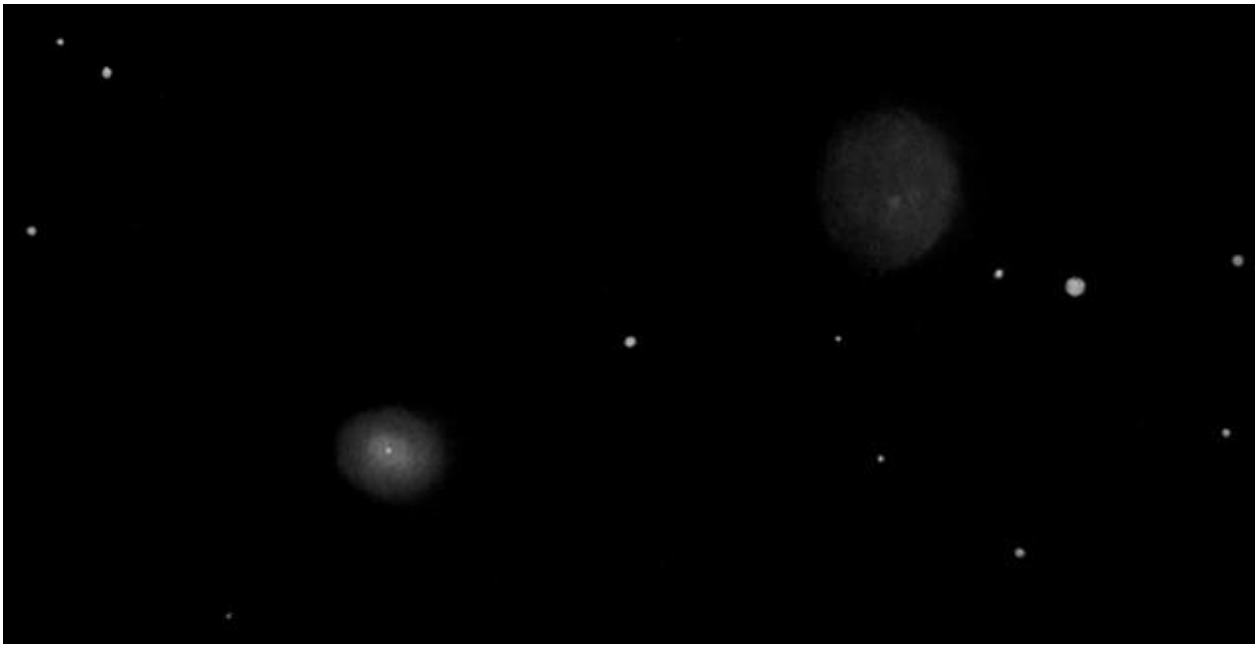
In 2005, I observed this pair with my 105/610mm (4.1-inch f/5.8) refractor from our family camp in the northern Adirondacks. There's no power or access by road. Below is the site with a light-pollution overlay.

At 47×, NGC 2300 is easy, brighter toward the center, and roundish.

NGC 2276 shows up at 87×. It's very faint, roundish, roughly 2′ across, and sits east-northeast of a mag. 8 star. NGC 2300 is smaller at about 1.6′. It's much brighter than its companion and hosts a large core with a stellar nucleus. It's very slightly oval east-west.

A mag. 11 star sits between the two galaxies.


Camp
430 ft
Google Earth



Joseph Rothchild: Observer from Massachusetts

I had a clear night and dark skies on Cape Cod on February 1, 2019. It was 18°F, and windy, which limited observing at higher power. I was able to observe both NGC 1514 and NGC 2300, which were both new objects for me.

I observed with my 10-inch reflector. NGC 2300 was also easy to find star hopping from Polaris with my finder. I initially could not see it at 45×, but it was readily visible at 88× as a small, compact glow between 2 adjacent stars. I couldn't definitively see the nearby galaxy, NGC 2276, but saw a grainy appearance in the expected location with averted vision.

Chris Elledge: Observer from Massachusetts

On March 23, 2019, @ 8:30pm EDT, I used a 10-inch f/5 reflector to observe NGC 2300 from the ATMoB Clubhouse. Sky conditions were: Bortle Scale 6. NELM was 5.0. Transparency was good. Seeing was poor.

I located NGC 2300 by star-hopping from Polaris heading east to OV Cephei and HD 42855. In the 1.9˚ FOV, placing OV Cephei near the N edge of the eyepiece, and HD 42855 near the NW edge, the mag. 8 star HD 51141 fell near the SSW edge. NGC 2300 was about 8 arcminutes ESE of this star, but I was unable to see it at 36×. The mag. 11 star TYC 4622-0256-1 adjacent to the galaxy's WNW edge was visible, though.

At 51× (25mm, 1.4˚ FOV), NGC 2300 was visible adjacent to the mag. 11 star. It appeared similar to a fuzzy faint star, slightly dimmer than the mag. 11 star next to it. There was no hint of NGC 2276 between the mag. 11 star and the mag. 8 star.

At 116× (11mm, 0.71˚ FOV), with the view centered on the mag. 8. HD 51141, 5 mag. 11 and 12 stars were visible surrounding it. NGC 2300 lay just beyond the ESE star (TYC 4622-0256-1), further to the ESE. It easily appeared as a round glow with averted vision. It was just visible as a smudge with direct vision. Still no sign of NGC 2276. Increasing the power to 270× (4.7mm, 0.3˚ FOV) made NGC 2300 appear as a small round ball. It didn't look as diffuse as I usually expect from a galaxy, but it was clearly larger than a star. NGC 2276 continued to evade me.

With ATMoB's 25-inch f/3.5 at 111×, NGC 2300 was easily visible as a round ball, even with direct vision. NGC 2276 was faintly visible as little more than a hint of fuzziness nearby a mag. 12 star to the east of HD 51141.

Richard Nugent: Observer from Massachusetts

With galaxies, it's all about surface brightness versus sky brightness. The elliptical galaxy, NGC 2300 is relatively bright, while the disturbed spiral, NGC 2276 is face-on and remarkably faint. The darker the background, the better. The quality of your sky is what it's about, but you can darken the background by choosing eyepieces that give higher magnification. I have read that the optimal exit pupil for deep sky objects is around 2mm. For any telescope, that's an eyepiece that gives a magnification of about 12× per inch of aperture [Or…eyepiece FL = 2mm/telescope focal ratio]. Indeed, my most successful observations were with telescope/eyepiece combinations that gave an exit pupil of about 2mm. However, don't be afraid to go higher.

From my Framingham, MA location, NELM is usually mag. 4.8, but reaches 5.0 on exceptional nights. When I observe at the Westford, MA observing site of the Amateur Telescope Makers of Boston, the NELM is closer to mag. 5.2 — 5.3.

These two galaxies are reasonably easy to find. Starting at Polaris and moving just less than 3° toward the nose of the Great Bear, you'll find the orange-red mag. 5 star OV Cephei. Continue another 40′ to the wide double star made by HD 56322 and HD 56049. These stars are 2.2′ apart and are mag. 7.9 and 8.7 respectively. I can see them in my 80mm finder scope. Continuing to move another 40′ away from the pole, these stars point toward the mag. 8 star, HD 51141. NGC 2300 lies 8′ away @ 102° while NGC 2276 is only 2′ from the star @ 69°.

From Framingham, I used my 10-inch and 20-inch scopes to observe these galaxies on several occasions. NGC 2300 was easy to see in both telescopes, but there was absolutely no hint of NGC 2276. I had better luck when observing from the Westford site. There, on several different nights, I observed this pair with my 10-incher, Steve Clougherty's 18-incher, and Slav Mich's 22inch scope. Under the better sky conditions, NGC 2300 was even easier to see. The

galaxy had a bright core and, with the larger scopes, I could see its fainter halo. In my 10-inch scope, I could see 2276 with averted vision as a faint, ill-defined patch of light…but, it was there! However, had I not know its location, I would've easily driven right past it without ever seeing it. Steve's scope showed it a bit brighter, but I still used averted vision to enhance the view. With Slav's scope (lots of aperture with fresh coatings), I could see the galaxy using direct vision!

Ah, galaxies! To improve your chances of viewing (the typically faint) NGC galaxies, try to get to the darkest skies available to you. Make sure your eyes are adequately dark-adapted. Play with a variety of magnifications, and don't be afraid to go with high power to darken the background. Make sure you're looking at the correct location. Jiggle the scope a little…sometimes very faint objects can be seen when they're moving slightly. Breathe. Be patient. Have fun!

Mario Motta: Observer from Massachusetts

I fought some clouds late, and had to drop some subs, but got about 65 minutes total for this image.

SBIG STL 1001B camera, five minute subs to keep the bright mag. 8.5 star, only a couple arc minutes away from blooming too much, with the 32-inch f/6 telescope, and then processed in PixInsight.

NGC 2300 is mostly featureless as an elliptical, but I found NGC 2276 very interesting. It has sharp arms that are chock full of H alpha knots, it would appear.

I wonder if NGC 2276 is a starburst galaxy? Possibly, by a close approach to 2300? Such an interesting galaxy and image.

Supplemental Post:

I did a search and was right, concerning NGC 2276! It's a starburst galaxy, see below: A short abstract from Chandra observations.

Abstract:

The star-busting, nearby (D = 32.9 Mpc) spiral (Sc) galaxy NGC 2276 belongs to the sparse group dominated by the elliptical galaxy NGC 2300. NGC 2276 is a remarkable galaxy, as it displays a disturbed morphology at many wavelengths. This is possibly due to gravitational interaction with the central elliptical galaxy of the group. Previous ROSAT and XMM–Newton observations resulted in the detection of extended hot gas emission and of a single very bright (∼1041 erg s−1) ultra-luminous X-ray source (ULX) candidate. Here, we report on a study of the X-ray sources of NGC 2276 based on Chandra data taken in 2004. Chandra was able to resolve 16 sources, 8 of which are ULXs, and to reveal that the previous ULX candidate is actually composed of a few distinct objects. We construct the luminosity function of NGC 2276, which can be interpreted as dominated by high-mass X-ray binaries, and estimate the star formation rate (SFR) to be ∼5–15 M⊙ yr−1, consistent with the values derived from optical and infrared observations. By means of numerical simulations, we show that both ram pressure and viscous transfer effects are necessary to produce the distorted morphology and the high SFR observed in NGC 2276, while tidal interaction have a marginal effect.

Jay and Liz Thompson: Observers from Nevada

We had seen the pair of galaxies NGC 2276 and NGC 2300 highlighted in the November 2012 issue of *Sky and Telescope* magazine and decided to view them from the dark skies of Cathedral Gorge State Park, NV, with our 17-inch reflector. They were visible at 95×. At 227×, with a very wide field 8.8mm eyepiece, they were still in the same field of view. NGC 2300 was the brighter of the pair.

Roger Ivester: Observer from North Carolina

I observed NGC 2300 and NGC 2276 – Galaxies in Cepheus – on Wednesday, March 6, 2019, using a 10-inch f/4.5 reflector @ 183×. The eyepiece used was a 12.5mm with a 2× Barlow making a FOV of 0.33º, or 20 arc-minutes. Sky conditions were: NELM ~5.0-5.2.

NGC 2300 had a high surface brightness, a brighter, very concentrated nucleus, mostly round, but with a subtle E-W elongation.

NGC 2276 was extremely difficult, mostly round, very low surface brightness and appeared only as a brightening in the sky. Very even, without concentration. The glare from a mag. 8.5 star, located only two arc minutes WSW of the galaxy hindered the view. I had to use averted vision to see it. The eyepiece view of this faint galaxy was far more elusive than my pencil sketch suggests.

NGC 2300 AND NGC 2276
GALAXIES - CEPHEUS
DATE: MARCH 6th 2019
TELESCOPE: 10-INCH DOBSONIAN REFLECTOR
SKETCH MAGNIFICATION: 183x
EYEPIECE: 12.5mm + 2x BARLOW
FOV: 0.33° 20 ARCMINUTES
NGC 2300: BRIGHT, HSB, BRIGHTER VERY CONCENTRATED CORE, MOSTLY ROUND, BUT WITH A VERY SUBTLE E-W ELONGATION.
NGC 2276: FAINT, DIFFICULT, MOSTLY ROUND, VERY LOW SURFACE BRIGHTNESS, APPEARING ONLY AS A BRIGHTENING IN THE SKY. GLARE FROM 8.5 MAG STAR MAKES GALAXY MORE DIFFICULT.
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I originally observed this pair in 2010 and tentatively identified both as face-on galaxies, though only the companion to NGC 2300, NGC 2276, is actually a face-on galaxy. I was so glad I was able to get a fresh observation on March 30, 2019, because it turned out this area was full of Easter eggs. All in all, there were eight galaxies within the field of view of my eyepiece. I was able to view five of them but the three others, while I could tell something was there, were not quite verifiable, to be sure. More on that later.

NGC 2300, the lenticular, fooled me last time because of the shape. Now that I had more time to study it, I could see why it fooled me. Anyway, to start at the beginning…

I viewed the objects from our "undisclosed location" at Lake Mead on March 30, 2019, using a 16-inch f/4.5 Dobsonian at 102×. At 2,100 feet, it was cool, with a slight breeze that died down before dark. There were high, thin clouds that seemed to disappear before dark, and it looked like it would be a gorgeous night. At first it appeared to be. However, the transparency wasn't all that great. In fact, it was in holes, where in one spot, I was able to go very deep, while in other places, I could barely see bright stuff. It was very frustrating. Just as the sun went down, I put on a long-john shirt, but never did end up with a coat, but I really needed it by the time we quit at 11 PM. Not only had the temperature dropped into the low fifties, by then, the winds picked up and started knocking stuff over. However, that was when we must've got a nice hole in the sky, because things started to open up, and I was finding stuff again. Go figure. Wasn't the worst night, but could've been better. Oh, and the seeing was terrible all night. Everything scintillated bad.

NGC 2300 was a small fuzzball with a stellar core. It was slightly oval with an extended halo and the core was fairly fat. A nearby star provided a dividing line between it and the bright

neighbor galaxy NGC 2276, which was a bit brighter and more interesting. I don't have much more to add to it, as for a fairly bright galaxy, as galaxies go, it was rather dull to look at.

NGC 2276 Wow! It was round and blotchy with a tight, uneven spiral shape. Very soft and no core. However, I could just see hints of spiral arms or at least something going on there, and with averted vision, I'd catch an occasional glimpse of mottled details and the impression of a spiral shape. It was next to a bright star pair, one being much brighter that the other and the brighter of the two kind of interfered with viewing the galaxy, but not all that bad. This galaxy was easy to see despite being the more subtle of the two.

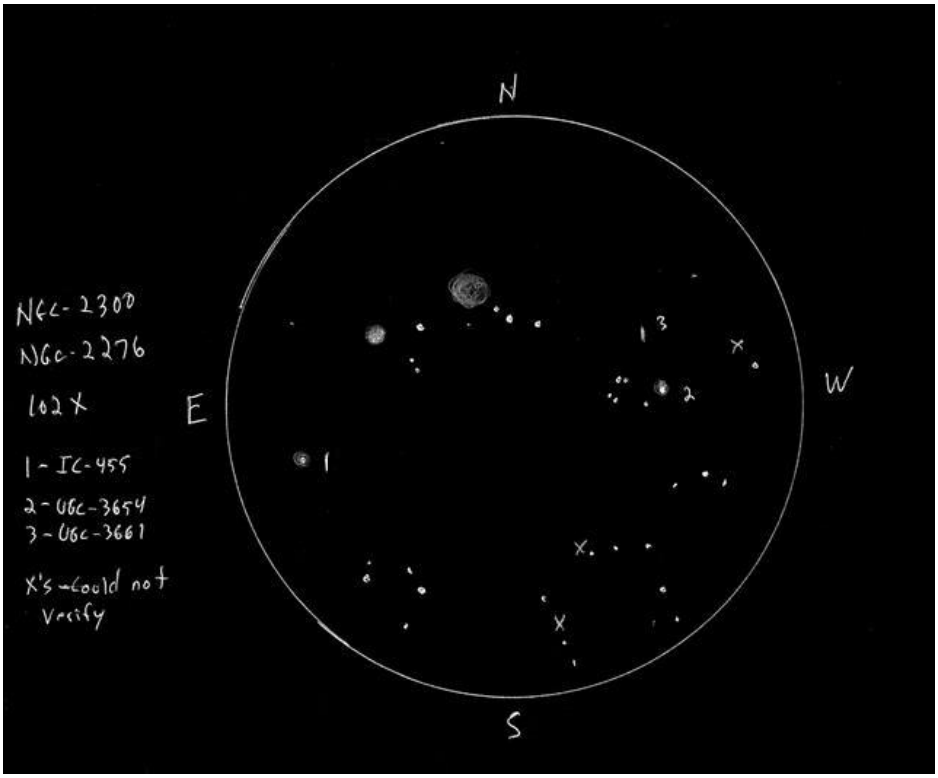
IC 455 At mag. 14.3, it was still quite distinct as a fuzz around or near a star, or maybe part of a stellar core. The oval and the fuzz extended quite a ways with averted vision. I had no trouble spotting it right away. Couldn't tell for sure if there was a core because of the star, but a couple of times, I could've sworn I saw double in there. Very faint, but distinct.

UGC 3654 At mag. 15.0, it was an extremely faint smudge around or next to a dim, but brighter star. As with IC 455, the star may be obscuring the core, if there was one, or it was so close to the star that it was all blended in. This one was so faint, the star might've been drowning out any detail except for just the fuzz of knowing it was there at all.

UGC 3661 At mag. 15.3, I was surprised to see this extremely faint streak above two dim stars. At the threshold of detectability, but it was still distinct enough to see relatively easily. It stood out against the black or almost black background.

I tried for UGC 3669, which should've been as bright as IC 455, but the surface brightness was waaaaay dimmer than the mag. 14.3 listed. It was just a hint. UGC 3670 was at mag. 15.2 and while I saw more of a hint of something there than with UGC 3669, I couldn't quite pull it out as a positive. The same for CGCG 362-35 at mag. 15.4. Something was there, but not bright enough to make it a positive.

The ones I couldn't give a positive for, I marked with an X on the drawing.


N
E
W
S
NGC-2300
NGC-2276
102 X
1 - IC-455
2 - UGC-3654
3 - UGC-3661
X's - Could not Verify