MONTHLY OBSERVER'S CHALLENGE

Compiled by:

Roger Ivester, North Carolina

&

Fred Rayworth, Nevada

With

Sue French, New York, Special Advisor

Thanks to Robert Lambert, Alabama, for his dedicated work as LVAS Webmaster 2009 – 2019
RIP – You will be missed!

JUNE 2019

Report #125

NGC 5377 Galaxy in Canes Venatici

"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 who'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 astronomers 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 5377 Galaxy in Canes Venatici

NGC 5377 is a barred spiral galaxy that lies in Canes Venatici, and was discovered on May 12, 1787 by William Herschel. It lies about 88 million light-years away and shines at approximately mag. 11.3 with a surface brightness of 13.6, depending on the source.

It's pretty much by itself in the sky, and has no nearby neighbors or "Easter eggs" for those with larger scopes, though there may be some unknown or unnamed galaxies that could show up on long exposures. Otherwise, this object seems to stand out by itself, a lonely sentinel in what's an otherwise rather busy galaxy area of the sky.

However, there's a galaxy cluster, AGC 1830 just to the northeast in the field of view, but it lists as a mag. 17.5 for the brightest members, and to the far southwest at the extreme edge

of a wide-field EP is CGCG 246-25, but at mag. 15.7. Both objects are out of the range of everything but the largest amateur telescopes.

Observations/Drawings/Photos

Maureen Galevi: Observer from Massachusetts

NOTE: We'd like to introduce new participant Maureen Galevi from Townsend, MA. Welcome Maureen!

It was a nice night in the 50's, on June 9, 2019. I used a 12-inch Dobsonian @ 47× and 150× to observe NGC 5377. I found a lot of other old favorites, and for the first time, M64, the Black Eye galaxy. When I finally turned to the June Challenge, I started at Alkaid in Ursa Major. It was nice and high in the sky. I moved a quarter of finder toward the east.

The trick to finding the galaxy was: I centered it in the finder between the two mag. 7 stars, since it seemed invisible in a 9×50 finder. The galaxy was smudgy, with brighter center.

A great horned owl, hooting to another one farther away most of the night, stole the show. The hoots sounded like "Who Cooks for you?" (:

Michael Brown: Observer from Massachusetts

I observed NGC 5377 on June 7, 2019 from my yard in Townsend, MA, with my 8-inch SCT and a 9mm eyepiece. This is a mag. 11 galaxy in Canes Venatici, not far from the end of the Big Dipper, and the more famous galaxy, M51. It was a clear night, with some slight interference from a waxing crescent moon. Initially, I was barely able to discern the object, with difficulty even identifying the basic shape. After a few minutes of study, I tentatively determined that it was a strongly tilted - to an edge-on galaxy, oriented northeast-southwest. It seemed somewhat brighter toward the center.

I observed the galaxy again on June 23, 2019 on clear night, before moonrise. With direct vision, I mainly saw the core of the galaxy. With averted vision, I could faintly tell that it was a tilted galaxy, with a NE-SW orientation. After several minutes of observation, the shape became much clearer. I also noted an interesting right-triangle pattern formed by two of the brightest starts in the field and the galaxy (at the right angle).

Observing this month's "Challenge object" has certainly persuaded me of the merits of carefully observing an object more than once, and spending a good amount of time studying it in the eyepiece!

Ed Fraini: Observer from Texas

I observed NGC 5377 on June 8, 2019, over a one-plus hour span in the main Houston Astronomical Society observatory, using a 14-inch SCT. All day, the sky was very blue, forecasting above average sky conditions for the night. The measured SQC was 20.14, which is low for this dark site due to the moon in the western sky near Leo, at 30% illumination. The plan was to continue to make observations of the galaxy until after midnight, when the moon would be setting. The seeing and transparency were not as good as expected. Only five stars were visible unaided in Ursa Minor. Seeing was average, but disappointingly low.

The field of view was first acquired at 21:55 with a 40mm eyepiece which provided a 0.63° field of view and 100× magnification. The proper area was positively identified utilizing two separate star triangles to the north of the target galaxy. The first triangle, an isosceles, which appeared relatively bright and distinctive, was easy to locate on the charts. The second was broader and near right triangle in shape. By placing these indicators at the very edge of the field of view, the galaxy should've been near the center in the eyepiece. I noted indication of the galaxy, even after prolonged observation, and the entire area was devoid of any bright stars. By 22:00, I began to detect a hint of the galaxy as a translucent elongated grey patch that flickered a couple of times a minute. By this time, the sky conditions had improved. I observed the small smudge of grey in and out over the next 15 minutes.

At 22:15 the eyepiece was switched to a 26mm, bumping up the power to 150×. NGC 5377 became a streak of defined size and orientation, and was more continuously observable. Under these conditions, I could see the galaxy randomly, but could only force its appearance with blinking and eye movement. This phenomenon was interesting to observe.

By 20:30, the galaxy had long periods of presence, and I noticed a small mag. 13 star to the south that made its detection synchronized with the appearance of the galaxy. At this time, the brighter core stood out.

At 23:00, I abandoned the plan to continue observation until after moonset. The temperature dropped, and the dew point went up from 75° to 92° over 30 minutes. Visually, I could tell the humidity was high and ground fog would be arriving soon. This change in dew point is a typical atmospheric pattern for us on the Gulf Coast. I believe this observing session was the most engaging I have experienced in a long time.

Richard Nugent: Observer from Massachusetts

NGC 5377, this 3.6′ × 1.4′ barred spiral galaxy, is located some 95 million light-years away and has a visual magnitude of 11.3, but a surface brightness of 12.7. The galaxy has three areas of interest. There's a brighter core region embedded in a large bar with a halo consisting of two, very faint spiral arms. The galaxy's position in the sky is relatively easy to locate, but the galaxy itself requires the darkest skies you can find.

I observed this object on numerous occasions with telescopes ranging from 8-inches to 25-inches from two observing sites. As mentioned in the past, my home site (Framingham, MA) has bright, light-polluted skies with a NELM of about 4.8 (Bortle 7). The ATMoB observing site is a bit darker with a NELM of about 5.2 (Bortle 6).

From Framingham, NGC 5377 is very difficult to detect, and therefore disappointing. In my 10-inch scope, using a magnification of 50×, the galaxy was invisible. With higher magnifications, it was a barely perceptible, round, diffuse glow without any hint of structure. I attempted no sketch because, quite frankly, there was nothing to sketch. The view through my 20-inch scope was only slightly better. At higher magnifications (>250×), the galaxy appeared as a dim, diffuse, oval glow without any sign of structure.

From the Westford site, 8 to 10-inch telescopes showed the galaxy as a distinct, soft, round, featureless glow. Pretty, but certainly nowhere near a showcase object. The ATMoB's 25-inch scope offered the best view. Looking northwest from that site offered the darkest sky, and the galaxy stood out as a distinct, oval shape. The spiral arms didn't appear to be visible, however, a crowd had gathered around the telescope that evening, making close scrutiny of the galaxy impossible. It would be worthwhile to revisit this object to see if the spiral arms can be detected with this telescope.

To summarize, smaller scopes with moderate magnification under light-polluted skies are capable of showing the core region of the galaxy. Darker skies reveal more of the bar structure, and darker skies still are (likely) required to observe the faint spiral arms.

Corey Mooney: Observer from Massachusetts

On June 7, 2019, I observed NGC 5377. After a little over two months of poor weather, I was able to set up my EAA live-stacking rig, and catch up on some Observers Challenge objects from the Westford clubhouse. I was planning on live stacking some of the wonderful summer nebula later in the night, so I decided to use my color camera, even though mono would have been better suited for this galaxy.

The equipment used:

Main scope: 4.5-inch f/4 Newtonian

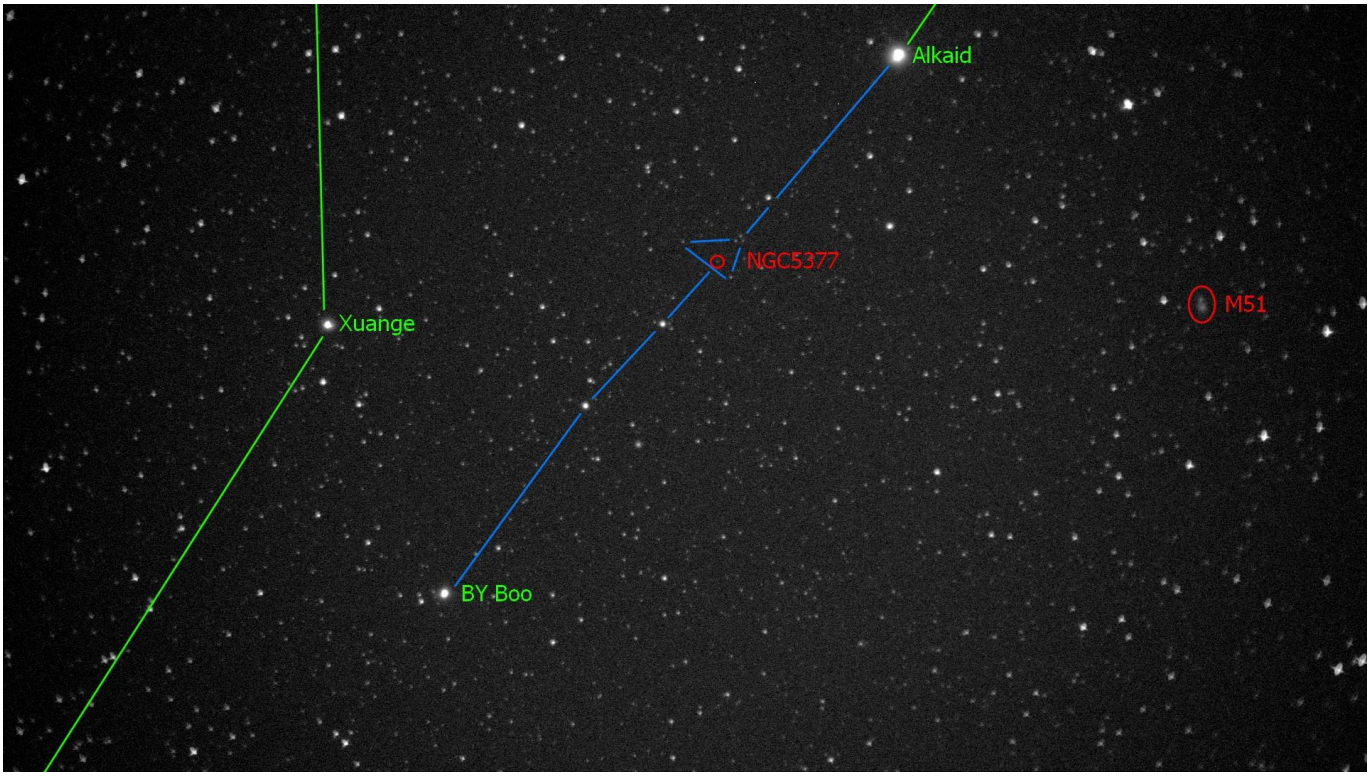
Main Camera: RisingCam IMX224 color CMOS

Finder Camera: RisingCam IMX290 Mono CMOS with 25mm f/1.4 lens

Mount: Equatorial converted to GoTo using OnStep

Unlike many of my previous reports, this time I actually remembered to capture the wide field finder-cam view. I annotated it with green for stars/constellation lines, red for objects, and blue for star hopping patterns.

12.6′ × 7.1′ FOV

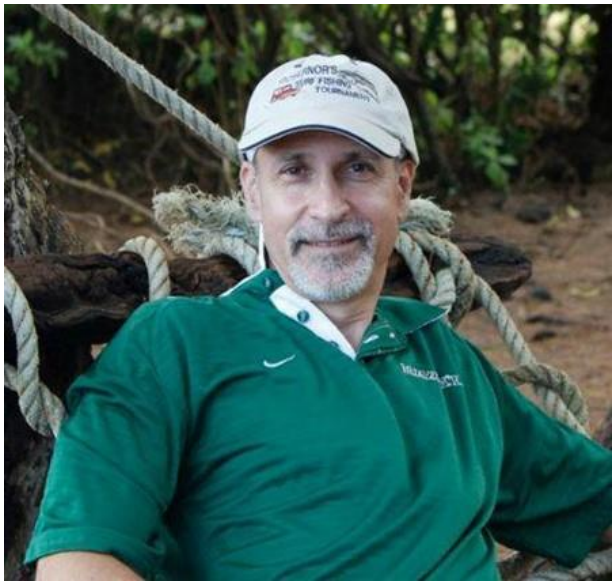


Once on target, I started live stacking 8 second frames at max gain. I ended up stacking 120 frames, totaling 960 seconds of integration. NGC 5377's bright core and strong bar where immediately visible, but the fainter ring-like arms trailing off of the bar required more stacking. I was just able to detect the faint arms in the field, but for this report, I post-processed with a more aggressive histogram stretch, noise reduction, and crop.

35.7′ × 23.8′ FOV

I was hoping to reshoot this galaxy with my monochrome camera to get more detail, but I missed my clear night opportunities.

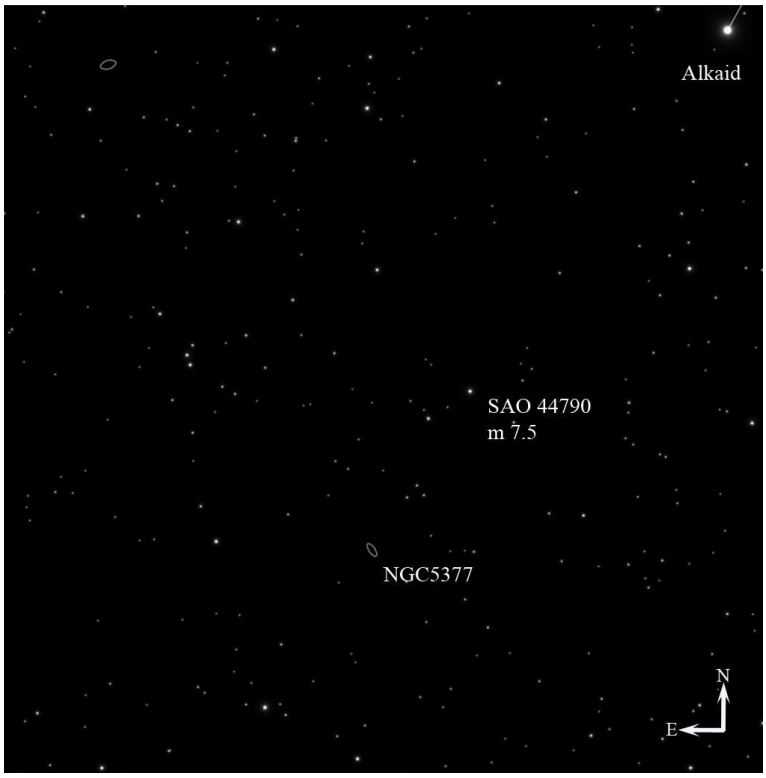
James Dire: Observer from Illinois



William Hershel discovered NGC 5377 in the year 1787 using his 18.7-inch reflector. It's a mag. 11.5 spiral galaxy located in Canes Venatici. The galaxy is between edge-on and face-on, and the major axis extends from northeast to southwest, with a position angle of 34.4°. The galaxy measures 3.7 × 2.1 arcminutes.

It's easy to star hop to NGC 5377. Follow the handle of the Big Dipper straight through Alkaid, 1.8° to a mag. 7.5 star SAO 44790. Continue southeast, past a triangle of mag. 10-11 stars, ¾° from SAO 44790 to the object (see finder chart, herein).

I observed NGC 5377 during the June new moon, from a dark site 70 miles north of Peoria, Illinois, at the Bootleg Star Party, using my 14-inch f/6 Dobsonian. The seeing was excellent, but the transparency was not too great. The galaxy appeared as a faint oval smudge with no apparent detail visible. The drawing below duplicates the view using my 13mm eyepiece. North is up and east to the left. The above-mentioned trio of stars are in the upper right of the drawing. I included all stars down to mag. 12.


Alkaid
SAO 44790
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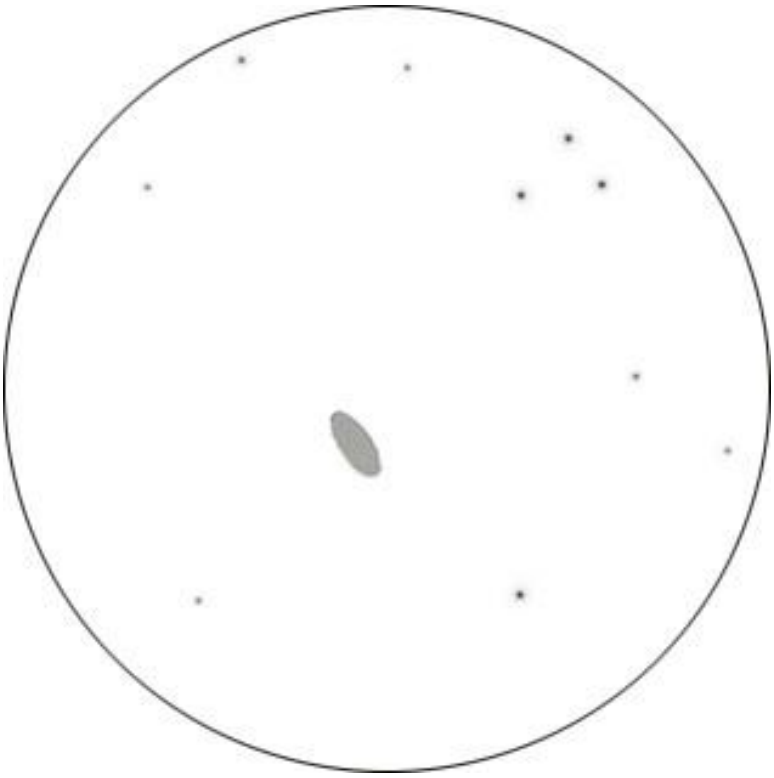
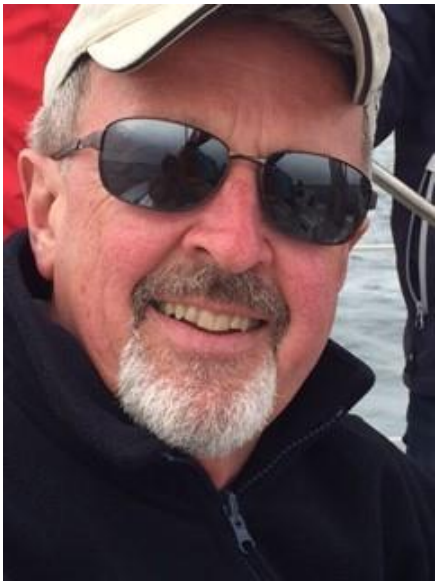


John Bishop: Observer from Massachusetts



I observed galaxy NGC 5377 in Canes Venatici on June 8, 2019, from the ATMoB Clubhouse in Westford, MA, with my 8.25-inch, f/11.5 Dall-Kirkham reflector. I used magnifications ranging from 48× to 192×.

Conditions were decent. The sky was clear, seeing was fair, and transparency was fair to good. The temperature at 1:30 A.M. was 54°F.

The galaxy was faint, but relatively easy to find. It lay between two mag. 7 stars that roughly formed an extension of a straight line drawn from Mizar to Alkaid in Ursa Major. I located the field with my 7×50 finder, and centered on the galaxy's presumed position. There it was, although barely visible at 48×.

The object was faint and nebulous, with a fairly bright core. At low power, the galaxy was more round, but at higher power, the nebulosity was obviously elongated. At higher power, the bright core was itself slightly out of round.

I also got a quick peek at NGC 5377 on June 27, 2019, at the same location, through the Club's 25-inch reflector. It was, not surprisingly, brighter, and the elongated halo was more well-defined.

This was my first time to observe the object, although it's in an area of the sky I've wandered through over the years.

Doug Paul: Observer from Massachusetts

I imaged the barred-spiral galaxy NGC 5377 as part of an all-nighter on the third night of the 5-night streak of good conditions back in March (described in the May report). The temp went down to 4°F, so I spent much of the time hiding inside while the computer ran the camera (typically ~1 hour per target). I still had to check and aim the camera manually.

Technical details: Canon 80D, 400mm f/2.8 lens, ISO 800, 80subs × 30 sec = 40 min, scale: 3 arc-sec/pixel. Orientation: North=up.

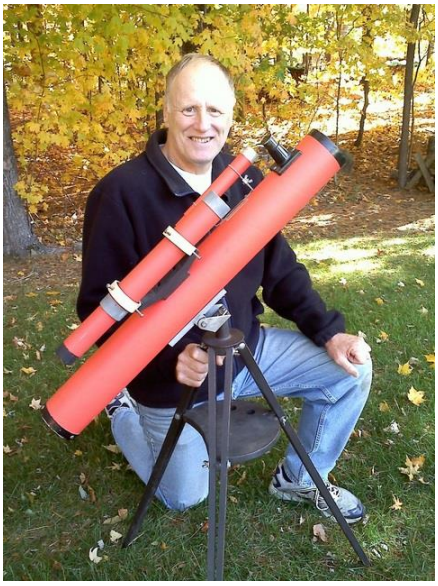
Sue French: Observer from New York

A brief clearing on May 6, 2019 allowed me to sketch NGC 5377, as seen through my 254/1494mm (10-inch f/5.8) Newtonian reflector. The seeing was poor, and the transparency fair.

At 43×, NGC 5377 was an easy star-hop from Alkaid at the end of the Big Dipper's handle. I pinpointed its position with the aid of a 3½′-tall, roughly isosceles triangle of stars (mags. 10.4, 10.4, and 11.6), that sits 17′ NW×N of the galaxy. NGC 5377 appeared as a small oval glow with a brighter center.

The sketch was made at 187×. At this power, NGC 5377 harbors a star-like nucleus within a bright, boxy core. An oval outer halo, about 2¼′ × ¾′, leans northeast and is slightly mottled. I saw no suggestion of the outlying spiral arms that make images of this galaxy so interesting.

Glenn Chaple: Observer from Massachusetts



On the evening of May 12, 1787, William Herschel came upon a nebulous object in what is now the extreme northeast corner of Canes Venatici. He considered it bright enough to qualify as a Class I object (Bright Nebulae), and it became his 187th entry in that group.

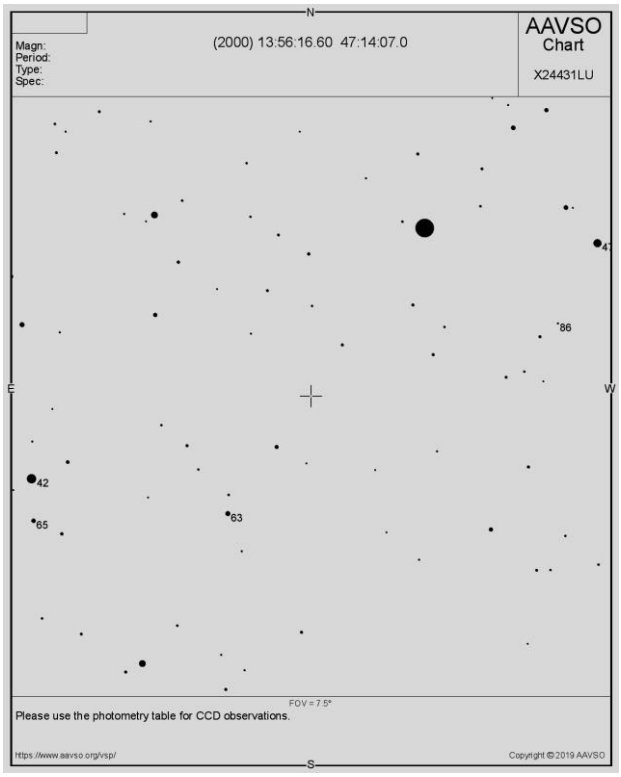
H187-1, better known by its New General Catalog designation NGC 5377, is a mag. 11 barred spiral galaxy. It lies some 85 million light-years away, which means that the photons greeting your eye as you peer into the telescope left during the latter part of the Cretaceous period, when dinosaurs still roamed the land.

With my 10-inch f/5 Dob, and a magnification 141×, I found it to be extremely faint – an "amorphous averted vision object at best." In all fairness to my scope (and my eyes!), I was observing under typical suburban skies with a limiting mag. of about 5. Its appearance in a similar-sized instrument under darker skies is described in Kepple and Sanner's *The Night Sky Observer's Guide – Vol. 2*. They write: "This galaxy has a fairly faint 2.5′ × 0.5′ NNE-SSW halo containing a bright oval core with a stellar nucleus." This would correspond to its interesting similarity to the Greek letter theta as shown in the accompanying Mario Motta image.

Locating NGC 5377 is somewhat of a challenge, as it lies in rather barren area 2° south and slightly east of Alkaid (Eta Ursae Majoris). Those of you with GoTo technology can plug in coordinates R.A. 13h, 56m 16.7s, Dec. +47° 14′ 08″. Star-hoppers can use the accompanying finder charts created using AAVSO's *Variable Star Plotter* program.

Below are finder charts for NGC 5377. In each, north is up, and NGC 5377 is plotted by a + at the center.

(Top) wide field (7.5°) chart showing stars to mag. 9. The bright star near upper right is eta Ursae Majoris. (Bottom) narrow field (2°) chart showing stars to mag. 13.



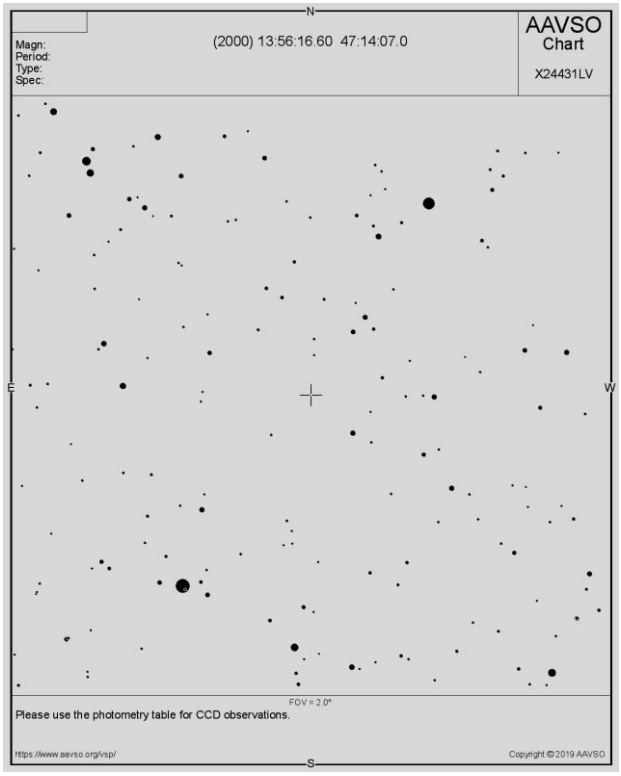
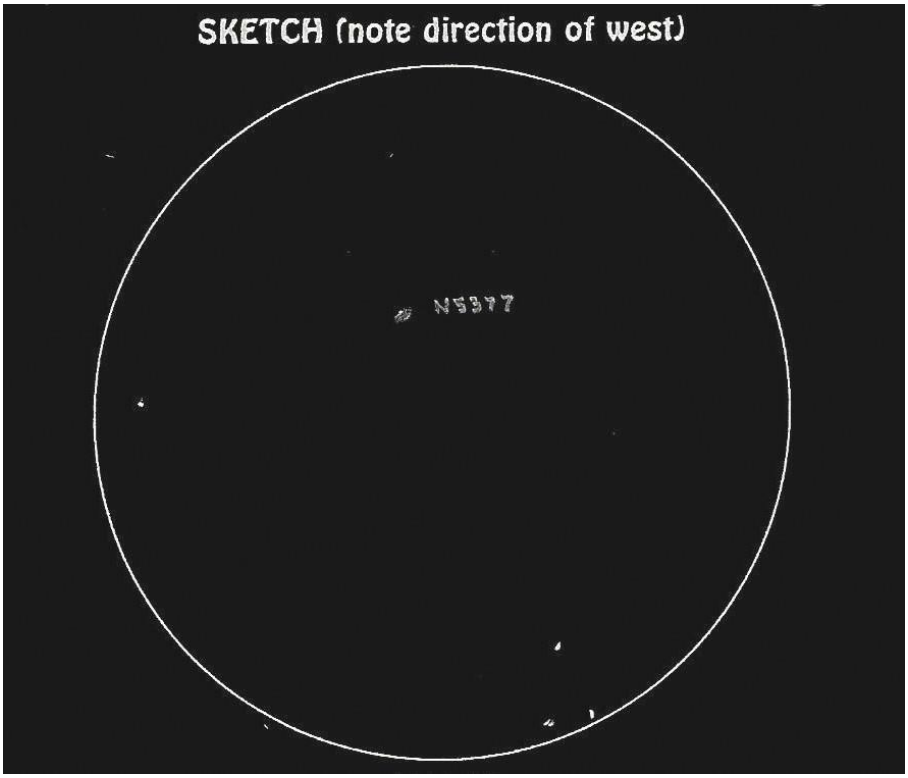


Image by Mario Motta, MD (ATMoB). North is up.

Image by Doug Paul (ATMoB). North is up.



Sketch by Glenn Chaple (ATMoB), with 10-inch f/5 reflector at 141×. North is to the right.

Chris Elledge: Observer from Massachusetts

On May 6, 2019, @10:30 P.M. EDT, I used a 10-inch f/5 reflector to observe NGC 5377 from the ATMoB Clubhouse. Sky conditions were: Bortle Scale 6. NELM 4.5. Transparency fair. Seeing good.

Locating NGC 5377 was simple due to its close proximity to Alkaid. It was a quick hop to HD 121388 and HD 122132. The galaxy was situated between the two.

At 35× (35mm 1.9° FOV), NGC 5377 was a small, faint spot with averted vision that disappeared when viewed directly. It sat between the two mag. 7 stars, HD 121388 in the NNW, and HD 122132 in the SSE. To the west of the galaxy was square of mag. 10-11 stars. The NE corner of the square pointed to a small triangle of mag. 10-11 stars. I could see the galaxy in the intersection of a line from the NE edge of the triangle heading SE and a line heading NE from the SE corner star of the square.

At 51× (25mm 1.4° FOV), it was more easily visible with averted vision, but was still very difficult to see with direct vision. Several mag. 12 stars also appeared along the N and E edges of the square mention earlier.

At 115× (11mm 0.71° FOV), it appeared as a smudge with averted vision. It had a NE to SW elongation, and there was a slightly concentrated core within it. Some mag. 13 stars were also apparent between the triangle and the galaxy.

Mario Motta: Observer from Massachusetts

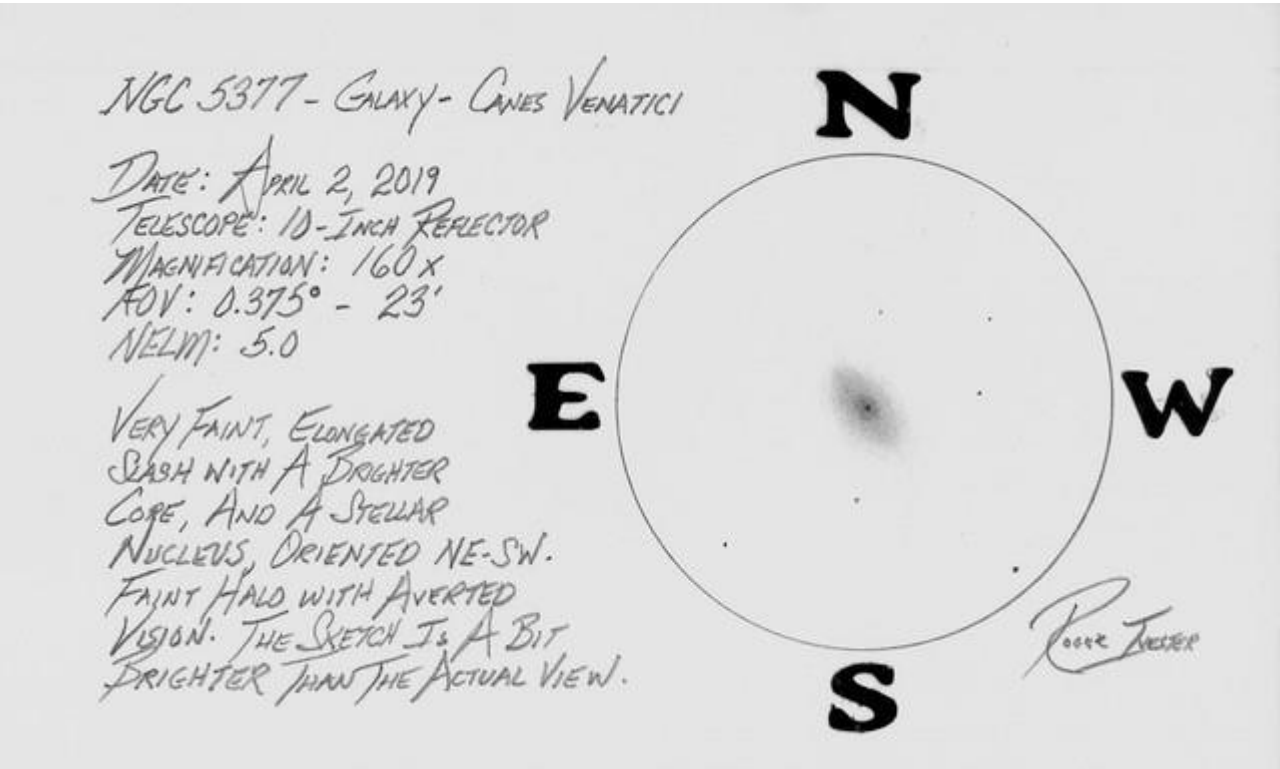
NGC 5377 was a nice barred galaxy. I used 15 subs, so, it ended up being 1 hour and 15 minutes of imaging stacked total, on my 32-inch telescope. No filters, through an STL 1001E SBIG camera.

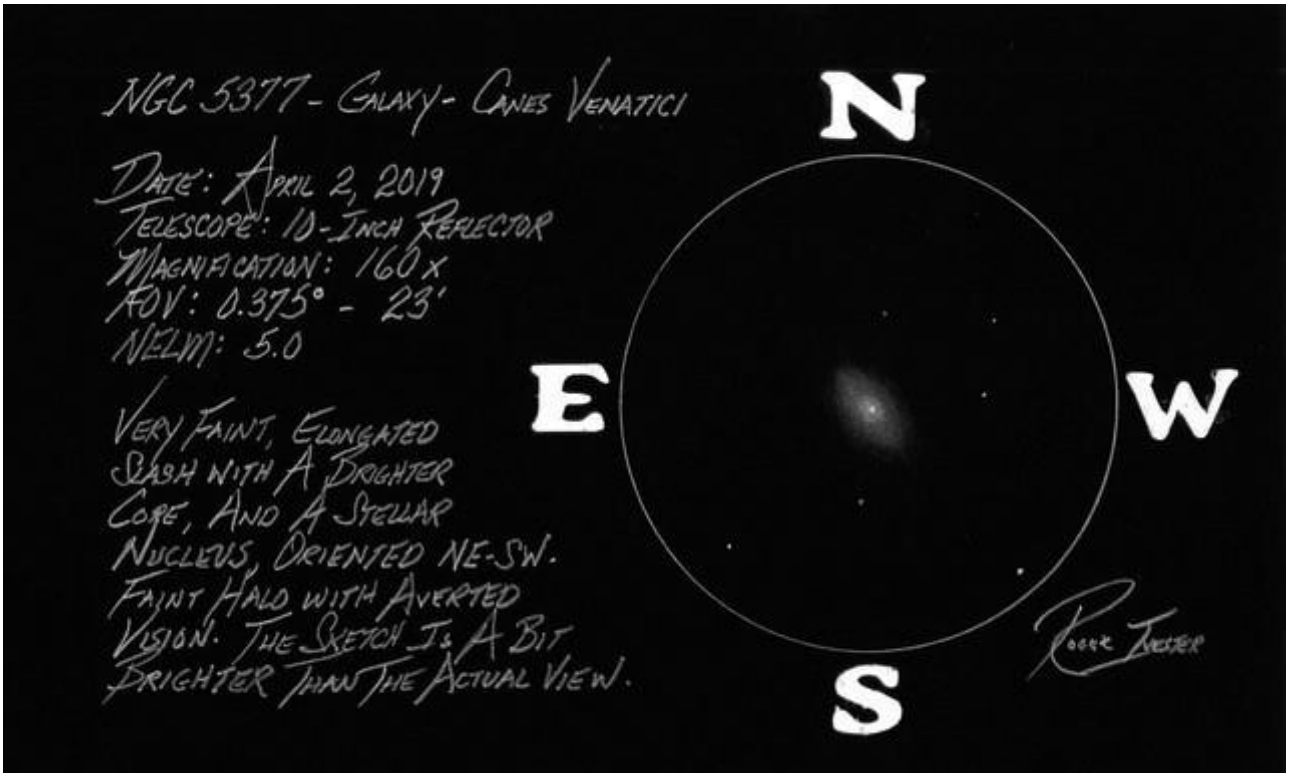
Jay Thompson: Observer from Nevada

I observed NGC 5377 from the dark skies of Meadview, AZ on a few occasions. With the LVAS 24-inch f/4 telescope, it appeared as an elongated small slash at 152×. In a 16-inch SCT at 271×, it was elongated and easy with direct vision. Most recently, during a marathon of viewing spring galaxies, I quickly acquired it at 203× due to its relatively bright core.

Roger Ivester: Observer from North Carolina

On April 2, 2019, I observed NGC 5377 from my backyard at 160× using a 10-inch f/4.5 reflector. The eyepiece setup was a 20mm and a 2.8× Barlow. The NELM was ~5.0. The galaxy was very faint, elongated NE-SW, with a brighter core and a stellar nucleus, surrounded by a faint halo. A mag. 10 star was situated 11 arc-minutes to the SW.




NGC 5377 - Galaxy - Canes Venatici
Date: April 2, 2019
Telescope: 10-Inch Reflector
Magnification: 160x
FOV: 0.375° - 23'
NELM: 5.0
Very Faint, Elongated Slash With A Brighter Core, And A Stellar Nucleus, Oriented NE-SW. Faint Halo With Averted Vision. The Sketch Is A Bit Brighter Than The Actual View.
N
E
W
S
Roger Ivester

Fred Rayworth: LVAS AL Coordinator and Observer from Nevada

I've observed this obscure and rarely seen galaxy twice. Once in 2015 and once in 2019, both at 102×, and both with the same 16-inch f/4.5 reflector.

The first time was on February 21, 2015, at the Furnace Creek Ranch golf course driving range at -190 feet below sea level. The night started out great with decent, though not superb transparency all around, except a few thin clouds on the western and northern horizons. The winds were calm to non-existent. I had a great night, showing the tourist objects, and when I just started to look for my own objects, to the south this time, David Blanchette came over and said it was time to quit. I looked up from the eyepiece, and it turns out, I was looking through a hole! The rest of the sky was gone, and word came down of a winter storm warning. This was around 9:30. By 10, we were back in the room. The next morning, we chased sprinkles all the way back to Las Vegas.

NGC 5377 was a medium-small oval with a stellar core. Outside of that, there wasn't much to note of this galaxy. It showed no other detail, maybe due to the fast deteriorating weather.

The second time was on June 1, 2019, from the "undisclosed location" at the Lake Meade Recreation Area at 2,100 feet. It was warm and nice, clear with no breeze at all, especially after it got dark. I never even had to weight down my charts. While it stayed transparent, there was a slight haze that moved through in spots, making some very faint objects almost invisible, especially in the mag. 14 range, at times. Yet I was still able to get down to mag. 15+ here and there. Finally, I gave up out of fatigue and a slight haze that was starting to move in. Seeing was better than usual, as well, with brighter stars not scintillating as much as usual.

NGC 5377 was a dim and vague spiral shape with a lumpy, stellar core. I didn't see a lot of detail, except the perimeter was kind of ragged, and I detected a vague spiral shape with slight flaking along the edges, somehow reminding me of the outer shell of the Ring Nebula (M57). This time, there were no Easter eggs nearby to add to the view. There was a galaxy cluster, AGC 1830 just to the northeast in the field of view, but it lists as a mag. 17.5 for the brightest members, so that was not even close for me! To the far southwest at the extreme edge of the FOV was CGCG 246-25, but at mag. 15.7, I never even had a chance, though I tried anyway. It didn't have a surface brightness listed, but the image in MegaStar was just a speck.