Snake River Skies

The Monthly Newsletter of the Magic Valley Astronomical Society

December 2023

Membership Meeting
December 9th at the Herrett Center
CSI main campus at 7:00pm

Centennial Observatory
See Inside for Details

Faulkner Planetarium
See Inside for Details

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Magic Valley Astronomical Society is a member of the Astronomical League

M-51 imaged by
Rick Widmer & Ken Thomason
Herrett Telescope - Shotwell Camera

www.mvastro.org

President's Message

My Astro Friends:

As December arrives, let me first thank all of you for your support the past two years as your president. I'm sure that as 2024 comes, Jay and the rest of the board will have some good monthly programs and events. Your continued support will be needed and greatly appreciated.

Our annual Christmas party will be held at the Herrett Center library Dec 9th at 7pm. And, as in past years, we're asking all who come to bring an exchange gift ($10-$15 max value) and a dessert, finger food, salad, or treat. Hopefully we'll be able to play some games, too.

As 2024 looms, one of the major items of interest will be the Total Solar Eclipse on April 8th. While I have no plans to observe, I know some of you will. Hope it's a spectacular show as was the one many of us saw in 2017. The current information I have says the duration of this one could be as long as 4min 27 seconds, almost double that of 2017.

Lots of fun and exciting things will be happening, too. Artemis, Moon landing, James Webb Space telescope, NASA, Space X. Blue Origins, etc.

And for our group, my hope is that we can stay together and do things together, i.e. star parties, regular monthly meetings, outreach to local school districts and to our community. Best to all of you for continued success.

Gary Leavitt

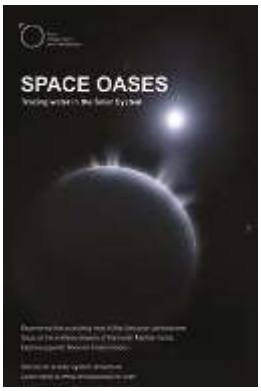
Centennial Observatory and Faulkner Planetarium Events

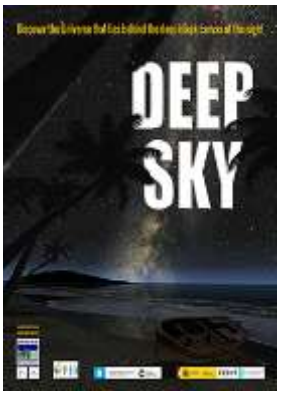
Observatory Upcoming Events
All events are weather permitting.

Event	Place	Date	Time	Admission
Telescope Tuesday	Centennial Observatory	Tuesday, November 28th, 2023	5:45 to 9:00 PM	$1.50 or free with Faulkner Planetarium admission
Monthly Free Star Party	Centennial Observatory	Saturday, December 9th, 2023	5:45 to 9:00 PM	FREE
Telescope Tuesday	Centennial Observatory	Tuesday, December 12th, 2023	5:45 to 9:00 PM	$1.50 or free with Faulkner Planetarium admission
Telescope Tuesday	Centennial Observatory	Tuesday, December 26th, 2023	5:45 to 9:00 PM	$1.50 or free with Faulkner Planetarium admission

Faulkner Planetarium Shows
For the full schedule and current show times visit!

Now Showing!





Visit the Herrett Center Video Vault

The Night Sky This Month – December 2023

(Looking for last month's 'Night Sky'? Find it at this link…)

As 2023 winds down, Saturn lingers in the western sky after sunset while Jupiter remains big and bright along the northern ecliptic, plenty big enough for fruitful telescopic observation. Venus remains bright in the early-morning sky in the southeast. It's a great year for the Geminid meteor shower as the Moon stays out of the way at mid-month. And the seasons change as the Sun reaches its most southerly point on the ecliptic. Here's what to see in the night sky in this month…

1 December 2023. Venus, making a fine showing as the 'Morning Star', lies a little less than 5° northeast of Spica in Virgo in the early morning sky. Venus is now receding from Earth and slowly growing smaller and fainter, but it still shines at a very bright magnitude -4.2. In a telescope, the planet appears gibbous with a disk about 17" across.

3 Dec. The waning gibbous Moon lies less than 5° from the bright star Regulus in Leo. The pair lie nearly overhead in the northern hemisphere as dawn arrives. This rendezvous repeats itself on Dec. 31.

5 Dec. Last Quarter Moon, 05:49 UT

The waning crescent Moon, Venus, and Spica in the southeastern sky before sunrise on Dec. 8, 2023. Picture is clickable (ctrl / command + left click) for a larger image.

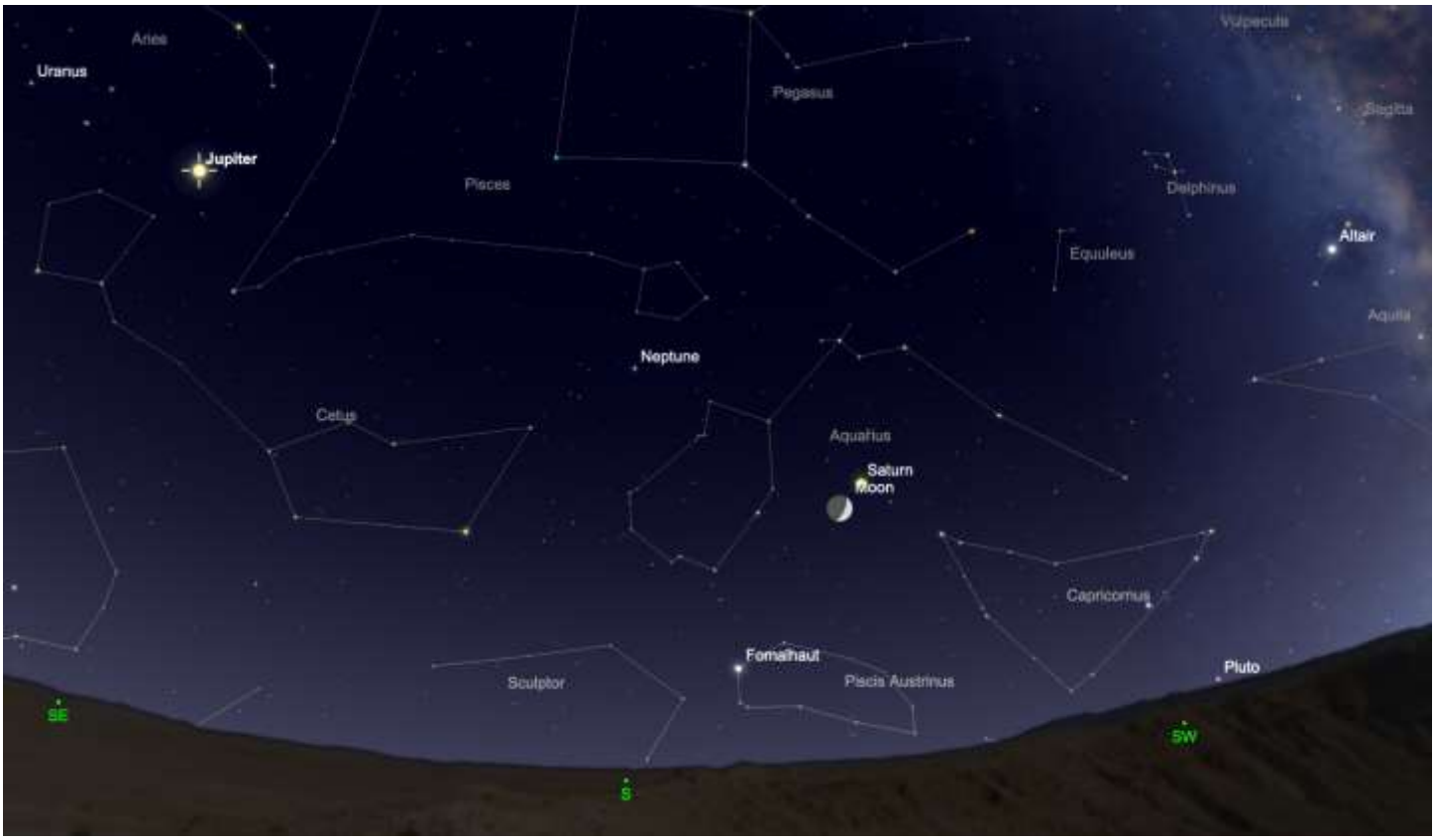
8 Dec. Spica and Venus remain near each other in the southeastern morning sky, and the waning crescent Moon joins the show today as it lies about 3^{o} north of Spica. The pair present a lovely view in binoculars.

9 Dec. In perhaps the best conjunction this month, the thin Moon and Venus pass within a few degrees of each other in the southeastern early-morning sky.

11-12 Dec. A rare and unusual event occurs tonight as the faint 14th-magnitude asteroid 319 Leona passes briefly in front of Betelgeuse! Those lucky enough to see this event – and it may only be a very few – may see the star wink out (or at least decrease significantly in brightness) for several seconds. Both the tiny asteroid (diameter about 50km to 80km) and immense Betelgeuse both subtend a nearly equal size of 50 milliarcseconds on the sky, but there's considerable uncertainty about the asteroid's size. More details on visibility and timing of the event at this link. Expected visibility is in a narrow band across southern Florida, the Atlantic Ocean, southern Spain, Italy, and Turkey.

12 Dec. New Moon, 23:32 UT

13-14 Dec. The usually reliable Geminid meteor shower peaks in the late hours of December 13 and into the early morning of the 14th. The Moon is well out of the way this year which makes for the best possible viewing. Look for Geminids late in the evening and after midnight. They can appear anywhere in the sky and trace their path back to a point near the star Castor in the constellation Gemini. Also, try looking after dark on the 13th for a few brighter Geminids that may enter the atmosphere at a shallow angle and burn slowly across the sky. The meteor shower happens on this date each year as the Earth passes through a stream of debris from the asteroid 3200 Phaethon, an Apollo asteroid discovered in 1983.



Saturn, Jupiter, Uranus, Neptune, and the waxing crescent Moon on the evening of Dec. 17, 2023. Picture is clickable (ctrl / command + left click) for a larger image.

17 Dec. The Moon returns to the evening sky and today its crescent lies about 3° southeast of Saturn in the southwestern sky. Saturn is moving away from Earth and lies about ten astronomical units distant. It shines in Aquarius in the southwest after sunset all month at magnitude +0.9 with a disk about 17" across.

19 Dec. First Quarter Moon, 18:38 UT

21 Dec. The waxing gibbous Moon sits about 6° southwest of fat and bright Jupiter. About six weeks past opposition, Jupiter still shines in Aries at a brilliant magnitude -2.8 with a disk about 48" across. It's a great time to observe the continuously changing face of the planet and its four bright moons with a good telescope.

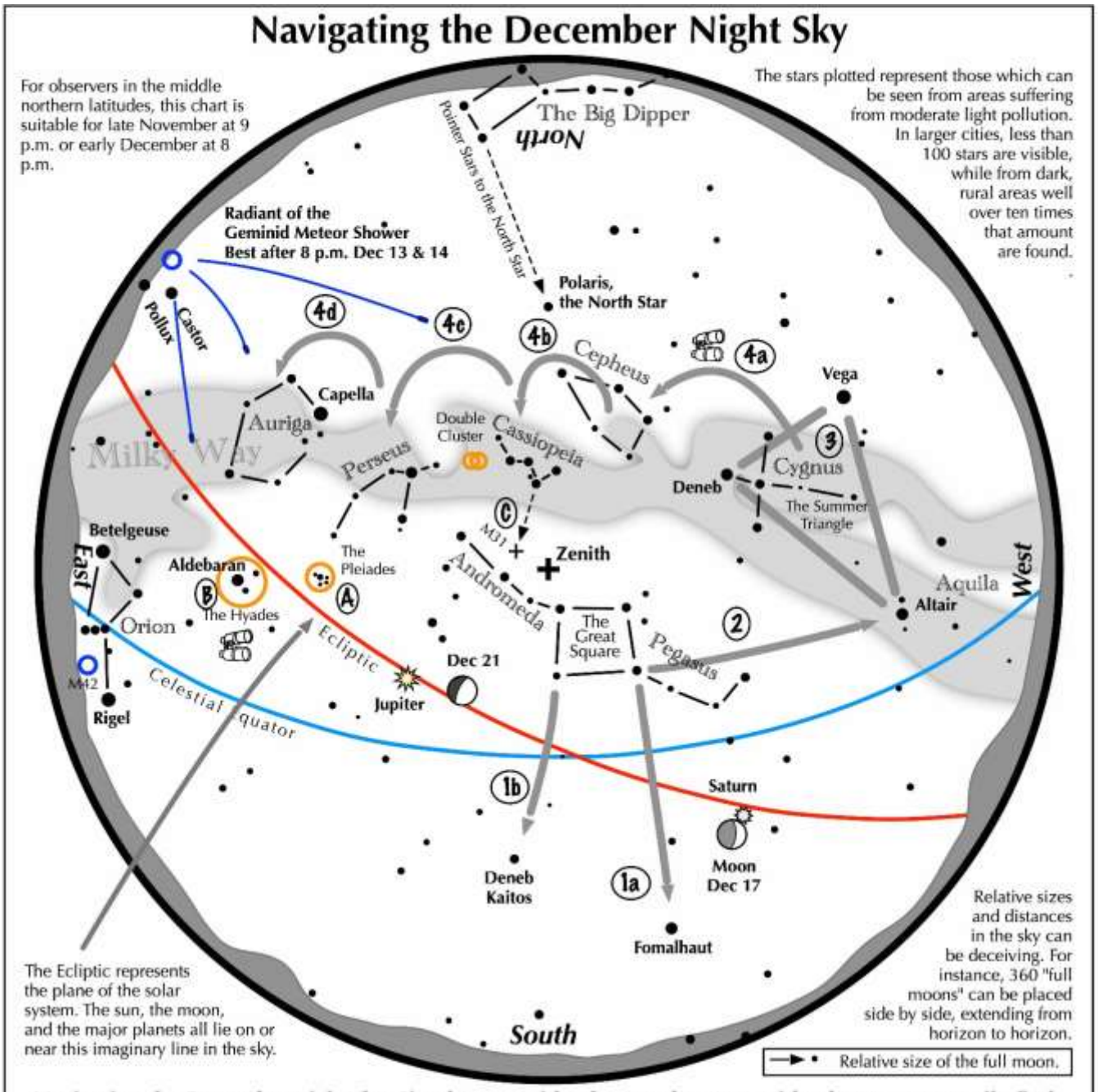
22 Dec. The December solstice arrives at 03:27 UT as the Sun reaches its southernmost point on the ecliptic in the constellation Sagittarius. This marks the shortest day and the beginning of winter in the northern hemisphere and the longest day and beginning of summer in the southern hemisphere.

27 Dec. Full Moon, 00:33 UT

29 Dec. The fat gibbous Moon, just past full, lies in the constellation Cancer about 3° west of the Beehive star cluster (M44).

Brian Ventrudo, Publisher, Cosmic Pursuits

Night Sky Map



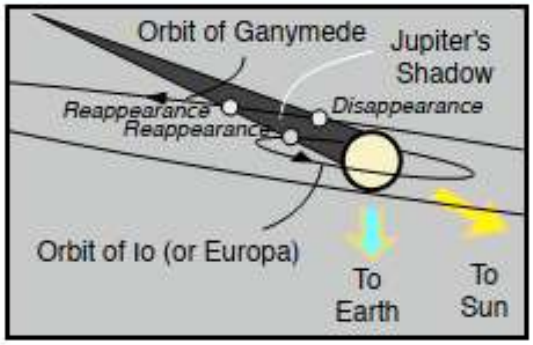
Navigating the December night sky: Simply start with what you know or with what you can easily find.

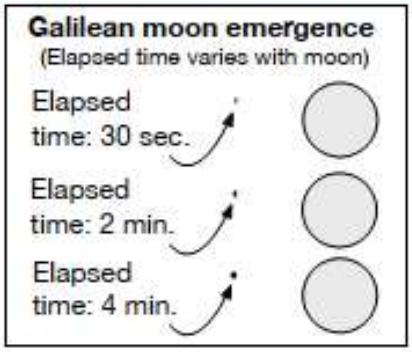
1. Face south. Almost overhead is the "Great Square" with four stars about the same brightness as those of the Big Dipper. Extend an imaginary line southward following the Square's two westernmost stars. The line strikes Fomalhaut, the brightest star in the southwest. A line extending southward from the two easternmost stars, passes Deneb Kaitos, the second bright star in the south.
2. Draw another line, this time westward following the southern edge of the Square. It strikes Altair, part of the "Summer Triangle."
3. Locate Vega and Deneb, the other two stars of the "Summer Triangle. Vega is its brightest member while Deneb sits in the middle of the Milky Way.
4. Jump along the Milky Way from Deneb to Cepheus, which resembles the outline of a house. Continue jumping to the "W" of Cassiopeia, to Perseus, and finally to Auriga with its bright star Capella.

Binocular Highlights

A and B: Examine the stars of the Pleiades and Hyades, two naked eye star clusters.
C: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.
D: Sweep along the Milky Way from Altair, past Deneb, through Cepheus, Cassiopeia and Perseus, then to Auriga for many intriguing star clusters and nebulous areas.

Jupiter's Moons





An "Oh! Wow!" moment through your telescope

Imagine seeing a world emerge in the darkness, taking several minutes to fully appear. Such a body is Io, Europa, or Ganymede on multiple occasions this December.

Aim a telescope at Jupiter shining in the south a few minutes before the event is predicted to take place. Look away from the planet's bright disk, about one planet diameter from its eastern edge. At the designated time, a faint speck can be discerned. As the seconds pass, that speck grows brighter and brighter.

This is one of the large Galilean moons, slowly leaving Jupiter's shadow while orbiting the giant planet. December is a good month this year to witness an event like this in the evening sky, because Jupiter's shadow angles to the east of the planet, putting the emerging moon relatively far from the planet's glare. Each moon takes a different time to fully emerge, because of its diameter and of its orbital velocity around the planet.

Note: December 12 and 19 have Ganymede disappearing into the shadow and reappearing.
December 21 and 28 have Io and Europa both disappearing near the same time.

Make sure that Jupiter is sufficiently above the horizon at your location
and that the evening twilight has sufficiently darkened.
Begin viewing a few minutes before the listed times.

Event commencement: (all times CST)

Io	Dec 5, 11:34 pm
Io	Dec 7, 6:04 pm
Ganymede	Dec 12, disappearance 5:41 pm, reappearance 7:48 pm
Io	Dec 13, 1:30 am
Europa	Dec 14, 6:24 pm
Io	Dec 14, 7:58 pm
Ganymede	Dec 19, disappearance 9:45 pm, reappearance 11:49 pm
Europa	Dec 21, 9:03 pm
Io	Dec 21, 9:53 pm
Europa	Dec 28, 11:42 pm
Io	Dec 28, 11:48 pm
Io	Dec 30, 6:18 pm

Use a "high" magnification!

NASA Night Sky Notes

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

A Flame in the Sky – the Orion Nebula

By Kat Troche

It's that time of year again: winter! Here in the Northern Hemisphere, the cold, crisp sky offers spectacular views of various objects, the most famous of all being Orion the Hunter.

Credit: Stellarium Web

As we've previously mentioned, Orion is a great way to test your sky darkness. With your naked eye, you can easily spot this hourglass-shaped constellation. Known as an epic hunter in Greco-Roman, Orion and all its parts have had many names and meanings across many cultures. In Egyptian mythology, this constellation represented the god *Sah*. The Babylonians referred to it as *The Heavenly Shepard.* In most cultures, it is Orion's Belt that has many stories: *Shen* in Chinese folklore, or *Tayamnicankhu* in Lakota storytelling. But the Maya of Mesoamerica believed that part of Orion contained *The Cosmic Hearth* – the fire of creation.

1,500 light years away from Earth sits the star-forming region and crown jewel of Orion – Messier 42 (M42), the Orion Nebula. Part of the "sword" of Orion, this cloud of dust and gas sits below the first star in Orion's Belt, Alnitak, and can easily be spotted with the naked eye under moderate dark skies. You may also use binoculars or a telescope to resolve even more details, like the Trapezium: four stars in the shape of a baseball diamond. These young stars make up the core of this magnificent object. Of course, it's not just for looking at! M42 is easily one of the most photographed nebulae around, by astrophotographers here on the ground, large ground-based observatories, and space telescopes alike. It has long been a place of interest for the Hubble, Spitzer, and Chandra X-ray Space Telescopes, with James Webb Space Telescope joining the list in February 2023. Earlier this year, NASA and the European Space Agency released a new photo of the Orion Nebula taken from JWST's NIRCam (Near-Infrared Camera), allowing scientists to image this early star forming region in both short and long wavelengths.

ESA/Webb, NASA, CSA, M. Zamani (ESA/Webb), PDRs4ALL ERS Team

But stars aren't the only items photographed here. In June 2023, JWST's NIRCam and MIRI (mid-infrared instrument) imaged a developing star system with a planetary disk forming around it. That's right – a solar system happening in real time – located within the edges of a section called the Orion Bar. Scientists have named this planet-forming disk **d203-506**, and you can learn more about the chemistry found here. By capturing these objects in multiple wavelengths of light, we now have even greater insight into what other objects may be hiding within these hazy hydrogen regions of our night sky.

In addition to our Dark Sky Wheel, a fun presentation you can share with your astronomy club would be our *Universe Discovery Guide: Orion Nebula, Nursery of Newborn Stars* activity. This will allow you to explain to audiences how infrared astronomy, like JWST, helps to reveal the secrets of nebulae. Or, you can use public projects like the NASA-funded MicroObservatory to capture M42 and other objects.

Learn more about what to spy in the winter sky with our upcoming mid-month article on the Night Sky Network page through NASA's website!

Important Links and Information

For the current Moon calendar visit: https://www.mooninfo.org/world/united-states/100911/moon-calendar-for-twin-falls.html

Visit https://saberdoesthe...does-the-stars/ for tips on spotting extreme crescent Moons and https://curtrenz.com/moon.html for Full Moon and other lunar data.

Go to https://skyandtelesc...ads/MoonMap.pdf and https://celestron-si...RReeves-web.pdf and https://nightsky.jpl...ObserveMoon.pdf for simple lunar maps.

Click on https://astrostrona.pl/moon-map/ for an excellent online lunar map.

Visit http://www.ap-i.net/avl/en/start to download the free Virtual Moon Atlas.

Consult http://time.unitariu...moon/where.html for current information on the Moon and https://www.fourmila.../lunarform.html for information on various lunar features.

See https://svs.gsfc.nasa.gov/5048 a lunar phase and libration calculator and https://quickmap.lro...2vIBvAXwF1SizSg for the Lunar Reconnaissance Orbiter Camera (LROC) Quickmap.

Click on https://www.calendar...endar/2023/december for a lunar phase calendar for this month. Times and dates for the lunar crater light rays predicted to occur this month are available at http://www.lunar-occ...o/rays/rays.htm

For information on the planets and how to locate them, browse http://www.nakedeyeplanets.com/

Summaries on the planets for June can be found at https://www.astronom...onth-december-2023/ and https://earthsky.org..._eid=9e4b41969c

The graphic at https://www.timeandd...lanets/distance displays the apparent and comparative sizes of the planets, along with their magnitudes and distances, for a given date and time.

The rise and set times and locations of the planets can be determined by clicking on https://www.timeandd...stronomy/night/

Click on http://www.asteroido.../2023_06_si.htm for information on asteroid occultation's taking place this month. See https://www.curtrenz.../asteroids.html for additional information on a number of asteroids.

Visit http://cometchasing.skyhound.com/ and http://www.aerith.ne...t/future-n.html and https://cobs.si/ for additional information on this and other comets visible this month.

A list of the closest approaches of comets to the Earth is posted at http://www.cometogra.../nearcomet.html

A wealth of current information on solar system celestial bodies is posted at http://www.curtrenz.com/astronomy.html and http://nineplanets.org/

Information on the celestial events transpiring each week can be found at https://stardate.org/nightsky and http://astronomy.com/skythisweek and http://www.skyandtel...ky-at-a-glance/

Free star maps for June can be downloaded at http://www.skymaps.com/downloads.html and https://www.telescop...thly-Star-Chart and http://www.kenpress.com/index.html

Data on current supernovae can be found at http://www.rochester...y.org/snimages/

Finder charts for the Messier objects and other deep-sky objects are posted at https://freestarcharts.com/messier and https://freestarcharts.com/ngc-ic and http://www.cambridge..._april-june.htm

Telrad finder charts for the Messier Catalog are posted at http://www.custerobs...cs/messier2.pdf and http://www.star-shin...ssierTelrad.htm

Telrad finder charts for the SAC's 110 Best of the NGC are available at https://www.saguaroa...k110BestNGC.pdf

Information pertaining to observing some of the more prominent Messier galaxies can be found at http://www.cloudynig...ur-astronomers/

Author Phil Harrington offers an excellent freeware planetarium program for binocular observers known as TUBA (Touring the Universe through Binoculars Atlas), which also includes information on purchasing binoculars, at http://www.philharrington.net/tuba.htm

Stellarium and Cartes du Ciel are two excellent freeware planetarium programs that are available at http://stellarium.org/ and https://www.ap-i.net/skychart/en/start

Deep-sky object list generators can be found at http://www.virtualcolony.com/sac/ and https://telescopius.com/ and http://tonightssky.com/MainPage.php

Freeware sky atlases can be downloaded at http://www.deepskywa...-atlas-full.pdf and https://www.cloudyni...ar-charts-r1021 and https://allans-stuff.com/triatlas/

Information on passes of the ISS, the X-37B, the Tiangong, the HST, the BlueWalker 3, Starlink, and other satellites can be found at https://www.heavens-above.com/

One hundred and five binary and multiple stars for December: Gamma Andromedae, 59 Andromedae, Struve 245 (Andromeda); Struve 362, Struve 374, Struve 384, Struve 390, Struve 396, Struve 400, Struve 19, Otto Struve 67 (Camelopardalis); Struve 191, Struve Iota Cassiopeiae, Struve 263, Otto Struve 50, Struve 283, Struve 284 (Cassiopeia); 61 Ceti, Struve 218, Omicron Ceti, Struve 274, Nu Ceti, h3511, 84 Ceti, h3524, Lambda Ceti, Struve 330 (Cetus); h3527, h3533, Theta Eridani, Rho Eridani, Struve 341, h3548, h3565, Tau-4 Eridani, Struve 408, Struve 411, h3589, h3601, 30 Eridani, 32 Eridani (Eridanus); h3478, h3504, Omega Fornacis, Eta-2 Fornacis, Alpha Fornacis, See 25, Xi-3 Fornacis, h3596 (Fornax); Struve 268, Struve 270, h1123, Otto Struve 44, h2155, Nu Persei, Struve 297, Struve 301, Struve 304, Eta Persei, Struve 314, Otto Struve 48, Tau Persei, Struve 331, Struve 336, Es588, Struve 352, Struve 360, Struve 369, Struve 382, Struve 388, Struve 392, Struve 410, Struve 413, Struve 425, Otto Struve 59, Struve 426, 40 Persei, Struve 434, Struve 448, Es277, Zeta Persei, Struve 469, Epsilon Persei, Es878 (Perseus); Struve 399, Struve 406, Struve 401, Struve 422, Struve 430, Struve 427, Struve 435, 30 Tauri (Taurus); Epsilon Trianguli, Struve 219, Iota Trianguli, Struve 232, Struve 239, Struve 246, 10 Trianguli, Struve 269, h653, 15 Trianguli, Struve 285, Struve 286, Struve 310 (Triangulum)

Notable carbon star for December: U Camelopardalis

One hundred deep-sky objects for December: NGC 891 (Andromeda); IC 342, K6, St23, Tom 5 (Camelopardalis); Be65, IC 1848, K4, Mel15, NGC 896, NGC 1027, St2, Tr3 (Cassiopeia); M77, NGC 788, NGC 835, NGC 864, NGC 908, NGC 936, NGC 955, NGC 958, NGC 1015, NGC 1016, NGC 1022, NGC 1042, NGC 1052, NGC 1055, NGC 1087, NGC 1094 (Cetus); IC 2006, NGC 1084, NGC 1140, NGC 1187, NGC 1199, NGC 1209, NGC 1232, NGC 1291, NGC 1300, NGC 1309, NGC 1332, NGC 1337, NGC 1353, NGC 1357, NGC 1395, NGC 1400, NGC 1407, NGC 1421, NGC 1426, NGC 1440, NGC 1452, NGC 1453, NGC 1461 (Eridanus); NGC 1079, NGC 1097, NGC 1201, NGC 1292, NGC 1316 (Fornax I Galaxy Cluster), NGC 1317, NGC 1326, NGC 1344, NGC 1350, NGC 1360, NGC 1365, NGC 1371, NGC 1374, NGC 1379, NGC 1380, NGC 1381, NGC 1387, NGC 1398, NGC 1404, NGC 1406, NGC 1425 (Fornax); Bas10, Cz8, IC 351, IC 2003, K5, Mel 20, M34, NGC 869, NGC 884, NGC 957, NGC 1023, NGC 1058, NGC 1161, NGC 1245, NGC 1275 (Perseus I Galaxy Cluster), NGC 1333, NGC 1342, NGC 1444, Tr2 (Perseus); M45 (Taurus); NGC 777, NGC 784, NGC 890, NGC 925, NGC 949, NGC 959, NGC 978A/B (Triangulum)

Top ten binocular deep-sky objects for December: M34, M45, Mel15, Mel20, NGC 869, NGC 884, NGC 1027, NGC 1232, St2, St23

Top ten deep-sky objects for December: M34, M45, M77, NGC 869, NGC 884, NGC 891, NGC 1023, NGC 1232, NGC 1332, NGC 1360

Challenge deep-sky object for December: vdB14 (Camelopardalis)

The objects listed above are located between 2:00 and 4:00 hours of right ascension.

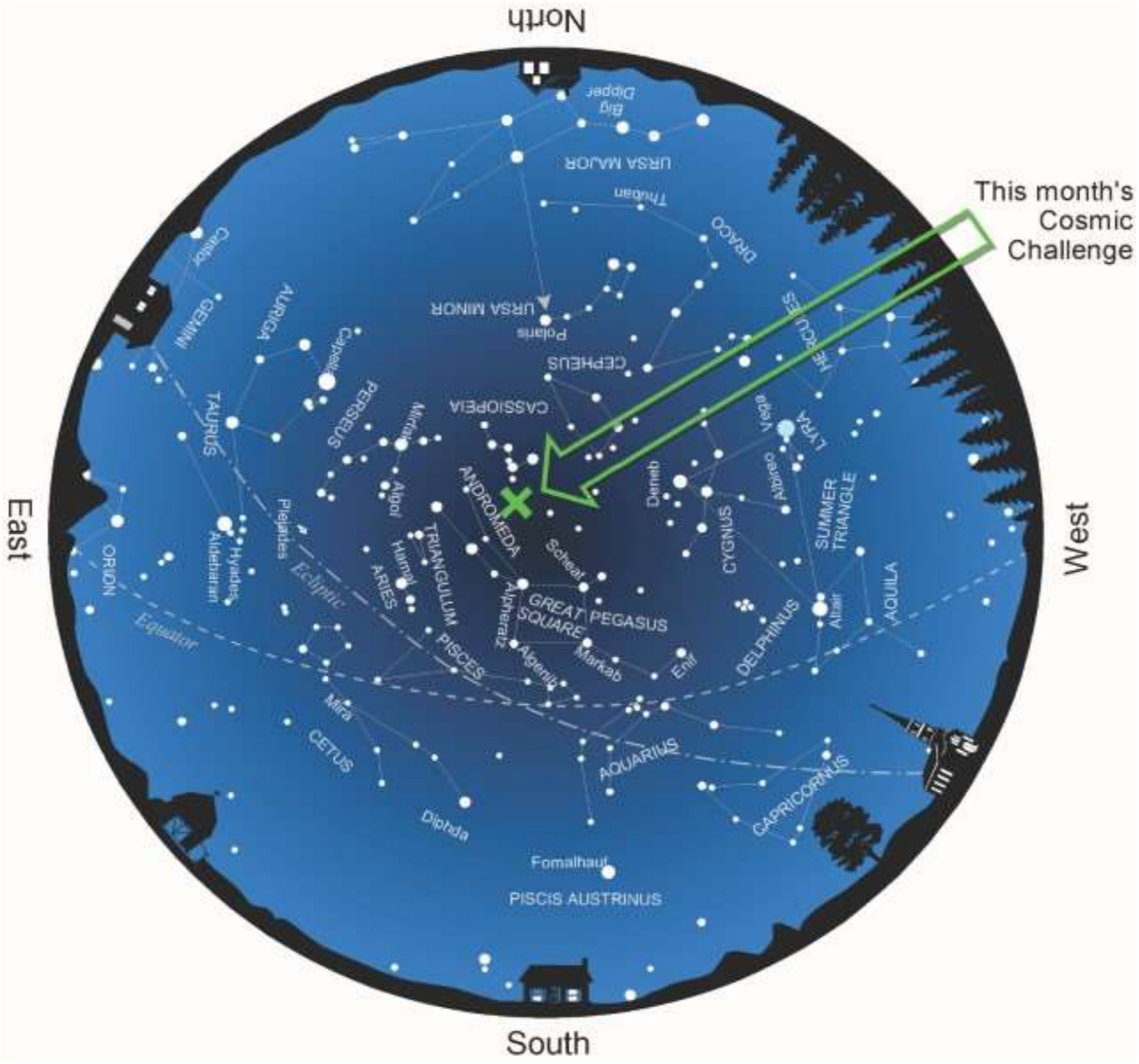
Phil Harrington's Cosmic Challenge

NGC 51 Galaxy Group

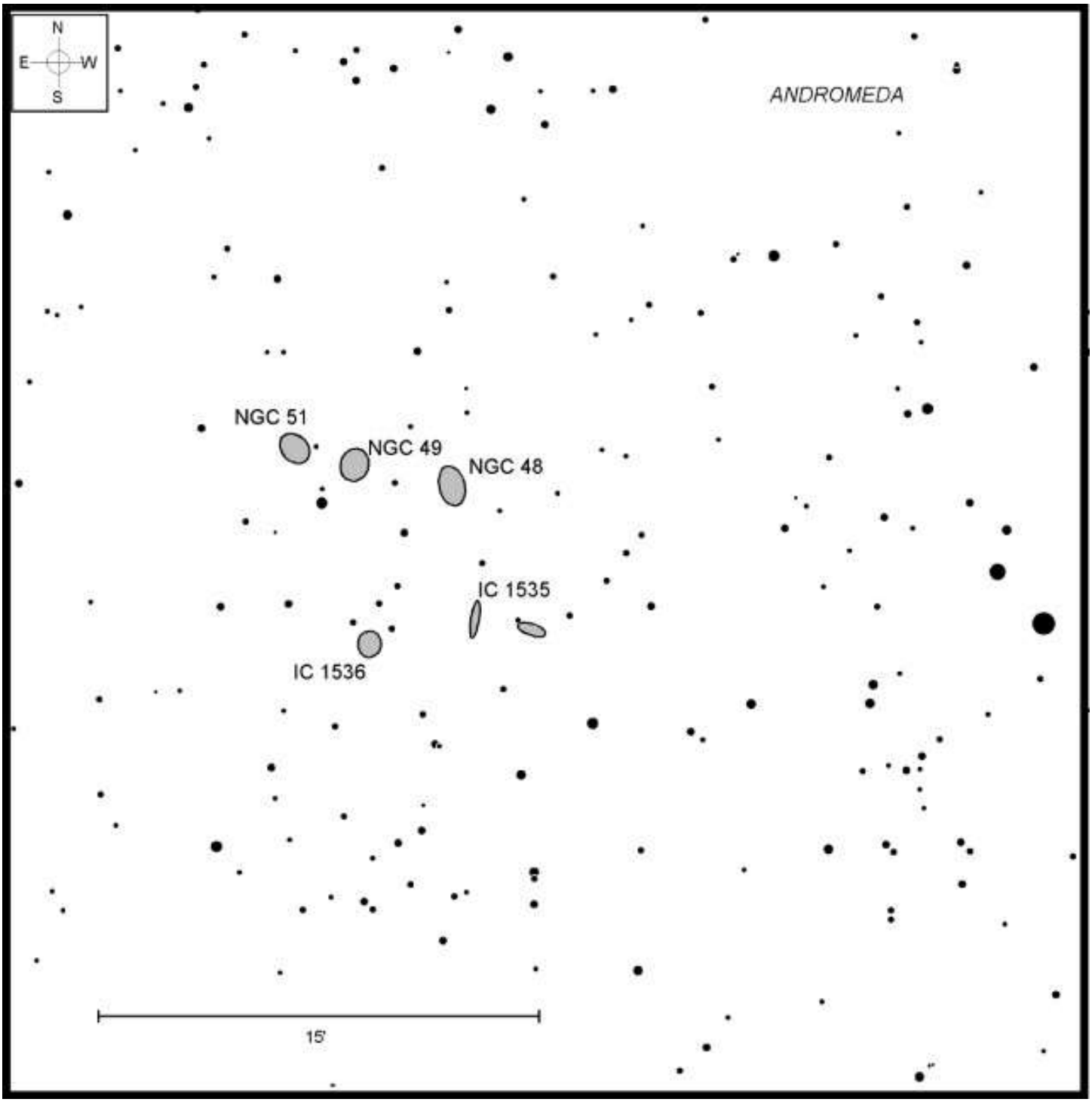
This month's suggested aperture range: 12” and Larger telescopes
Featured Telescope this Month - Meade LX200 12”

Target	Type	RA	DEC	Constellation	Magnitude	Span
NGC 51 group	Galaxy group	00h 14.2m	+48° 12.1’	Andromeda	--	10'

Andromeda, the Princess, is best known to deep-sky observers for M31, the Andromeda Galaxy. But the princess also plays host too many other island universes, including this month’s challenging galactic menagerie.



Above: Early evening star map showing the location of this month's Cosmic Challenge. Credit: Map adapted from **Star Watch** by Phil Harrington.



Above: Finder chart for this month's Cosmic Challenge. Credit: Chart adapted from **Cosmic Challenge** by Phil Harrington
Click on the chart to open a printable PDF version in a new window

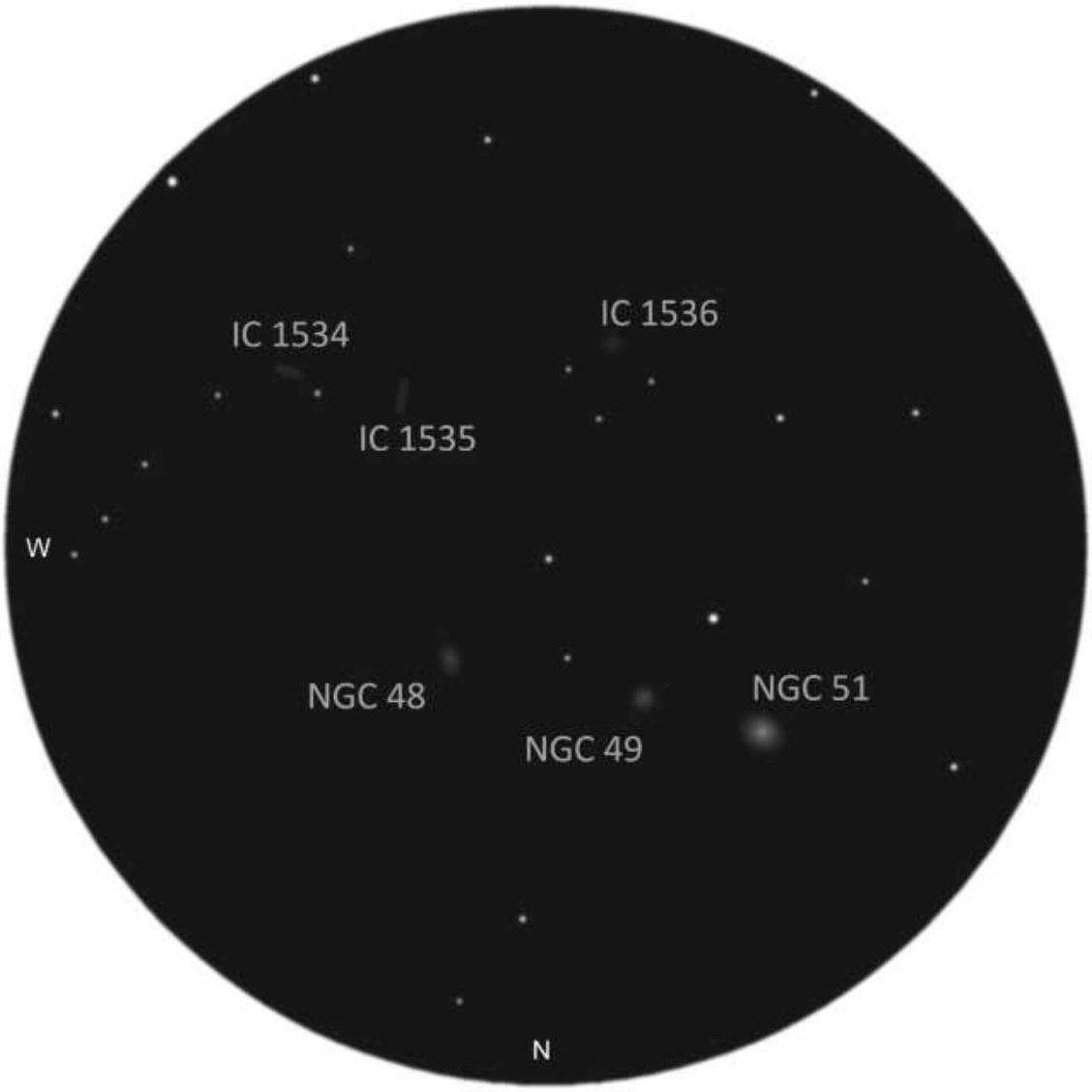
Of the dozens of galaxy groups scattered around the autumn sky, the 136-million-light-year-distant NGC 51 group is one of the more difficult bunches to spot. Although they are not listed among Paul Hickson's compact galaxy groups, the six galaxies here are ideally placed near the zenith in early December evenings for observers at mid-northern latitudes. Its high altitude carries the group far enough above any horizon-hugging interferences that might spoil some of our other challenges. The table below lists the particulars of all six galaxies found here.

Members of NGC 51 Galaxy Group

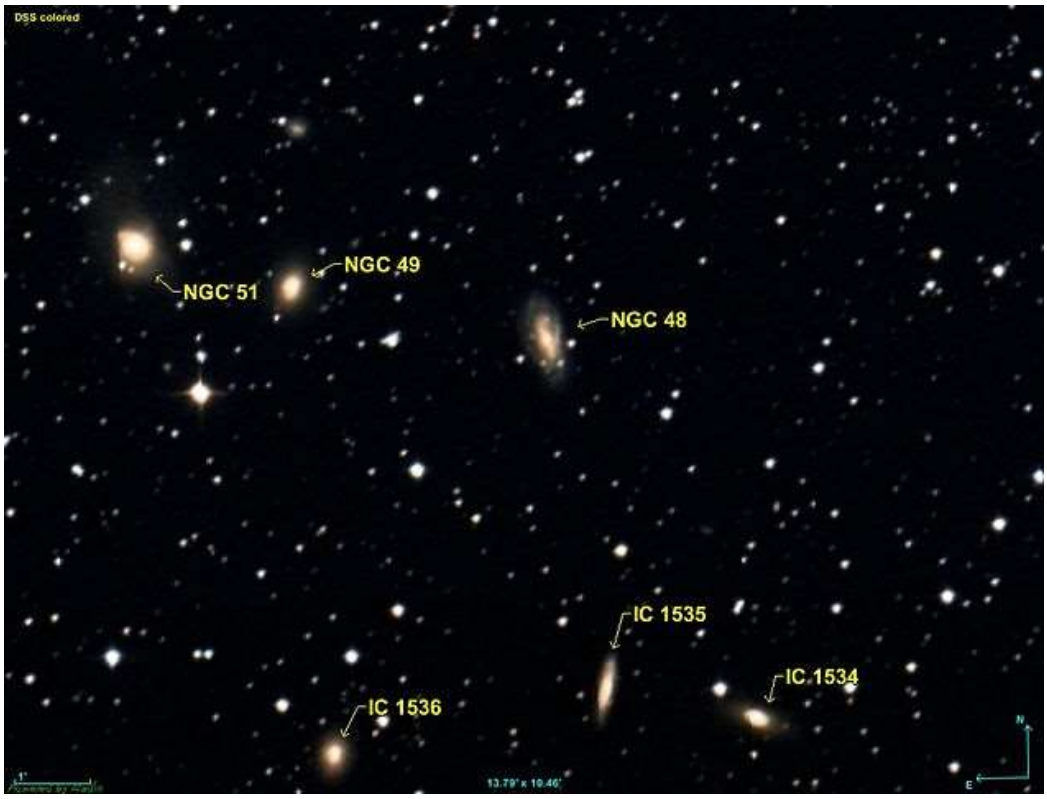
Galaxy	RA	Dec	Magnitude	Size (')
IC 1534	00h 13.8m	+48° 09.1’	14	1.0'x0.4'
IC 1535	00h 13.9m	+48° 09.5’	14	1.3'x0.3'
NGC 48	00h 14.0m	+48° 14.1’	13.6	1.4'x0.9'
IC 1536	00h 14.3m	+48° 08.6’	14	0.9'x0.8'
NGC 49	00h 14.4m	+48° 14.8’	13.7	1.1'x1.0'
NGC 51	00h 14.6m	+48° 15.4’	13.1	1.2'x0.9'

To locate this distant galactic swarm for yourself, first center your attention on 5th-magnitude 22 Andromedae in north-central Andromeda. Moving 2° to its north-northeast brings an optical double star made up of 6th- and 8th-magnitude components into view. From here, you are only minutes away (minutes of arc, that is) from the challenge, as the galaxies lie about 20' to the stars' east.

A string of three NGC galaxies highlights the sextet. All were discovered in 1885 by American astronomer Lewis Swift through a 16-inch (40.6-cm) refractor. The easternmost of the trio is the lenticular galaxy **NGC 51**. Most find this to be the brightest and easiest of the bunch to spot, although it can still be tricky at magnitude 13.1. Its slightly oval disk is punctuated by a brighter central core, making it possible to glimpse NGC 51 through 10-inch (25-cm) telescopes under excellent sky conditions.



Above: The NGC 51 Galaxy Group, as seen through the author's 18-inch (46.7-cm) reflector. (South is up.)
Below: NGC 51 and company. (North is up.) Credit: Donald Pelletier, via Wikimedia Commons.



Can you spot a second, dimmer smudge 2' to the west of NGC 51? If so, you have seen 14th-magnitude **NGC 49**. Look for a small, slightly oval blur with a brighter stellar nucleus that becomes evident by using averted vision. The sketch above was made on a better-than-average suburban night with my 18-inch (46-cm) reflector.

NGC 48 is a third faint fuzzy another 3½' further west of NGC 49. Although NGC 48 is also rated at 14th magnitude, the larger apparent size of this S(B)pc peculiar barred spiral causes its surface brightness to drop, hampering detection. It displays a faint stellar core surrounded by an even dimmer galactic halo that appears slightly elongated southwest-northeast through my 18 inch at 171x.

The other three galaxies in the group, discovered by Edward Barnard in 1888, all shine on the low side of 14th magnitude. **IC 1534** is seen only as an extremely faint, elliptical glow about 5' southwest of NGC 48. Careful scrutiny with 200x or so might show its tiny disk brightening to a central core. A faint star just kisses the northeastern edge of IC 1534.

IC 1535 trails close behind. This apparently coreless galaxy is also oval, but oriented perpendicular to IC 1534. It is also larger and fainter, making it a difficult test indeed.

The final galaxy, **IC 1536**, looks almost perfectly round. Look for its tiny smudge of gray light along the southern side of a triangle of three 13th-magnitude stars.
Do you have a favorite challenge object of your own? I'd love to hear about it, as well as how you did with this month's test. Contact me through my website or post your observations/suggestions in this month's discussion forum.

Until next year, remember that half of the fun is the thrill of the chase. Game on!

About the Author:

Phil Harrington writes the monthly *Binocular Universe* column in Astronomy magazine and is the author of 9 books on astronomy, including Cosmic Challenge: The Ultimate Observing List for Amateurs. Visit www.philharrington.net to learn more.

Magic Valley Astronomical Society
550 Sparks St.
Twin Falls, ID

The Magic Valley Astronomical Society (MVAS) was founded in 1976. The Society is a non-profit [501(c) 3] educational and scientific organization dedicated to bringing together people with an interest in astronomy.

In partnership with the Centennial Observatory, Herrett Center, College of Southern Idaho - Twin Falls; we hold regularly scheduled monthly meetings and observation sessions, at which we share information on current astronomical events, tools and techniques for observation, astrophotography, astronomical computer software, and other topics concerning general astronomy. Members enthusiastically share their telescopes and knowledge of the night sky with all who are interested. In addition to our monthly public star parties we hold members only star parties at various locations throughout the Magic Valley.

MVAS promotes the education of astronomy and the exploration of the night sky along with safe solar observing through our public outreach programs. We provide two types of outreach; public star parties and events open to anyone interested in astronomy, and outreach programs for individual groups and organizations (e.g. schools, churches, scout troops, company events, etc.), setting up at your location. All of our outreach programs are provided by MVAS volunteers at no cost. However, MVAS will gladly accept donations. Donations enable us to continue and improve our public outreach programs.

Membership is not just about personal benefits. Your membership dues support the work that the Magic Valley Astronomical Society does in the community to promote the enjoyment and science of astronomy.
Speakers, public star parties, classes and support for astronomy in schoolrooms, and outreach programs just to name a few of the programs that your membership dues support.

Annual Membership dues will be:
$20.00 for individuals, families, and $10.00 for students.
Contact Treasurer Jim Tubbs for dues information via e-mail: jtubbs015@msn.com

Donations to our club are always welcome and are even tax deductible. Please contact a board member for details.
Lending Telescopes: The society currently has three telescopes for loan and would gladly accept others please contact President Robert Mayer, for more information on these and other benefits.

Telescopes are an individual thing and not practical for public use. However, everyone should have the experience of a good look at the moon for at least 5 minutes in their life time. It is a dimension and feeling that is unexplainable. Pictures or TV can't give this feeling, awareness, or experience of true dimension. A person will not forget seeing our closest neighbor, the moon.

Norman Herrett in a letter to Dr. J. L. Taylor, president of the College of Southern Idaho, Twin Falls, ID, USA.