M111

October 2024

The newsletter of the Richland Astronomical Society and Warren Rupp Observatory

Hello, World!

Welcome to the first issue of the revived newsletter for the Richland Astronomical Society, M111. The format, frequency, etc. are all to be determined. Your suggestions on these and any other topics are welcome. Even more welcome is content created by members. Regardless of experience or perceived writing talent everyone in the club has experiences, stories, research, and images that they can share.

Some examples of topics and other items are:

- "Road Trip" reports: Tell the other members of the club about a star party or another club's activities, or a visit to a historic astronomical or space site.
- Astronomical League programs that you've completed – or are currently working on. Discuss interesting objects, anything you've learned, and provide tips for others thinking about working on the program.
- Images (including sketches) that you've created that are interesting, challenging, or pretty, accompanied by a short or long summary of circumstances, camera settings, processing technique, etc.
- Astronomical items for sale or trade.
- Hidden Hollow photos, stories, etc.
- RAS History or vintage photos

- Reviews of equipment, books, web-based tools, or software. These don't have to be exhaustive reports with charts, graphs, and destructive testing. Just discuss the item and what you liked or didn't like, whether you recommend it, and so on.
- Anything else related to astronomy.

Updates to Membership Roster Data

Because we're a small and frugal club, we maintain our membership data using the free Night Sky Network website maintained by the Astronomical Society of the Pacific and sponsored by the Jet Propulsion Laboratory and NASA. All RAS members have an NSN account. Additionally, every member of RAS is also a member of the Astronomical League. Our membership data for the Astronomical League is maintained in a spreadsheet that's updated manually.

If a member moves, changes phone numbers, or wants to update their profile in some other way, they can do so easily by logging onto their NSN account. Additionally, they can email the club secretary (secretary@wro.org) and ask that it be updated. If you update your data – especially your mailing address, please email the secretary so that he can update the Astronomical League's roster as well.

Content from other sources

This issue contains material provided by both the Night Sky Network and the Astronomical League. These will continue to be a feature of the newsletter, but the hope is that most of the material will come from the membership.

How to submit content and suggestions

Please send any content submissions, questions, or suggestions to the RAS secretary at secretary@wro.org.

Constellation Hunter

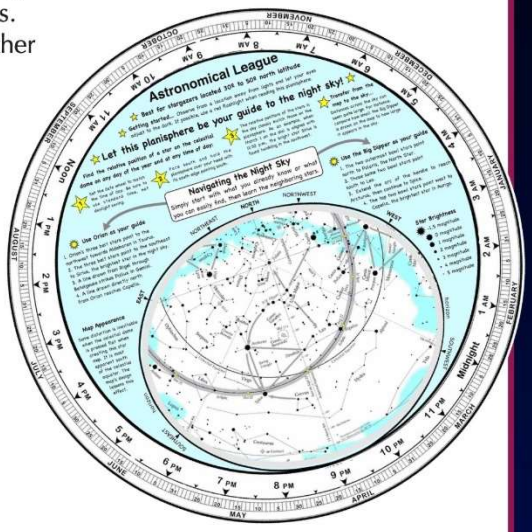
A great way to learn
the constellations and brighter stars

How on Earth do you find your way among the stars?
Here is a helpful Astronomical League Observing Program designed for you!

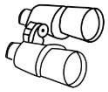
- Become familiar with the constellations and brighter stars.
- Begin learning how to navigate among the stars.
- Provides a sold foundation for moving on to other observing programs.

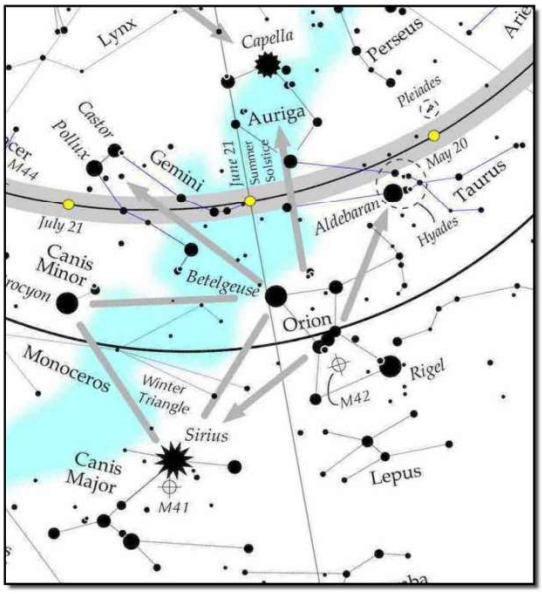
You'll need:
- a basic star map or a planisphere,
- a red flashight.

A **planisphere** is a rotatable dial that shows star positions in the sky at any time during the year.

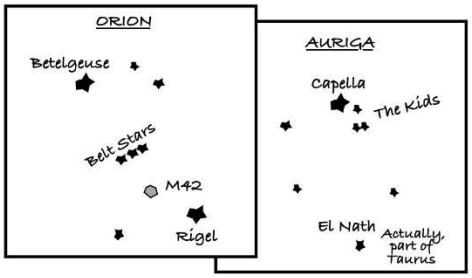


Binoculars are a great aid for seeing better and seeing more!





Sketch all stars that are visible to the unaided eye out the limits of the constellation's boundary. Named stars should be identified along with other features visible such as galaxies, clusters, and nebulae.



For complete details ...
https://www.astroleague.org/constellation-hunter-observing-program/

Delphinus, take a closer look

Surprises await for the binocular and small telescope user

Delphinus is a small constellation following Altair in its westward motion across the sky. To some observers, the tracing of its major stars really does resemble a leaping dolphin. While it doesn't contain any bright highlights, its packs binocular and telescope features.

Gamma Delphini
A nice double star, easily split at 50x.

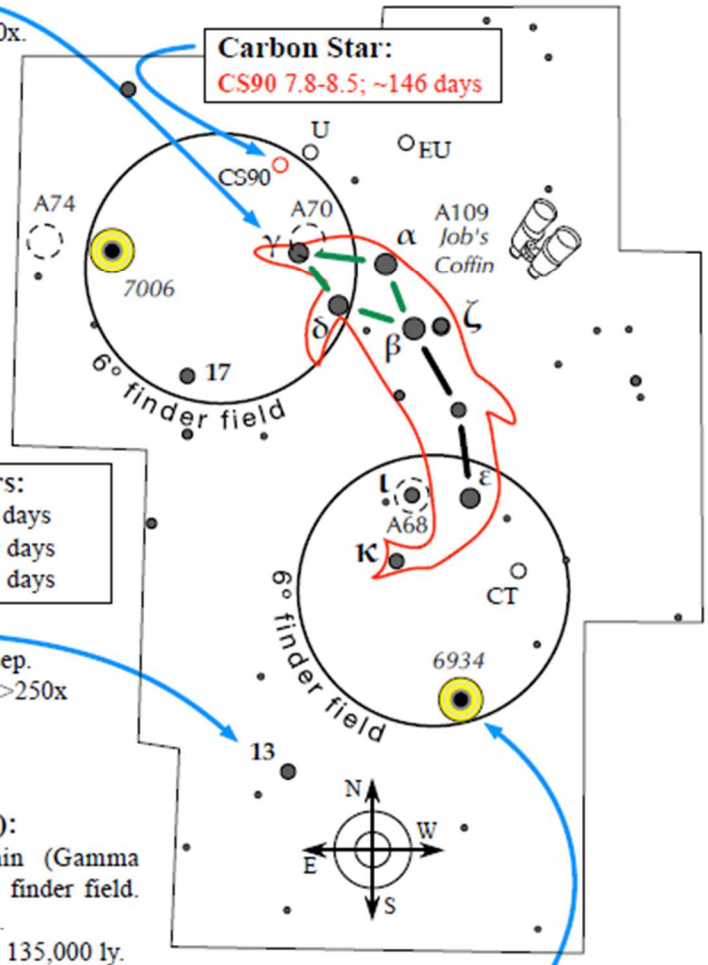
Asterisms:
A68 13 stars mag. 10-13 forming a distinctive triangle 10 minutes east of Iota.
A70 lies 1° northwest of Gamma Delphini. The "Flyswatter."
A74 Imaginative "Toadstool" shape of 13 stars of mag. 9-12.
A 109 - Job's Coffin: comprises the rough parallelogram of Gamma, Alpha, Beta, and Delta Delphini.

Variable Stars:
U 6.1-7.6; ~120 days
EU 5.4-6.7; ~59 days
CT 6.8-8.5; ~83 days

13 Delphini
5.7 & 8.5 magnitude; 1.5 seconds sep.
A challenging double star, needs >250x and good seeing.

To find Globular Cluster NGC 7006 (aka Caldwell 42):
Place the snout of the dolphin (Gamma Delphini) on the west side of the finder field. NGC 7006 lies on the eastern edge.
Mag: 10.6; Dia: 2.8 min; Distance: 135,000 ly.

AL Observing Programs represented here:
Constellation Hunter, Double Star, Variable Star, Asterism, Caldwell, Globular Cluster, & Carbon Star.



To find Globular Cluster NGC 6934 (aka Caldwell 47):
Place Epsilon and Iota Delphini at the north edge of the finder field. The globular cluster lies near the southern edge.
Magnitude: 8.8; Diameter: 1.2 minutes

2405

Scan the area with binoculars for asterisms and stellar groupings

Between the First Point of Aries and the Water Jar

The **First Point of Aries** marks the intersection of the celestial equator and the ascending ecliptic which defines the location of 0 hrs Right Ascension.

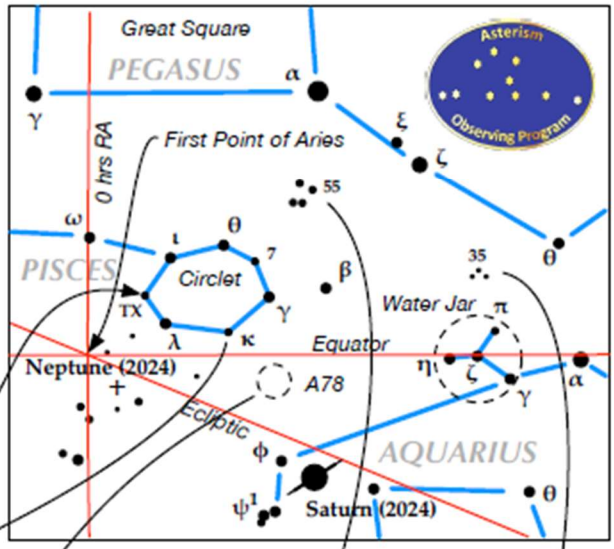
Naked eye and binocular sights

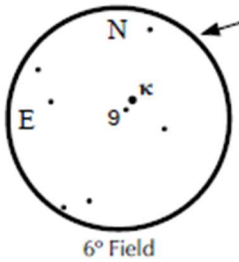
Circlet. These six, maybe seven depending on sky clarity and visual acuity, 4th and 5th magnitude stars trace a squashed circle at the far southwestern corner of Pisces.

It lies 10° below the southern edge of the asterism the **Great Square** in Pegasus, and less than 15° east of another asterism, the four 4th & 5th magnitude stars of the **Water Jar** in Aquarius.

These features are subtle, not bright. Best seen from a dark location with a transparent sky.

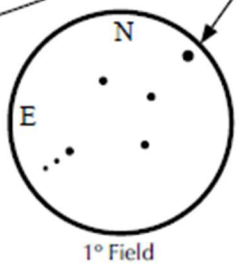
Binoculars users enjoy studying **TX Piscium**. The star varies between 4.8 and 5.2 magnitude, a noticeable amount to the careful observer. It appears as a distinct orange-red hue and its period is irregular, but averages around 224 days.





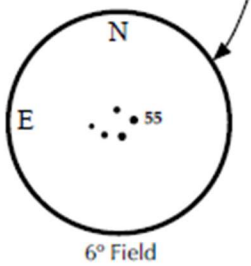
6° Field

Binocular Double
4.9 mag. Kappa Psc
6.2 mag. 9 Piscium
Separation: 9 min



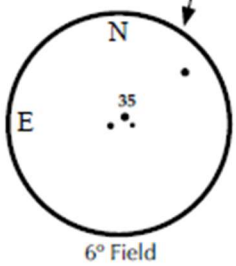
1° Field

Asterism A78
7 stars of 7-8 mag.
tracing the outline
of a "rocketship"



6° Field

Binocular sight
A stellar quintet
Four 5th mag stars
& one 6th mag star.



6° Field

Binocular sight
A stellar trio
One 5th mag. star &
two 6th mag. stars.

In 2024, Saturn lies 10° southwest of the Circlet and Neptune hides just 5° to its southeast.

This article is distributed by NASA's Night Sky Network (NSN).

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

October's Night Sky Notes: Catch Andromeda Rising!

By Dave Prosper
Updated by Kat Troche

If you're thinking of a galaxy, the image in your head is probably the Andromeda Galaxy! Studies of this massive neighboring galaxy, also called M31, have played an incredibly important role in shaping modern astronomy. As a bonus for stargazers, the Andromeda Galaxy is also a beautiful sight.

Spot the Andromeda Galaxy! M31's more common name comes from its parent constellation, which becomes prominent as autumn arrives in the Northern Hemisphere. Surprising amounts of detail can be observed with unaided eyes when seen from dark sky sites. Hints of it can even be made out from light polluted areas. Use the Great Square of Pegasus or the Cassiopeia constellation as guides to find it. Credit: Stellarium Web

Have you heard that all the stars you see at night are part of our Milky Way galaxy? While that is mostly true, one star-like object located near the border between the constellations of Andromeda and Cassiopeia appears fuzzy to unaided eyes. That's because it's not a star, but the Andromeda Galaxy, its trillion stars appearing to our eyes as a 3.4 magnitude patch of haze. Why so dim? Distance! It's outside our galaxy, around 2.5 million light years distant - so far away that the light you see left M31's stars when our earliest ancestors figured out stone tools. Binoculars show more detail: M31's bright core stands out, along with a bit of its wispy, saucer-shaped disc. Telescopes bring out greater detail but often can't view the entire galaxy at once. Depending on the quality of your skies and your magnification, you may be able to make out individual globular clusters, structure, and at least two of its orbiting dwarf galaxies: M110 and M32. Light pollution and thin clouds, smoke, or haze will severely hamper observing fainter detail, as they will for any "faint fuzzy." Surprisingly, persistent stargazers can still spot M31's core from areas of moderate light pollution as long as skies are otherwise clear.

Generated version of the Andromeda Galaxy and its companion galaxies M32 and M110. Credit: Stellarium Web

Modern astronomy was greatly shaped by studies of the Andromeda Galaxy. A hundred years ago, the idea that there were other galaxies beside our own was not widely accepted, and so M31 was called the "Andromeda Nebula." Increasingly detailed observations of M31 caused astronomers to question its place in our universe – was M31 its own "island universe," and not part of our Milky Way? Harlow Shapley and Heber Curtis engaged in the "Great Debate" of 1920 over its nature. Curtis argued forcefully from his observations of dimmer than expected nova, dust lanes, and other oddities that the "nebula" was in fact an entirely different galaxy from our own. A few years later, Edwin Hubble, building on Henrietta Leavitt's work on Cepheid variable stars as a "standard candle" for distance measurement, concluded that M31 was indeed another galaxy after he observed Cepheids in photos of Andromeda, and estimated M31's distance as far outside our galaxy's boundaries. And so, the Andromeda Nebula became known as the Andromeda Galaxy.

While M31's disc appears larger than you might expect (about 3 Moon widths wide), its "galactic halo" of scattered stars and gas is much, much larger – as you can see here. In fact, it is suspected that its halo is so huge that it may already mingle with our Milky Way's own halo, which makes sense since our galaxies are expected to merge

sometime in the next few billion years! The dots are quasars, objects located behind the halo, which are the very energetic cores of distant galaxies powered by black holes at their center. The Hubble team studied the composition of M31's halo by measuring how the quasars' light was absorbed by the halo's material. Credits: NASA, ESA, and E. Wheatley (STScI)

These discoveries inspire astronomers to this day, who continue to observe M31 and many other galaxies for hints about the nature of our universe. One of the Hubble Space Telescope's longest-running observing campaigns was a study of M31: the Panchromatic Hubble Andromeda Treasury (PHAT). Dig into NASA's latest discoveries about the Andromeda Galaxy, on their Messier 31 page.

Originally posted by Dave Prosper: September 2021 Last Updated by Kat Troche: September 2024