

STELLAR SENTINEL



Grand Traverse Astronomical Society November 2025

Stars, Stories and Galaxies of Autumn II

By Bob Moler



The Double Cluster, a reduced size and cropped photograph by Daniel Dall'Olmo. It is similar to the field of what is seen with an eyepiece delivering 50 X magnification.

This article is based on a talk I gave a few years ago to the society and at the Traverse Area District Library.

One of the jewels of the night sky, or should I say two of them, is the Double Cluster. The two components actually have star designations: η and Chi (χ) Persei. They are located nearly midway between Perseus and Cassiopeia. I locate them with the naked eye as a small fuzzy spot in the Milky Way.

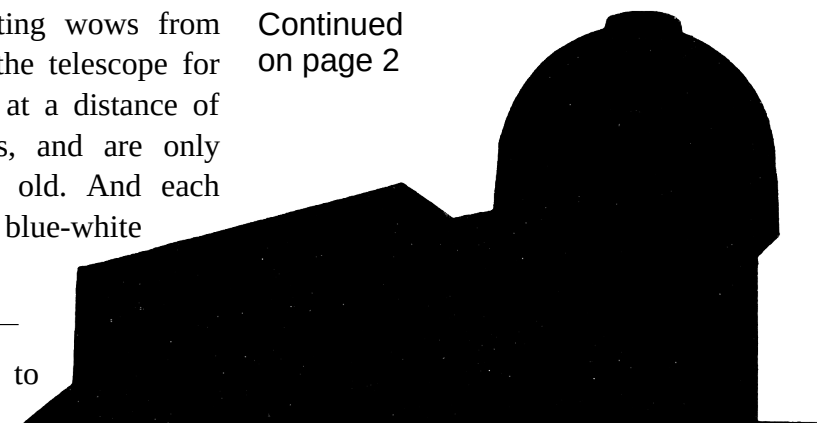
They are a glorious highlight of an autumn star party eliciting wows from those that see them in the telescope for the first time! They lie at a distance of about 7,500 light years, and are only about 14 million years old. And each cluster has over 300 hot blue-white supergiant stars.

the Great Andromeda Galaxy, the closest spiral galaxy to our own Milky Way., and visible to the naked eye.

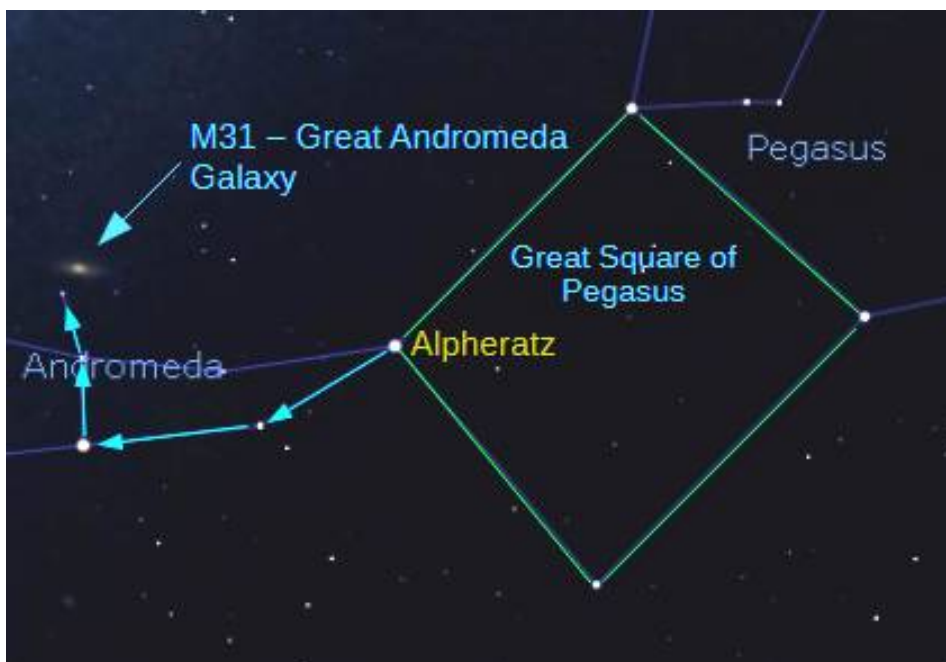
It's very easy to find with the naked eye on a dark moonless night by locating the body of Pegasus, the flying horse, which is a big square, called the Great Square of Pegasus. On autumn evenings the square is standing on one corner. The leftmost star is Alpheratz, whose name means 'Navel of the Mare', but it

Continued
on page 2

Andromeda is home to



Stars... (Continued from page 1).



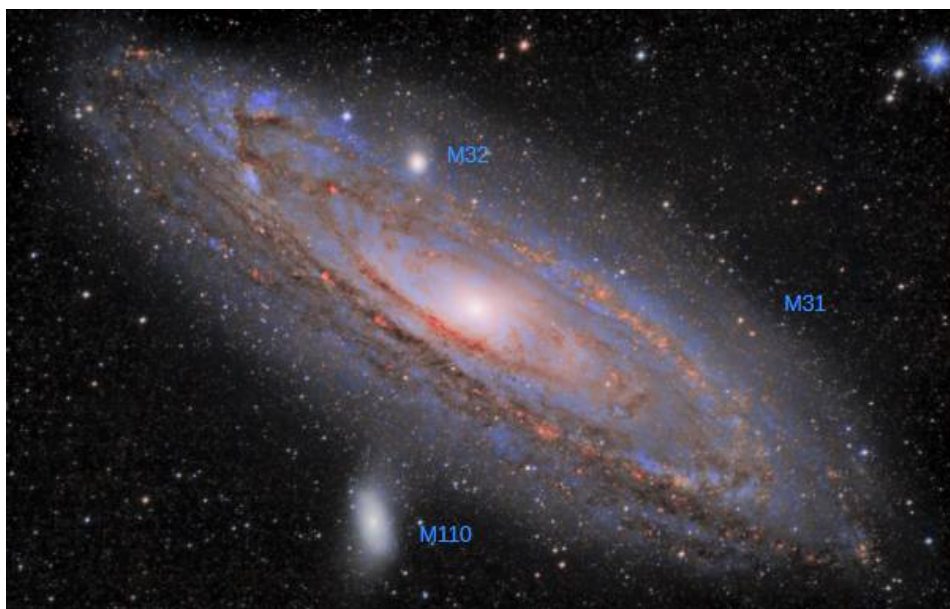
favorites was taken by our own Dan Dall'Olmo. The labels are my own, and are not seen in the sky, or on Dan's original photograph. Andromeda has more satellite galaxies, but these two are the brightest. The designations are from 18th century French astronomer Charles Messier's catalog of faint fuzzies in the sky that weren't the comets he was looking for. What strikes me is how the red hydrogen two (H II) regions pop out as being very red, really enhancing the appearance of the structure of the Galaxy.

How to find the Great Andromeda Galaxy using the Great Square of Pegasus. This is the orientation seen in the east on autumn evenings. Based on Stellarium. officially belongs to Andromeda as Alpha Andromedae.

The constellation of Andromeda, as I see it, is two curved lines of stars diverging from Alpheratz.

I take the lower line with brighter stars, and count off two stars. I then go up two stars. The Great Andromeda Galaxy is just above and right of this last star. To the naked eye, it looks like this, a dim fuzzy spot. In binoculars its elongated shape is evident. It takes long exposure imaging to show its spiral arms.

This image of the Great Andromeda Galaxy is one of my



The Great Andromeda Galaxy by Daniel Dall 'Olmo, with Messier Catalog labels.

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Grand Traverse Astronomical Society - Est. June 1982 – 43 years of service

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Upcoming Society Events

Events not held at the Joseph H. Rogers Observatory depend on the weather.

Friday, November 7 – Monthly meeting and star party at NMC Rogers Observatory. Also available via **Zoom**. See our website <http://www.gtastro.org> for instructions and a link.

Note: Special time!

No Board of Directors Meeting

7 PM – General Meeting: Jerry Dobek will present ***Light Pollution Part 2*** in his ongoing crusade for dark skies.

8 PM – Star Party, if it is clear.

Friday, December 5 – Monthly meeting and star party at NMC Rogers Observatory. Also available via **Zoom**. See our website <http://www.gtastro.org> for instructions and a link.

7 PM – Board of Directors Meeting

8 PM – General Meeting: Bob Moler will continue his December series on ancient astronomy with ***Ptolemy—The Good, Bad and the Ugly***.

9 PM – Star Party, if it is clear.

Zoom Meeting Link:

<https://us02web.zoom.us/j/8388913229?omn=88435646093>

Stars... (Continued from page 2).



Size comparison of the Moon and the Great Andromeda Galaxy. What is seen visually in a telescope appears to extend only to the inner dust band. To me, binoculars show a greater extension of the galaxy. Created using Stellarium and GIMP.

I have always heard it said that the Andromeda Galaxy has width of six Moons side by side. In order

to check that out using Stellarium, I superimposed the moon on the image of the galaxy hoping that they made the image of the galaxy the correct size for the scale.

The spiral structure is too faint to discern visually with a telescope, though that dust lane below the nucleus of the galaxy can be seen.

Messier never cataloged M110. Caroline Herschel, sister of William Herschel, discoverer of the planet Uranus, rediscovered it in 1785. I've known it since the 1950s, observing it as a teenager with my 5 inch Newtonian reflector, and always knew it is NGC 205. NGC, by the way, stands for "New General Catalog" which isn't that new anymore, being over 130 years old by now. After 1967 NGC 205 was given the added designation M110, obviously posthumously, as the last object in Charles Messier's catalog.

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Stars... (Continued from page 3).

The amazing thing is that the Milky Way and the Great Andromeda Galaxy are going to collide.

Indeed, the far flung stars of both galaxies halos are even now interacting and mingling. The stars themselves will not collide with each other, but I imagine planetary systems of the stars will be effected, especially their outer planets, their Kuiper belts and Oort comet clouds. The same can't be said of the nebulae in each. The collision will cause compression of the gasses in the nebulae of each to create a burst of star formation.

Below Andromeda there is the small constellation of Triangulum. The head of Andromeda is the star Alpheratz, the leftmost star of the Great Square of Pegasus. The third spiral galaxy of our Local Group after the Milky Way and the Andromeda Galaxy, is M33 or the Triangulum Galaxy. It's large, but has a low surface brightness.



Star hopping to M33, the Triangulum Galaxy via Stellarium.

A way to find that is to go back to Alpheratz again, and follow the two stars in the lower line of stars that is part of Andromeda. But instead of hanging a right up to M31, we turn left or down. M33 is located in a pretty blank part of the sky, which makes finding it difficult.



The Triangulum Galaxy (M33) by Daniel Dall'Olmo.

In this image by Dan Dall'Olmo we see the beautiful spiral galaxy, M33. It has two major spiral arms and a very small nucleus, so it's not as bright as M31. It's also a little bit farther away than M31 with distance estimates coming in around 2.9 million light years away. It's also 75,000 light years from M31, meaning that it's probably a satellite of it.

In the collision between Andromeda and the Milky Way it might be the odd man out, and be flung out, or later coalesce with the two combined galaxies. M33 is not as massive or as big as the Milky Way. It's about 60,000 light years in diameter compared to the Milky Way's 100,000 light years.

The bright overexposed red dot at about 2 o'clock position above the nucleus is NGC 604, a hydrogen two region like the Great Orion Nebula. Only it's 1500 light years in diameter, as opposed to Orion's 24. So compared to it the Orion Nebula isn't that great.

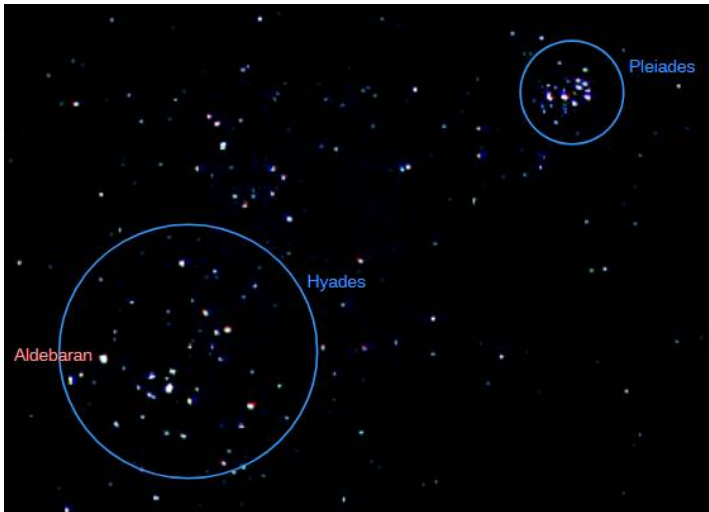
In the northeast, the little clutch of stars called the Pleiades appears, the beautiful Seven Sisters. And below that another winter constellation the face of Taurus the bull, and the letter V of stars which is the Hyades, the half sisters of the Pleiades. The V of stars of the Hyades is also the face of Taurus the bull, with the Pleiades in his shoulder.

According to Greek myth the god Zeus in the guise a bull seduced the maiden Europa. That's why today Europa is one of the satellites of Jupiter, the Roman equivalent of Zeus. The other satellites are also named for Zeus' lovers, his wife Hera, or Juno, is not among them. She's an asteroid. NASA recently sent a

Stars... (Continued from page 4).

spacecraft named Juno to check up on him.

Taurus is charging at something below the horizon. That something is the hunter Orion, who is rising to the challenge Taurus, or to chase the Pleiades.



Here's a family portrait of the Pleiades and Hyades. Yes, family portrait. In Greek mythology, the Hyades are either the sisters of the Pleiades or the half sisters. The god Atlas seems to be their father, Pleione seems to be the mother of the Pleiades, and Aethra is the mother of the Hyades.

In astronomical terms, the Hyades would then be the older sisters of the Pleiades. The Hyades is a star cluster that is 153 light years away. It is the closest star cluster to us and somewhat over 6 times the age of the Pleiades. The younger and splashier Pleiades are around 444 light years away, and only 100 million years old. Whereas the Hyades are over 600 million years old. The Pleiades still contain hot blue stars which have died out by the time of the age of the Hyades.

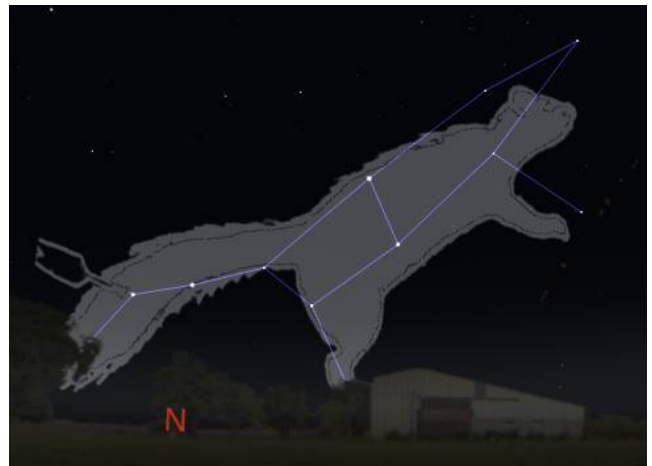
We end this exploration of selected constellations, stars and wonders of the autumn sky with a look at one of the important Anishinaabek constellations, Ojiiig the Fisher or Ojiiig Anung, the Fisher Star. Normally thought of as a constellation of spring, the Fisher, a weasel like creature, is located in the same place in the sky that we call the Big Dipper and Ursa Major, the Great Bear.

There is a wonderful story of how the Fisher brought summer to the Earth:

Back, a long time ago, the earth was always cold, and there was always snow on the ground. The Fisher with his friends the cougar, otter and wolverine climbed to the highest mountain, just under the sky, which was solid. Above which lived the sky people. They tried to break through because the sky held back the warm air that would bring summer to the earth.

The cougar tried it and hit his head on the sky and was knocked out cold. The Otter tried also but slipped and slid all the way down the mountain, just like otters slide down the snow banks today. The Wolverine tried it and he was able to break a hole into the sky and he scampered through and was gone.

It was up to the Fisher to enlarge the hole to make sure that the sky people could not close it so that the warm air would flow down and warm the earth. When he had done this he himself climbed through the hole but the sky people saw him and chased him up a tree while they were shooting arrows at him. Being a magical creature the Fisher was impervious to the arrows, except in one vulnerable spot, the tip of his tail.



One of the arrows hit the tip of his tail and he fell down dead out of the tree and through the hole in the floor of the sky, toward the earth. But before he hit the earth the Great Spirit, Gitchi Manitou, caught him and placed him in the sky where he resides to this day as a sign of the coming of the seasons.

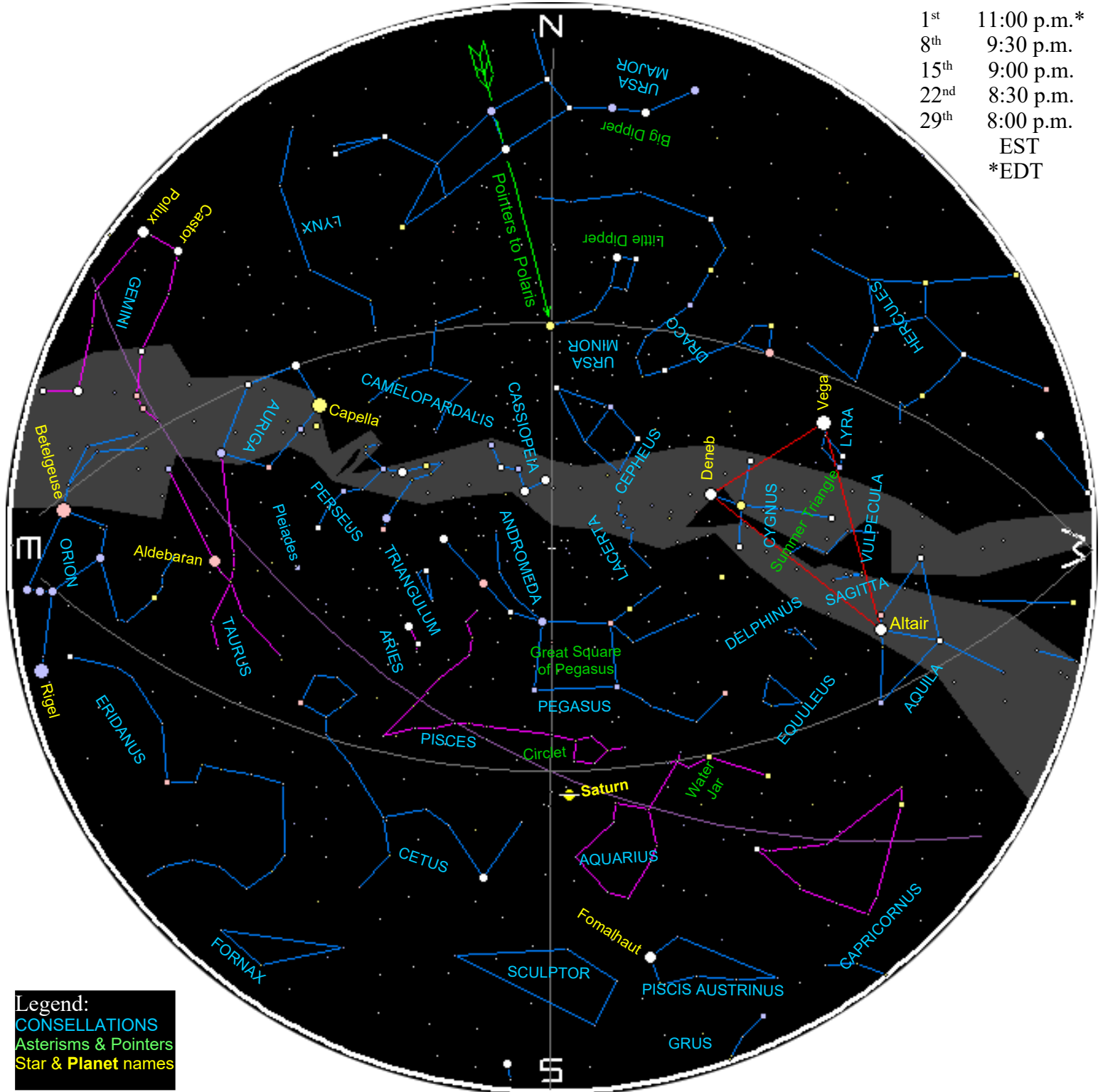
His rise in the northeast in the evening signals the maple sugar season. When summer is nigh, he is high overhead. But, late on autumn evenings the bloody tip of his tail swoops down in the north, and paints the trees, turning their leaves into the fall colors we see this season. ★

The Evening Stars and Planets for November 2025

By Bob Moler

Planets are plotted for mid month. The star positions are correct for:

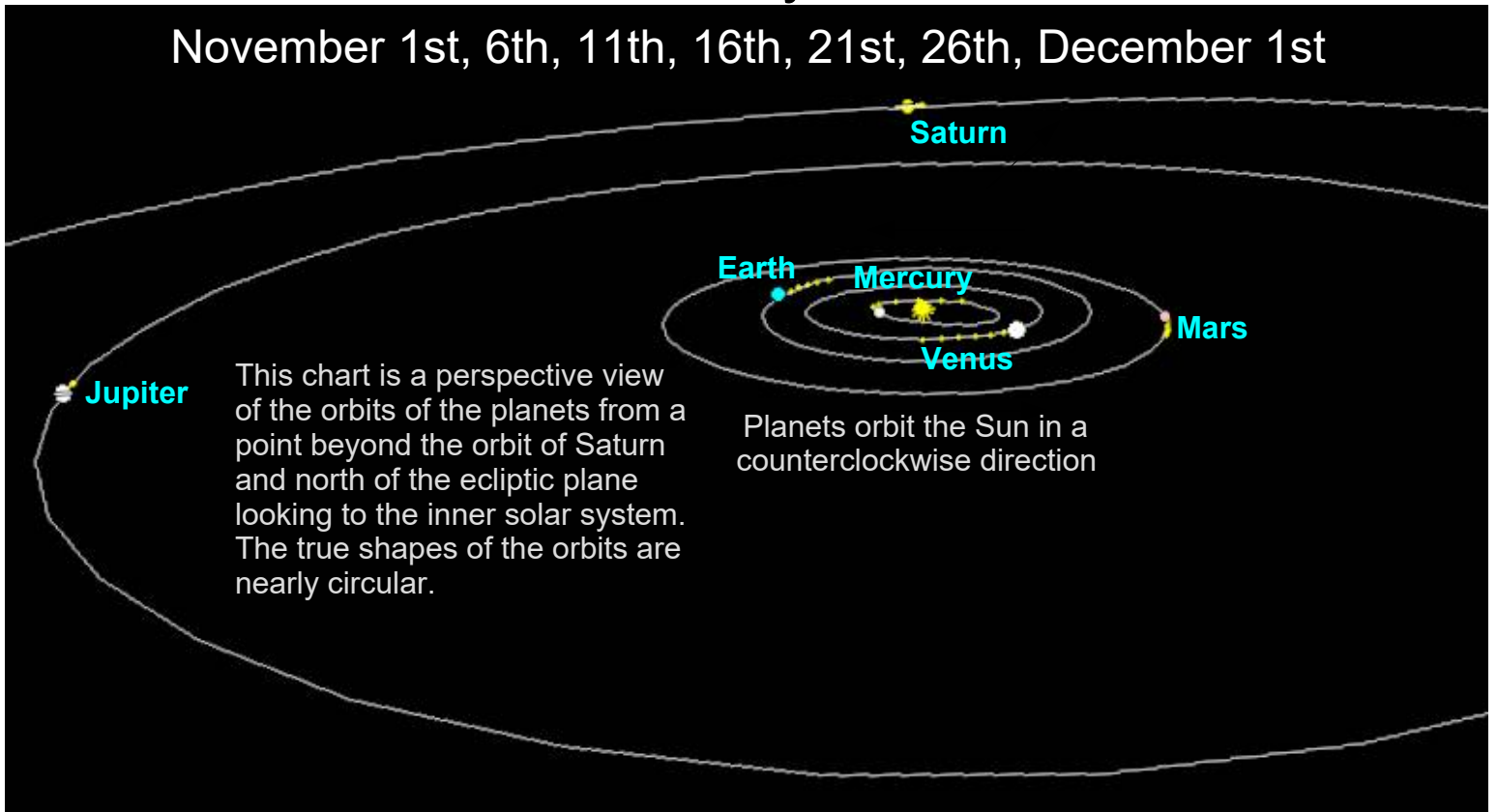
1 st	11:00 p.m.*
8 th	9:30 p.m.
15 th	9:00 p.m.
22 nd	8:30 p.m.
29 th	8:00 p.m.
	EST
	*EDT



November brings the autumn constellations to center stage in the south. The northernmost of the summer constellations are still hanging on in the western sky. Saturn is in Pisces, while Jupiter is about to rise near Pollux in Gemini. The northernmost constellations of the winter sky are in the northeast. Even the central winter constellation Orion is seen on the eastern horizon, now that his nemesis, Scorpius, has set. Pegasus the aerobatic flying horse is flying upside down nearly overhead in the south at chart time. It rides high along with Cassiopeia the queen, Cepheus the king, Andromeda the princess, Perseus the hero and Cetus the sea monster, of that wonderful autumn story.

The Naked Eye Planets

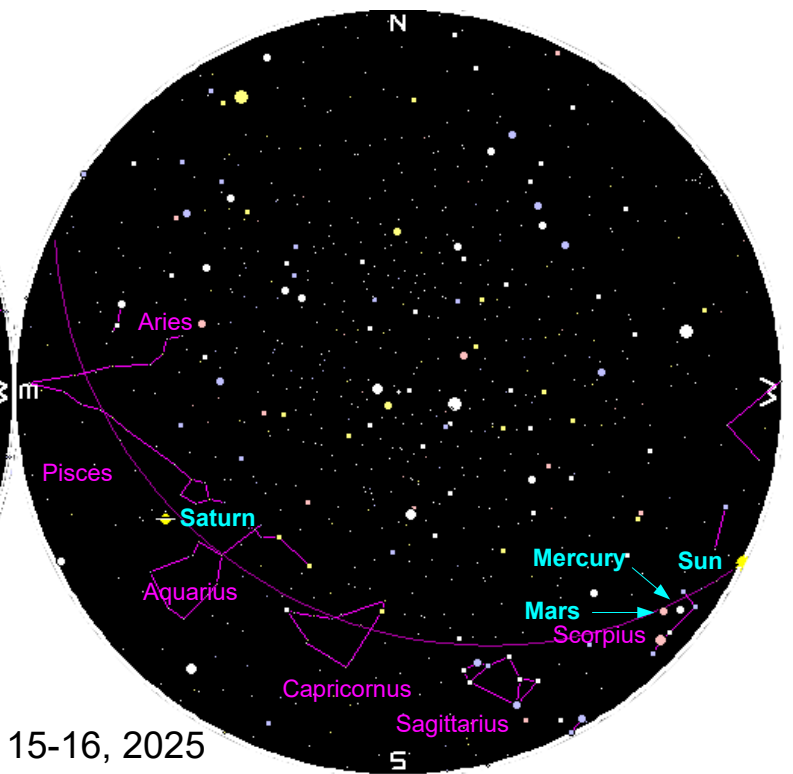
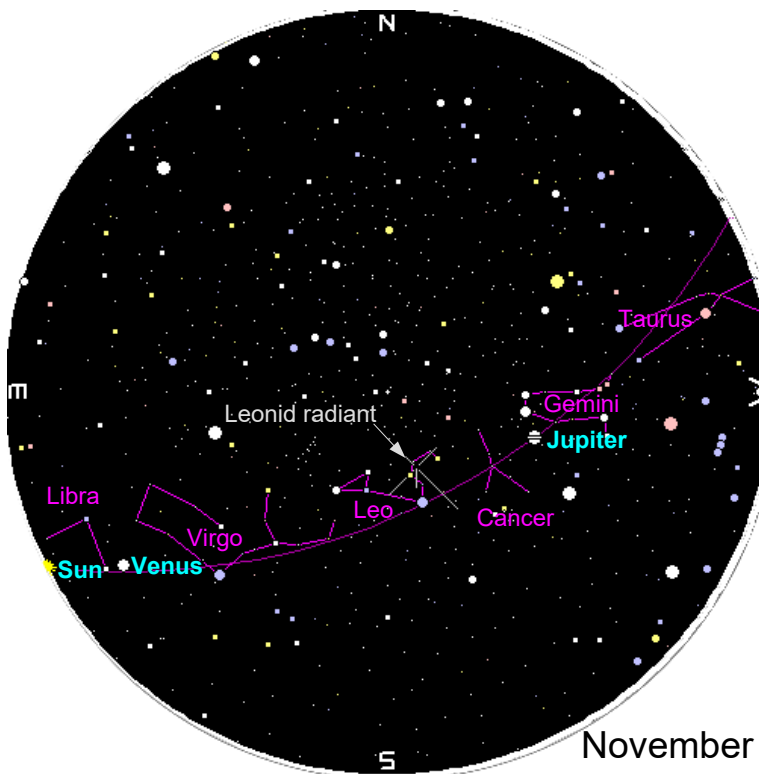
November 1st, 6th, 11th, 16th, 21st, 26th, December 1st



The Planets as Seen From Northern Michigan

Sunrise

Sunset



November 15-16, 2025

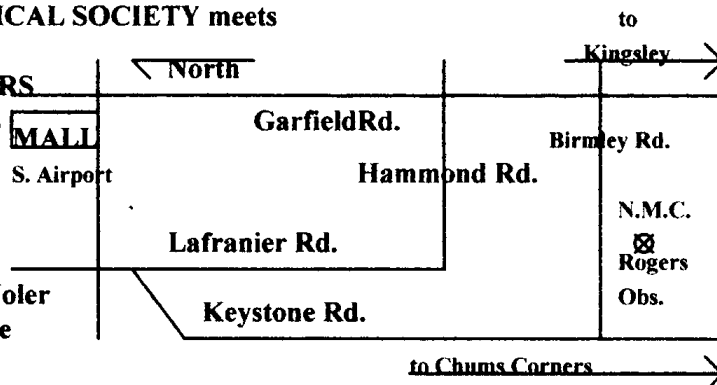
CELESTIAL CALENDAR

Date	Time	Event
Nov 1 Sa		Venus: 16.2° W
1 Sa	12:46 PM	Moon Ascending Node
1 Sa	8:04 PM	Venus-Spica: 3.5° N
2 Su	5:46 AM	Moon-Saturn: 3.7° S
5 We	7:36 AM	South Taurid Shower: ZHR = 10
5 We	8:19 AM	Full Moon
5 We	5:29 PM	Moon Perigee: 356,800 km
6 Th	10:26 AM	Moon-Pleiades: 0.8° S
8 Sa	6:41 AM	Moon North Declination: 28.4° N
8 Sa	9:45 PM	Mercury-Antares: 3.6° N
10 Mo	1:40 AM	Moon-Pollux: 2.7° N
10 Mo	2:56 AM	Moon-Jupiter: 4° S
11 Tu	12:27 AM	Moon-Beehive: 1.8° S
12 We	12:28 AM	Last Quarter
12 We	6:52 AM	North Taurid Shower: ZHR = 15
12 We	5:51 PM	Moon-Regulus: 1.1° S
12 We	10:41 PM	Mercury-Mars: 1.2° N
14 Fr	1:38 AM	Moon Descending Node
17 Mo	5:11 AM	Moon-Spica: 1.3° N
17 Mo	1:10 PM	Leonid Shower: ZHR = 15
19 We	9:48 PM	Moon Apogee: 406,700 km
20 Th	1:47 AM	New Moon
20 Th	4:20 AM	Mercury Inferior Conjunction
21 Fr	7:33 AM	Uranus Opposition
22 Sa	1:12 PM	Moon South Declination: 28.3° S
28 Fr	1:59 AM	First Quarter
28 Fr	4:33 PM	Moon Ascending Node
29 Sa	2:08 PM	Moon-Saturn: 3.8° S
Dec 1 Mo		Venus: 8.7° W

Sky Events Calendar by Fred Espenak and Sumit Dutta (NASA's GSFC), <http://eclipse.gsfc.nasa.gov/SKYCAL/SKYCAL.html> to make your own for any year. Some additions and clarifications were made by the editor.

The GRAND TRAVERSE ASTRONOMICAL SOCIETY meets

on the first Friday of each month at the NORTHWESTERN MICHIGAN ROGERS OBSERVATORY at 8 p.m. The public is invited to attend all Society functions as our guests. We are a non-profit group dedicated to the study of astronomy and the sky above us. If you would like more information on GTAS, please call Bob Moler at 946-8649, or write to the address on the last page of this publication.



DATE	SUN RISE	SUN SET	DAYLIGHT HOURS	TWILIGHT*		MOON RISE OR PHASE	ILLUM OR TIME	ILLUM FRACTN
				END	START	SET**		
Sat 1	08:20a	06:30p	10:10	07:35p	07:15a	Set	04:33a	83%
EST	Time Change							
Sun 2	07:21a	05:29p	10:07	06:34p	06:16a	Set	04:52a	91%
Mon 3	07:23a	05:28p	10:04	06:33p	06:18a	Set	06:14a	96%
Tue 4	07:24a	05:26p	10:02	06:32p	06:19a	Set	07:40a	99%
Wed 5	07:26a	05:25p	09:59	06:30p	06:20a	Full	Rise 05:10p	100%
Thu 6	07:27a	05:24p	09:56	06:29p	06:21a	Rise	05:50p	97%
Fri 7	07:28a	05:23p	09:54	06:28p	06:23a	Rise	06:43p	91%
Sat 8	07:30a	05:21p	09:51	06:27p	06:24a	Rise	07:49p	83%
Sun 9	07:31a	05:20p	09:49	06:26p	06:25a	Rise	09:04p	73%
Mon 10	07:32a	05:19p	09:46	06:25p	06:26a	Rise	10:22p	63%
Tue 11	07:34a	05:18p	09:44	06:24p	06:27a	Rise	11:37p	52%
Wed 12	07:35a	05:17p	09:41	06:23p	06:29a	L Qtr	Rise 12:48a	42%
Thu 13	07:36a	05:16p	09:39	06:22p	06:30a	Rise	01:56a	32%
Fri 14	07:38a	05:15p	09:37	06:22p	06:31a	Rise	03:02a	23%
Sat 15	07:39a	05:14p	09:34	06:21p	06:32a	Rise	04:06a	16%
Sun 16	07:40a	05:13p	09:32	06:20p	06:33a	Rise	05:10a	9%
Mon 17	07:42a	05:12p	09:30	06:19p	06:34a	Rise	06:16a	5%
Tue 18	07:43a	05:11p	09:28	06:18p	06:36a	Rise	07:22a	2%
Wed 19	07:44a	05:10p	09:25	06:18p	06:37a	Rise	08:27a	0%
Thu 20	07:46a	05:09p	09:23	06:17p	06:38a	New	Set 04:56p	1%
Fri 21	07:47a	05:09p	09:21	06:16p	06:39a	Set	05:36p	3%
Sat 22	07:48a	05:08p	09:19	06:16p	06:40a	Set	06:26p	7%
Sun 23	07:49a	05:07p	09:17	06:15p	06:41a	Set	07:24p	12%
Mon 24	07:51a	05:07p	09:15	06:15p	06:42a	Set	08:29p	19%
Tue 25	07:52a	05:06p	09:13	06:14p	06:44a	Set	09:38p	27%
Wed 26	07:53a	05:05p	09:12	06:14p	06:45a	Set	10:49p	37%
Thu 27	07:54a	05:05p	09:10	06:14p	06:46a	Set	12:00a	47%
Fri 28	07:56a	05:04p	09:08	06:13p	06:47a	F Qtr	Set 01:12a	58%
Sat 29	07:57a	05:04p	09:07	06:13p	06:48a	Set	02:26a	68%
Sun 30	07:58a	05:03p	09:05	06:13p	06:49a	Set	03:44a	78%

* Nautical Twilight

** Moonrise or moonset, whichever occurs between sunset and sunrise

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Dues: ___ Single Membership\$25.00/yr **Mail check to:** G.T.A.S.

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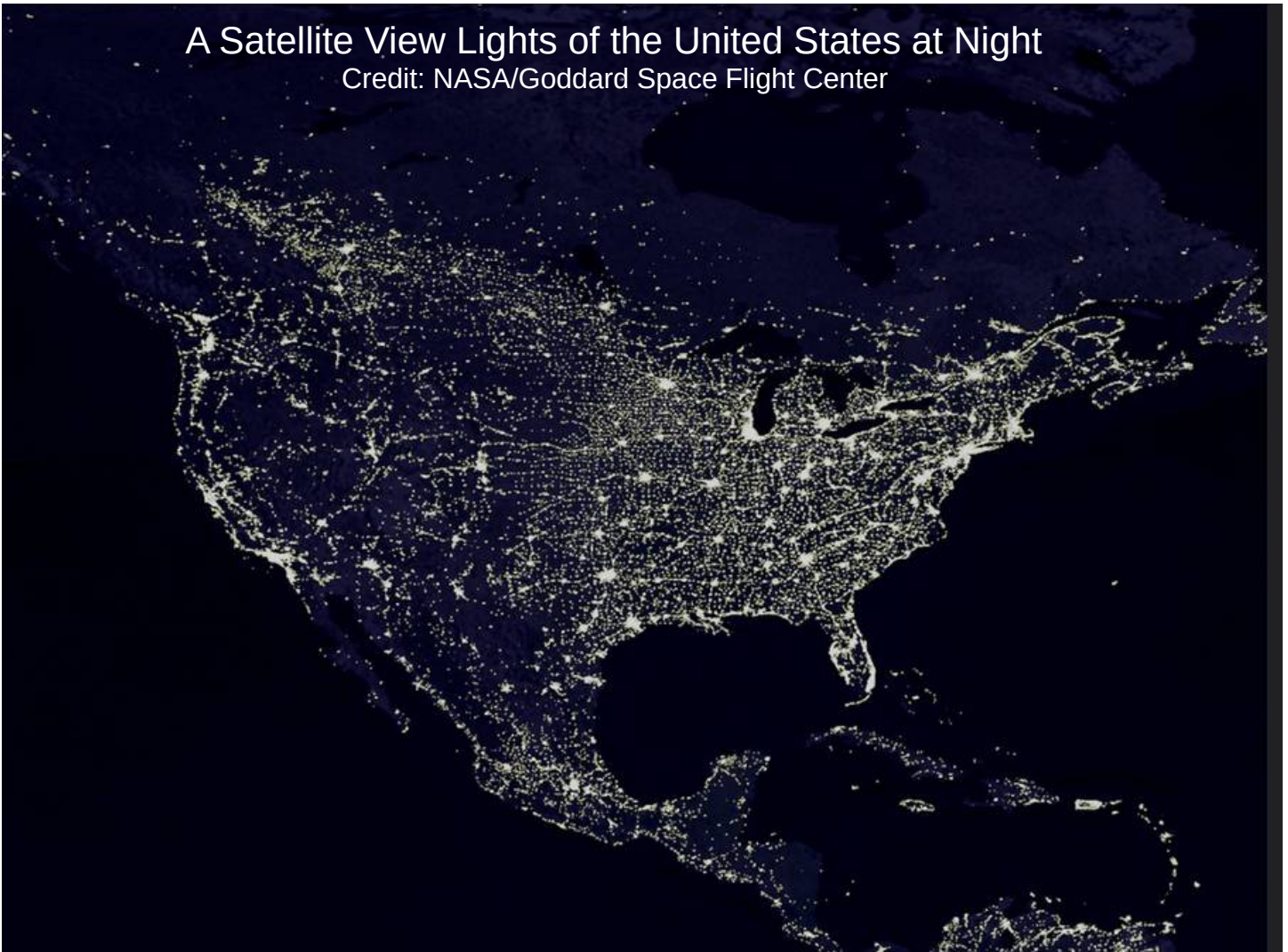
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 Example: Single Joining in June:
 \$25.00 X 6 (Jul-Dec) / 12 = \$12.50

A Satellite View Lights of the United States at Night

Credit: NASA/Goddard Space Flight Center



Eileen Carlisle

Avon Representative

1473 Birmley Road

Traverse City, MI 49696-8808

Phone: 946-8123 Fax: 929-0859

E-Mail: EileenAvonRep@charter.net

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