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Penobscot Valley Star Gazers

An Astronomical Society of Central Maine

The goldenrod is yellow, / The corn is turning brown,
The trees in apple orchards / With fruit are bending down.
-Helen Hunt Jackson



September 2025

September Meeting

The September 2025 meeting of the PVSG will be held at the Versant Astronomy Center on Monday the 8th at 6:30 pm. We will be joined by the UMaine Astronomy Club. Shawn plans a planetarium show for the program. Zoom may be available and should be the regular ID. (Zoom meeting ID 862 9984 6478 Password: PVSG.)

Thanks for last month's program go to Jeff for his talk about his Dwarf smart telescope.

Note: Dues collection starts next month.



PVSG Monthly Meeting Minutes August 11, 2025

Note: Some of the information provided in these minutes are recorded out of order to allow for organizing them according to their normal meeting section.

The August minutes were unavailable.



Observe The Sky This Month

Some Selected Objects
September 2025

General sky comments – Autumnal equinox is on the 22nd at 18:19 UT (2:19 p.m. EDT on the 22nd) and autumn officially begins. The full Moon was on the 7th this month and is the Harvest Moon. Being closest to the equinox it is high in the sky for an extraordinary long time each night helping with the harvest. It is also known as the Corn Moon from the corn harvested in September. There was a total eclipse of the Moon that same night. Unfortunately it was not visible in the Americas. This month two moons of Jupiter [Io and Europa] have multiple incidences of both moon shadows being projected on Jupiter. The dates are Sep. 20, 23, 27, & 30. If you are interested details can be found in the September issues of Sky and Telescope, Astronomy, or Observer's Handbook 2025 for details. When the morning sky has no Moon and observing from a dark site near the time of the equinox the Zodiacal Light may be observed. The dates this month are from the 19th through the end of September.

Events before the meeting next month – Double shadows on Jupiter Oct. 4, 5, & 7. Full Moon, is on Oct. 6.

Planets this month – Full Moon was on Sunday September 7th before the monthly meeting on the 8th. Last quarter Moon is on Sunday the 14th, New Moon (lunation 1271) is on Sunday the 21st and first quarter is on Monday the 29th. Mercury is too close to the Sun to be observed having been at superior conjunction on the

13th. Venus is visible in morning twilight and appears in conjunction with both Regulus and the waning crescent Moon on the 19th. This conjunction is best seen in the Western United States. Farther west the Moon occults Regulus and then Venus. Mars is visible in evening twilight among the stars of Virgo. Jupiter dominates the evening and overnight sky. The waning crescent Moon passes 5° to the north on the 16th. Saturn achieved opposition on the 21st 72 light minutes, 8.66 au from the Earth. The rings appear open from 2.6° to 1.5° south of the planet during the month due to the orbit of the Earth. Saturn is in Pisces and the almost full Moon makes a close pass north on the 8th. Uranus (Οὐρανός) is in retrograde in Taurus and can be observed with a binocular or small telescope 4° south of the Pleiades. Neptune is at opposition on the 23rd 4.0 light-hours, 28.9 au from Earth and visible all night in extreme southern Pisces. Pluto remains in Sagittarius at magnitude 14.

Constellations for the month – Last month we observed some of the last of the summer constellations and most of them remain visible and ready to be viewed if you have not done so. We will add a few more this month and take advantage of the excellent sky conditions and weather occurring this time of the year. This month these new constellations will be visible starting with the constellation most southern for us Piscis Austrinus, the Southern Fish. I usually think of this constellation as a fish with its mouth wide open and turned up to catch the water falling through the sky from the "Water Jar" of Aquarius the constellation above. Piscis Austrinus is very simple to find. Low in the sky about 10 to 15 degrees above the horizon you will see the 1st magnitude star Fomalhaut. It will not be as bright as you might expect due to the low latitude but it marks the bottom of the mouth of the fish. Dimmer stars form the body of the fish. If it was not for Fomalhaut and a few double stars, Piscis Austrinus would not be worth observing for us. The easy double star 4.3 and 7.1 magnitude Beta (β) 6° WSW of Fomalhaut, Dunlop 241 a pair of orange stars 1° NW of Beta, and H VI 119 a triple system 1° slightly west of south of the top star of the "Fish" epsilon (ε) with a close pair of yellow stars and a more distant blue star. Above is the constellation Aquarius, the Water Bearer. Aquarius, the Water Bearer is a long constellation and covers a large segment of the sky one end of which protrudes into the

summer constellations. When I look at the total constellation of Aquarius I imagine a person holding a jug under their left arm with water pouring out of a jar of water, breaking into three streams one of which pours into the mouth of the southern fish and the other two pour into a river. The jug with the water pouring out is represented by a diamond of four stars, Sadalmelik alpha (α), Sadachbia gamma (γ), zeta (ζ), and pi (π) ranging in brightness from magnitudes 2.9 to 4.4. The water coming out of the jug is represented by the 4.0 magnitude star eta (η). Arching down SW we come to a grouping of five stars where the water from the jug breaks up into streams. Three of the stars are close together and two are separated a bit. They are phi (ϕ), chi (χ), and 1, 2, 3 psi (ψ). Less than 1° NNW of the middle psi (2) is the galaxy NGC 7606 a spiral easily seen at 136X with some detail using my 12" telescope. From 1, 2, 3 psi (ψ) go 6° SW to a pair of galaxies, NGC 7727 and NGC 7723. NGC 7727 is a barred spiral but I could only note the center had several parts. NGC 7723 is likely a disturbed spiral galaxy as I could detect an unusual looking center. The last object I have observed in Aquarius is the Helix Nebula NGC 7293 found 21° south of ζ the eastern tip of the water jug and 11° NW of Fomalhaut. This planetary nebula should be observed by everyone. The following are my field notes: Large, brighter than expected. Numerous stars visible inside. What appears to be the central star was just visible at 13th mag. with averted vision at 150x. This was with a 12" telescope but smaller telescopes also give a nice view of this bright planetary nebula. The best looking view is with a wide field scope at low power. Above the "Water Jug" we will pass through the western third of another fall constellation, Pegasus, the Winged Horse. We will discuss it next month. $3\frac{1}{2}^\circ$ west of this star is a globular cluster NGC 7006. This globular cluster and globular cluster M15 located 8° SW should also be noted. M15 will be expanded upon in our Messier object of the month covered below. Going north we now come on an obscure constellation Lacerta, the Lizard. Lacerta was created by Hevelius to cover an area not otherwise covered in the sky. It contains mostly 4th and 5th magnitude stars but is not particularly difficult to observe in a reasonably dark sky. The major features of Lacerta are three open clusters. NGC 7296 is located $\frac{1}{2}^\circ$ east of Beta (β) Lacerta the top star in the constellation. This will probably be the most difficult object you will observe this month. It is a collection of two to three dozen faint stars resolvable at 100X with a larger telescope. NGC 7243 is much easier to find $2\frac{1}{2}^\circ$ SSW of Beta (β). This cluster is a semi-circle of stars with a tight grouping of four or five stars at the bottom center and it stands out in the field of background stars. Continue another $3\frac{1}{2}^\circ$ on SSW of NGC 7243 to find NGC 7209 an open cluster of 75 to 100+ stars depending on the size of your telescope. At 100X NGC 7209 is surrounded by several brighter stars not part of the cluster. Above Lacerta is Cepheus, the King. Look for it below in Featured Constellation. My social media handle is Cepheus King if interested.

Featured star of the month – If you use the Astrono-

my magazine Deep Space Mysteries Calendar (as I do) the featured article at the end of the calendar Fomalhaut is the subject. It contains insights into the rings of dust known to surround the star and the possibility of embedded planets. I urge you to read this article if you have access to or use this calendar. The following is a more formal take on the star. Fomalhaut, alpha (α) Piscis Austrini at mag 1.16 is the brightest star in the constellation Piscis Austrinus the southern fish. It is a main sequence Vega like star. Abbreviated as α PsA at a distance of 25.13 ± 0.09 ly. Fomalhaut has two companion stars, a main sequence K-type main sequence star and a M-type red dwarf star making it a triple system. Fomalhaut was the first star to have an exoplanet Fomalhaut b (Dagon) seen at visual wavelengths. It has been suggested from new data and examination of old data Fomalhaut b is not a planet but an expanding dust cloud resulting from an old collision. The name comes from an Arabic name *Fom al-Haut* literally "mouth of the whale". Although Fomalhaut is listed as a southern star, it is located at a declination similar to Antares and greater than Sirius. There should be no reason not to observe Fomalhaut.

Messier object for the month – Messier15 is a class IV globular cluster located 4° NW of Equuleus. This fine globular cluster has a sparkling bright core with many chains of stars radiating outward. It was found by Maraldi in September of 1746 while searching for the Chesaux Comet. Messier rediscovered it in 1746. The east side of the cluster is slightly less dense than the western half. In larger scopes 12" and above with 175x the 13 mag. stars in the core can be resolved along with a dark area SW of the center. This is one of the best medium size globular clusters and is fully resolvable.

Featured Constellation – Above Lacerta is Cepheus, the King. I think the constellation looks like a big head with a pointed nose wearing a pointed hat but to others it resembles a house with a pointed roof. Cepheus was the king of Ethiopia, husband of Cassiopeia, and father of Andromeda. The mythology of this family we have covered before. The precession of the axis of the Earth brings the direction of the future North Pole through this constellation with Errai, gamma (γ) the top star in Cepheus the pole star in 2,000 years and the alpha (α) star Alderamin the pole star in 4,700 years. The pole also passes near Alfirk, beta (β) but not as close as the other two stars. Halfway between Alderamin and iota (ι) is the white and light yellow double star Kurhah xi (ξ) cep. This double is a true pair. At the bottom left side of Cepheus is the star delta (δ) cep the original Cepheus variable star. $5\frac{1}{2}^\circ$ ESE of Alderamin is one of the deepest red stars in the sky known as Herschel's "Garnet Star." This star looks the reddest in small telescopes and near minimum magnitude. This star is similar to Betelgeuse being a pulsating red supergiant but likely brighter considering the differences in distance of the two. NGC 7160 is an open cluster 4° W of Alderamin. It contains about a dozen stars with a couple of brighter stars one being double. 4° NE of Alderamin is the open cluster NGC 7142 a large loose collection of about 100

stars. $2\frac{1}{2}^\circ$ E of delta (δ) is the open cluster and emission nebula NGC 7380. It contains near 30 stars embedded in an emission nebula visible without aid but a UHC filter brightens it considerably.

Other objects for the month – If you have an 8 inch or larger telescope look for NGC 40 (Caldwell 2) a round planetary nebula with a bright section on one side. It is located 5.5° SSE of Errai, gamma (γ) Cephei. I

found it by star hopping from Errai using a star chart. It is known as the Bow Tie nebula and was discovered by William Herschel on November 25, 1788. Some observers think it looks like Mars without the red color. The central white dwarf star is visible at powers above 200x.

Bill Shackelford

Come view with me as we observe tonight.