

Night-Sky Photos – 2024

A Compilation of Astronomy Images



Image by Vikash Kr Singh

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Associated Photographer: Christopher S. Hill
Public Photos: As Noted

Introduction

Recently I began taking photos of objects in the night sky, and I have now decided to compile this short album of some of the better images to share with friends and family. The album includes written descriptions of the various objects to help people better understand what they are looking at. In addition, so people can fully grasp the beauty of these objects, I have included some photos from a friend and experienced astrophotographer, Chris Hill. Further, at various points I have incorporated some high quality photos that are publicly available. The telescopic setups used to capture many of the photos in this album are shown on this page, and a Glossary (p. 17) and a funny meme are included at the end of the album. (Note: some photos herein are color enhanced to better display the detailed features of the objects depicted.)



Mike Caba's Photographic Telescope
Seestar S50



Chris Hill's Long Focal Length Photographic Telescope
11" Corrected Schmidt Cassegrain with a 60MP Cooled Mono Camera



Chris Hill's Wide Field Photographic Telescope
2.75" Petzval Refractor with 26MP Cooled Colored Camera

Andromeda Galaxy – M31

Type of Object: Galaxy

Constellation: Andromeda

My Photo Taken From: NW Crossing, Bend, OR

Date of My Photo: August 27, 2024



Description: The Andromeda Galaxy is the closest large galaxy to our own Milky Way Galaxy. Even though it is about 2.5 million light-years away, on dark, clear nights it can actually be seen with the naked eye. In the distant future it will likely collide with the Milky Way; however, the two galaxies will pass through each other with very few, if any, impacts between individual objects. Chris's photo below of Andromeda is spectacular, one of the best I have ever seen.



Bode's Galaxy & Cigar Galaxy – M81 & M82

Type of Object: Two Galaxies

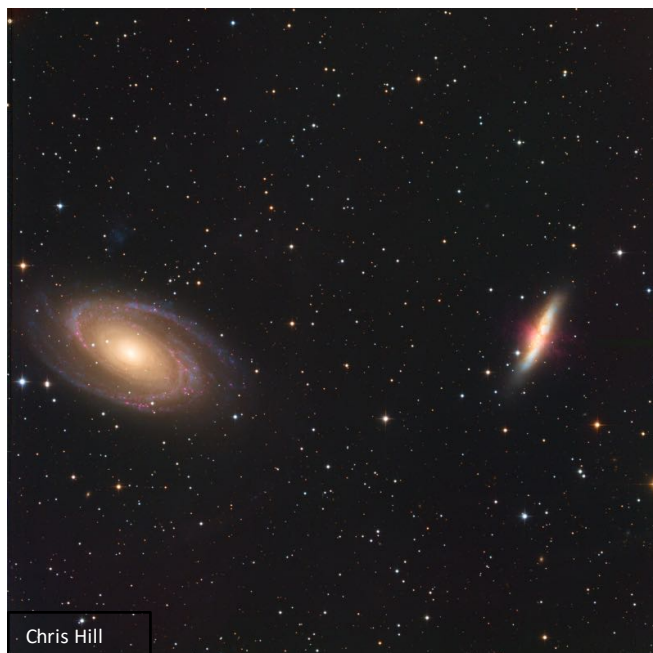
Constellation: Ursa Major

My Photo Taken From: NW Crossing, Bend, OR

Date of My Photo: 7/05/2024



Description: These two galaxies are approximately 12 million light-years from Earth and are located in the sky near the Big Dipper. The image of M81 (lower left) is taken from above its galactic disk showing its spiral nature. The image of M82 (upper right) is from an edge-on perspective. Both galaxies have supermassive black holes in their centers, though these are not visible in the images shown here.



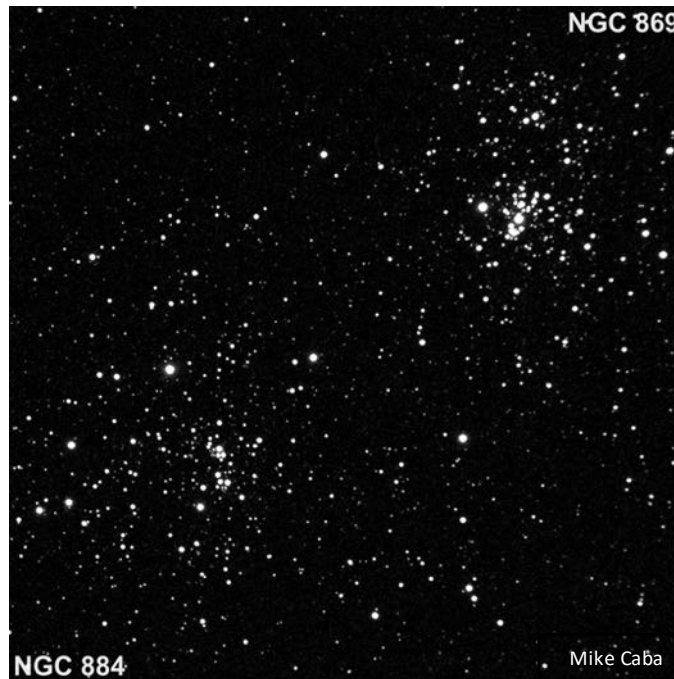
Double Cluster – NGC 869 & 884

Type of Object: Two Open Star Clusters

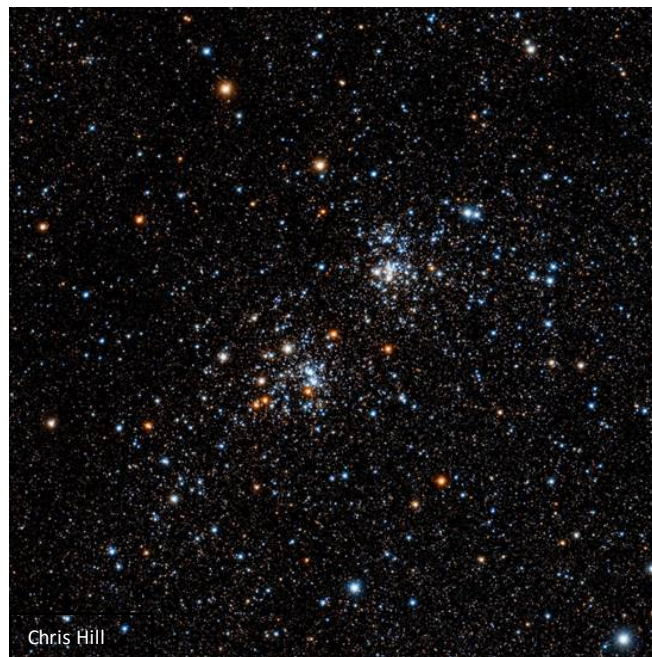
Constellation: Perseus

My Photo Taken From: Ford Road Near Millican, OR

Date of My Photo: 7/11/2024



Description: These two open star clusters are popular amateur astronomy targets, and on dark evenings can even be seen by the naked eye. They are about 7,500 light-years from Earth and are populated by many hot blue stars (see Chris's photo below.) By coincidence, they are the approximate radiant point of the Perseid Meteor Shower, that is, they are roughly the point from which the meteors are seen to emerge.



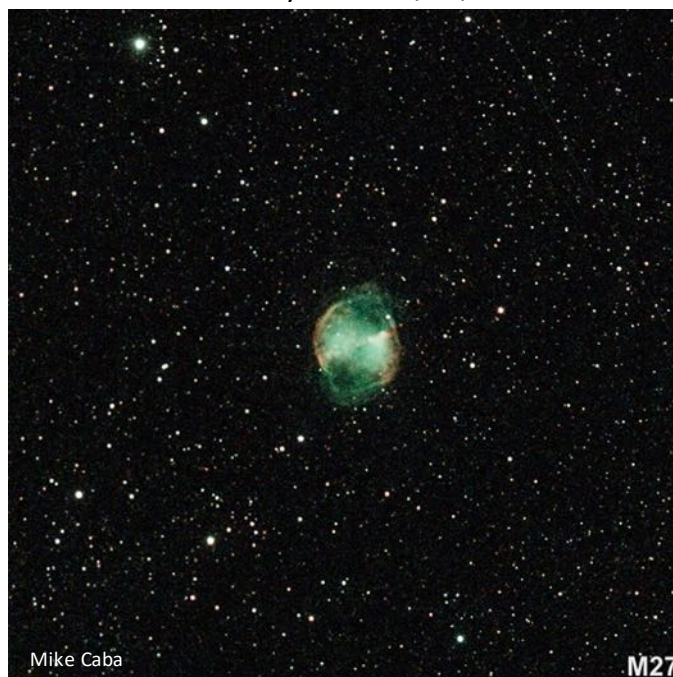
Dumbbell Nebula – M27

Type of Object: Planetary Nebula

Constellation: Vulpecula

My Photo Taken From: NW Crossing, Bend, OR

Date of My Photo: 7/01/2024



Description: This colorful object is known as the Dumbbell Nebula. It is a large cloud of gas and dust that has been ejected from a star that is similar in size to our own Sun. The remaining material not ejected collapsed down to a white dwarf. White dwarfs are typically about the size of the Earth, but are extremely dense. The object is about 1,360 light-years away. The different colors between the photos are due to different camera filters and photo processing.



Eagle Nebula – M16

Type of Object: Open Star Cluster, Nebula

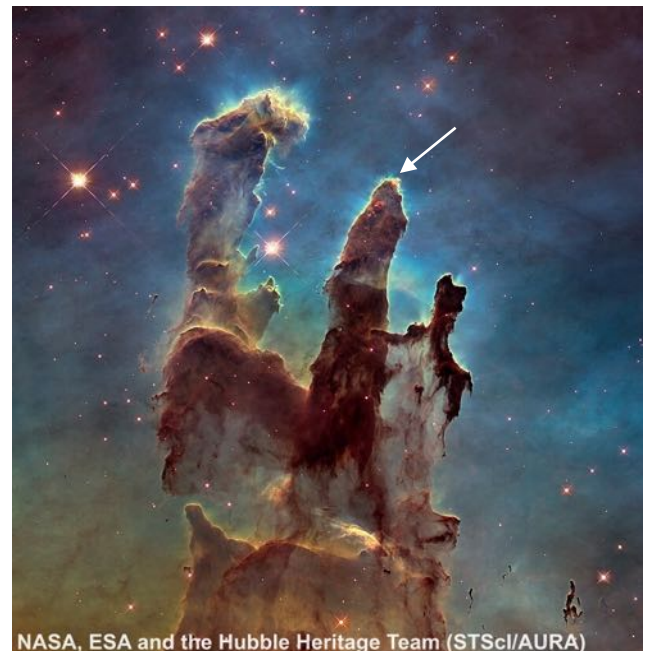
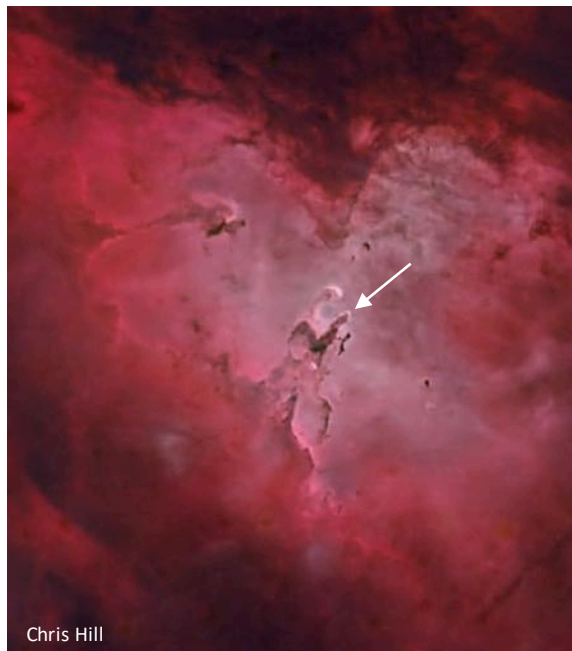
Constellation: Serpens

My Photo Taken From: NW Crossing, Bend, OR

Date of My Photo: 07/09/2024



Description: Though not as colorful as some photos in this album, the one above is one of my favorites of those I have taken. In the center of the photo you can see small pillar like objects floating in the clouds of gas and dust. These are known as the Pillars of Creation. A beautiful photo from Chris is shown below (left) in which all the stars have been removed, and a truly spectacular magnified photo taken by the Hubble Space Telescope is shown below (right). Arrows mark the central pillar in each photo. The distance is about 7,000 light-years from earth.



Great Hercules Cluster – M13

Type of Object: Globular Cluster

Constellation: Hercules

My Photo Taken From: NW Crossing, Bend, OR

Date of My Photo: 6/10/2024



Description: The Great Hercules Cluster is about 25,000 light-years from Earth and contains about 500,000 stars in a giant glob; thus, it is called a “globular” cluster. The cluster is about 120 light-years across and the individual stars within it sometimes collide forming new stars. Shown below is an incredible zoomed in photo taken by the Hubble Space Telescope revealing the staggering number and density of the stars within the cluster. Scientists are not sure how these clusters are formed.



Herschel's Garnet Star – Mu Cephei

Type of Object: Red Hypergiant Star

Constellation: Cepheus

My Photo Taken From: Ford Road Near Millican, OR

Date of My Photo: 8/11/2024



Description: The bright star in these two photos is one of the largest known stars in the Milky Way, being roughly 1,000 times the diameter of the Sun. In fact, if it were placed at the center of our solar system, it would extend out past the orbit of Jupiter; thus, the Earth would be inside the star. It shines at roughly 300,000 times the brightness of the Sun but, fortunately, it is over 2,000 light-years away; so, we are quite safe.



Orion Nebula – M42

Type of Object: Nebula

Constellation: Orion

My Photo Taken From: Dee Wright Observatory, McKenzie Pass, OR

Date of My Photo: October 13, 2024



Description: The Orion Nebula can actually be seen faintly with the naked eye on clear, dark nights. It lies within the sword of Orion, which is just below the three stars that form the warrior's belt, and appears as a slightly fuzzy patch to people with sharp vision. The above photo is one of the better ones I have been fortunate enough to capture of any object, but the truly spectacular nature of this nebula is fully revealed in the Hubble Space Telescope image shown below. This object is about 1,300 light-years from Earth and is about 25 light-years across. Note the bright stars glowing in the heart of the cloud in both photos.



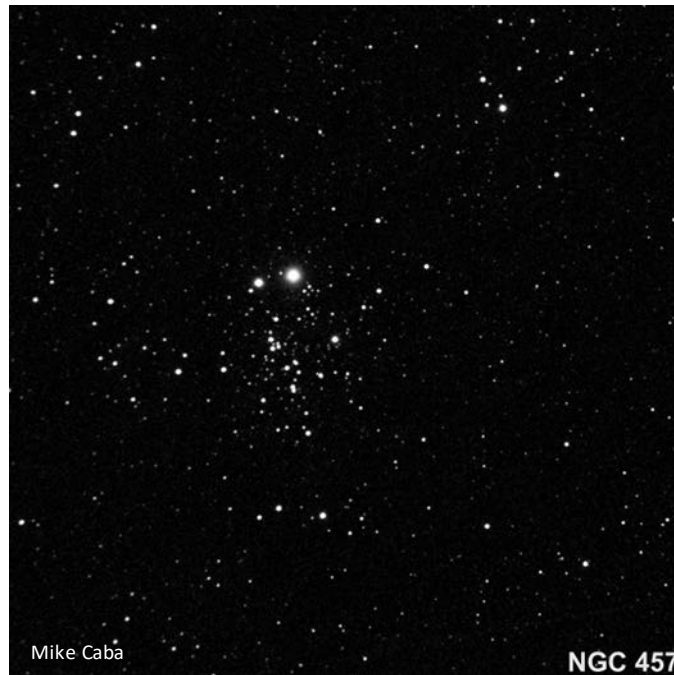
Owl Cluster – NGC 457

Type of Object: Open Cluster

Constellation: Cassiopeia

My Photo Taken From: Ford Road Near Millican, OR

Date of My Photo: 07/11/2024



Description: The Owl Cluster, sometimes referred to as the ET Cluster, resembles an owl with its two bright eyes at the top, its body extending below the eyes with wings spread to each side. Do you see it? A pattern of stars in the sky such as this that resembles a familiar object is known as an asterism. The cluster is about 7,900 light-years from Earth.



Trifid Nebula – M20

Type of Objects: Open Cluster, Nebulae

Constellation: Sagittarius

My Photo Taken From: NW Crossing, Bend, OR

Date of My Photo: July 10, 2024



Description: This complex and beautiful celestial object includes stars and colorful clouds of gas and dust. It is about 4,100 light-years from Earth. Its name “Trifid” means “three-lobe” based upon the divisions within the reddish colored lower portion. The object is about 21 light-years in diameter and was featured in an original Star Trek series episode, “The Alternative Factor.”



Veil Nebula – NGC 6960+

Type of Object: Nebula

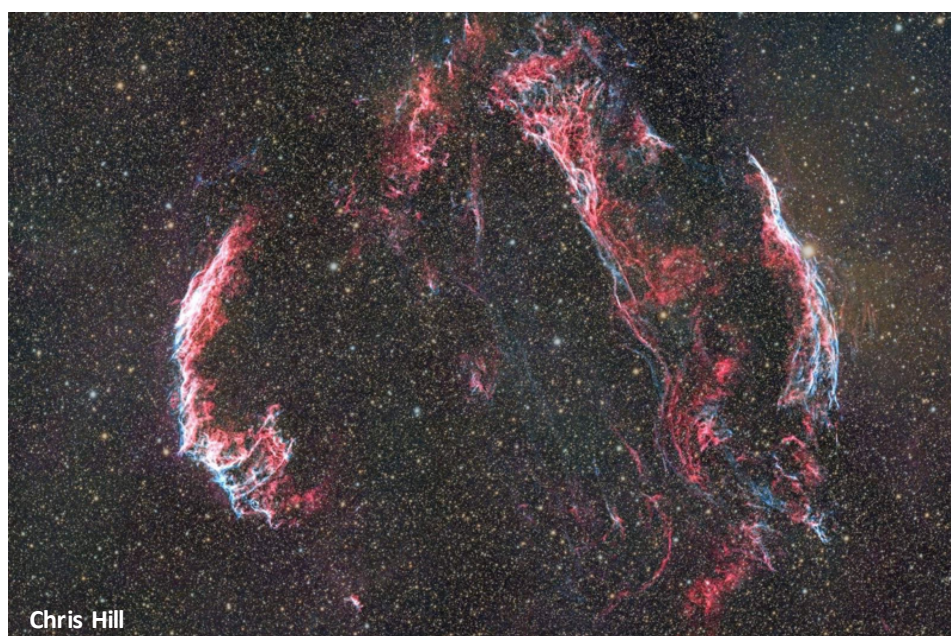
Constellation: Cygnus

My Photo Taken From: NW Crossing, Bend, OR

Date of My Photo: August 27, 2024



Description: The Veil Nebula is a remnant of a supernova explosion some 2,400 light-years away. The original star was about 20 times larger than the Sun. The Nebula forms a large loop of material in the sky, with the western portion shown in my photo above, and the whole nebula shown in Chris's photo below. The western portion is also known as the Witches Broom.



Whirlpool Galaxy – M51

Type of Object: Galaxy with Companion Galaxy

Constellation: Canes Venatici

My Photo Taken From: NW Crossing, Bend, OR

Date of My Photo: 6/10/2024



Description: This picturesque galaxy lies near the Big Dipper in the night sky and is about 31 million light-years from Earth, the furthest object included in this album. It is called the Whirlpool Galaxy due to the swirling nature of its beautiful arms. The galaxy is interacting gravitationally with its smaller companion galaxy as can be seen by the stream of stars connecting the two objects.



The Sun – White Light Filter

Type of Object: Star

Photo Taken From: NW Crossing, Bend, OR

Date of Photo: 5/20/2024



Description: This heavily filtered view of the Sun was taken on a clear day and shows a number of sunspots on the Sun's surface. These spots are cooler regions caused by magnetic fields blocking the internal solar heat from rising to the surface. Because they are cooler than the surrounding surface, they are darker. Note that the word "cooler" does not mean they are cold. Indeed, sunspots are about 7,000^o Fahrenheit, which compares to the Sun's surface temperature of about 10,000^o Fahrenheit. Sunspots such as these are roughly the same size as the Earth.

NOTE: Looking at the Sun with an unfiltered telescope or binoculars can cause serious eye damage or blindness. Please remind children of this fact.

The Sun – H-alpha Filter

Type of Object: Star

Photo Taken From: NW Crossing, Bend, OR

Date of Photo: 5/20/2024



Description: This picture of the Sun was taken with a special filter that only allows a tiny sliver of reddish light to pass through. This particular sliver of light shows prominences erupting from the surface of the Sun as illustrated more clearly in the enlarged photo below. These eruptions are about the height of 2-3 Earth diameters in size. Though the technical name for these features is "prominences," I prefer the more descriptive term, "jets of fire!"



NOTE: Looking at the Sun with an unfiltered telescope or binoculars can cause serious eye damage or blindness. Please remind children of this fact.

The Moon

Type of Object: Natural Satellite

Photo Taken From: Ford Road Millican, OR

Date of Photo: 7/11/2024



Description: This view of the Moon was taken during a waxing crescent phase and clearly shows impact craters, especially near the shadow line. This shadow line is actually called the terminator. Surprisingly, the best time to view the Moon is not when it is full. When the Moon is full the craters do not have shadows within their rims, thus their 3D nature is not apparent. In this photo, however, the 3D character is visible.

Glossary

Black Hole: An object in space with a gravitational pull so strong that nothing, not even light, can escape it.

Constellation: An area of the sky in which a group of stars form a recognizable pattern. There are 88 officially designated constellations covering the entire sky of both the northern and southern hemispheres.

Galaxy: A large system of stars and other material bound together by gravity. Often taking a spiraling shape, they exist at great distances from Earth. The Earth is located in its own galaxy called "The Milky Way." See pages, 2, 3 and 13.

Globular Cluster: A group of stars bound together by gravity into a spherical shape. They can contain tens of thousands to millions of stars. These are distinguished from open clusters by their spherical shapes and the much greater number of stars they contain. See page 7.

H-alpha: The deep red light given off by the hydrogen atom in some circumstances. Filters allowing this light to pass are often used to view the Sun. See page 15.

Hypergiant Star: A rare type of star with extremely high mass, volume and luminosity. See page 8.

Hubble Space Telescope: A telescope launched into low Earth orbit in 1990. It is still in operation and has produced many discoveries and stunning photographs. See photo of the telescope to the right.



Light-year: The distance a light beam travels in one year, about six trillion miles. By way of illustration, a light beam can travel around the Earth seven times in one second.

"M" Designation: Messier Catalogue. Charles Messier, a French astronomer in the 1700s, compiled a list of over 100 objects that form the catalogue. Individual objects are identified by the "M" followed by a number, e.g. M31, page 2. There are 110 Messier objects and these are some of the most popular night sky targets among astronomers of all types.

Natural Satellite: A body in space that orbits a planet, dwarf planet or smaller solar system body. Often called moons, they are distinguished from human launched artificial satellites. See page 16.

Nebula (pl. Nebulae): A giant cloud of gas and dust in space.

Neutron Star: A very dense collapsed core of a giant star that has burned through its nuclear fuel.

"NGC" Designation: New General Catalogue. A catalogue of deep sky objects compiled in the 1800s. Individual objects are identified by "NGC" followed by a number, e.g. NGC 869. There are 7,840 objects in the catalogue.

Open Cluster: A group of stars bound by gravity and typically numbering in the tens to a few thousand. They are distinguished from globular clusters by their irregular shapes and the much fewer number of stars they contain.

Planetary Nebula: An emission of gas and dust by a mid-sized star near the end of its nuclear fusion stage of life. See page 5.

Prominence: A large filament of incandescent gas lifted off the surface of the Sun by magnetic fields. See page 15.

Pulsar: A rapidly rotating neutron star that emits beams of radiation.

Star: A large sphere of hot, highly condensed gas, mostly hydrogen. Stars use nuclear fusion to release light and heat. For examples, see many pages of album.

Supernova: The massive explosion of a giant star that has burned through its nuclear fuel. The resulting remnant core becomes either a neutron star or a black hole.

White Dwarf: A dense, collapsed core of a mid-sized star that has burned through its nuclear fuel.

**STEAL A MAN'S WALLET,
AND HE WILL BE POOR FOR A WEEK**



**TEACH HIM ASTROPHOTOGRAPHY
AND SHOW HIM WHERE TO BUY GEAR, AND
HE WILL BE POOR THE REST OF HIS LIFE**