EUGENE ASTRONOMICAL SOCIETY

Io

June, 2022

PO Box 591 Lowell, OR 97452 www.eugeneastro.org

[1] M94, the Croc's Eye Galaxy in Canes Venatici Mark Wetzel

June Meeting

Thursday - June 16, 2022 7PM

To be announced

May Meeting

We met in person and discussed our upcoming Dexter star party.

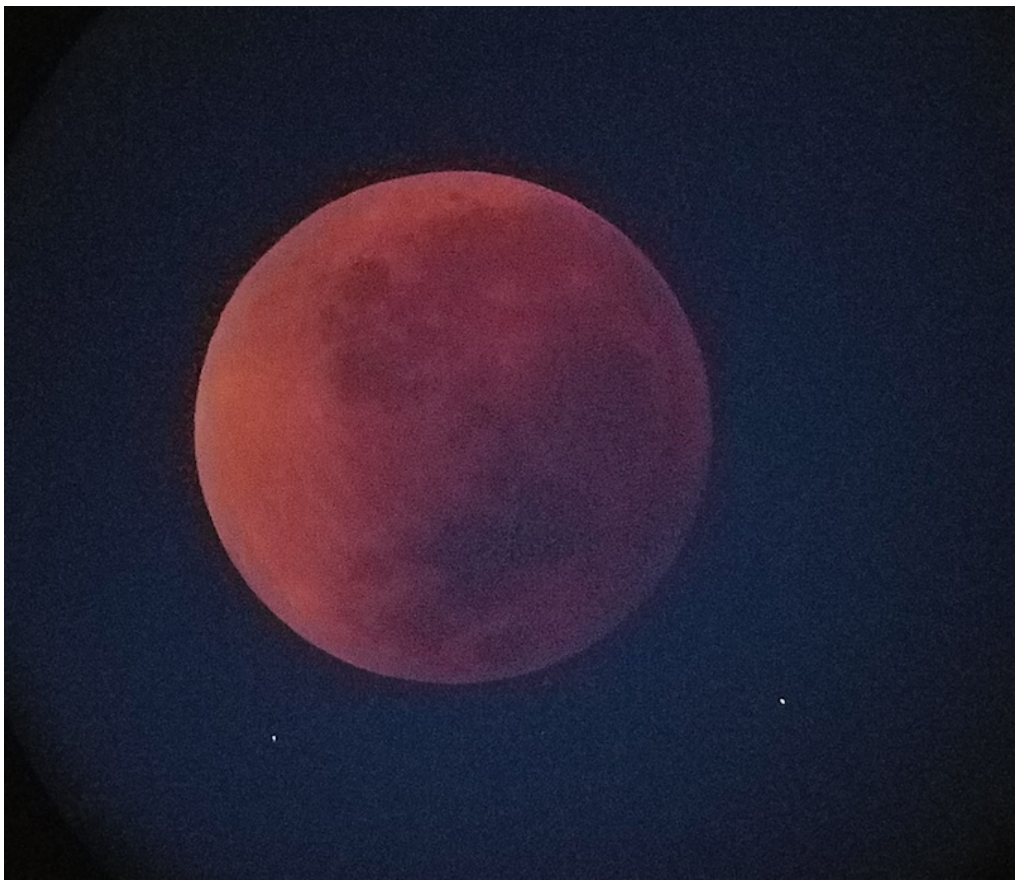
May 15 Eclipse Report

By Jerry Oltion

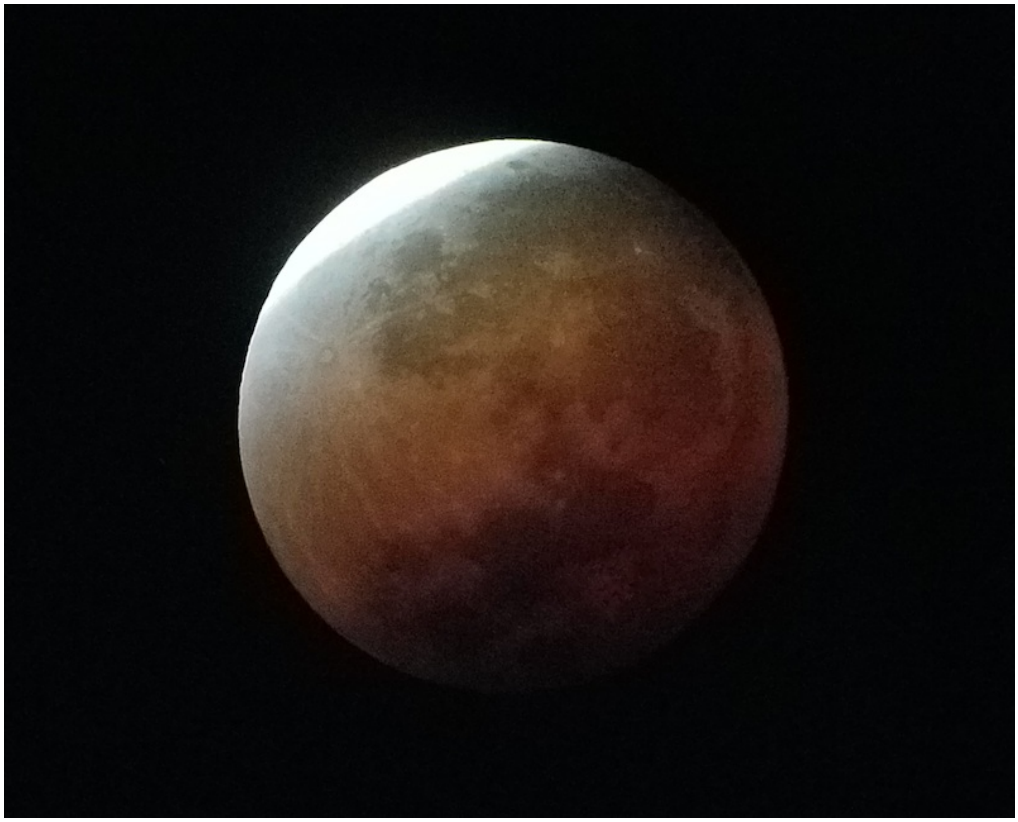
On May 15th we had a total eclipse of the Moon. It rose at 8:26 p.m. and totality began at 8:29, so we didn't get to see any of the ingress, and the eastern horizon was clouded up so we didn't even see the first half hour or so of totality, but the Moon finally rose above the clouds about 9:15 or so and gave us a nice view of its coppery-red face (illuminated by a ring of sunsets around the limb of the Earth) for about 45 minutes before totality ended. The clouds moved back in shortly thereafter, so we didn't get to watch much of the egress, either, but we were fortunate to see totality.

EAS members viewed the eclipse from all over town. Several of us gathered at our Mt. Baldy Lane observing site, where we were joined by a surprising number (about 20 or more) of visitors who came to watch it from atop Mt. Baldy but many of whom stayed to view it through our telescopes with us. Several dozen others viewed it from the College Hill Reservoir, and others watched from their homes around town.

We were fortunate to see it at all, given that it happened during a spate of cloudy weather, but we got a city-wide sucker hole just at the right moment. Our next total lunar eclipse will be on November 8th in the early morning (totality begins at 2:18 AM). Here's hoping for an equally fortuitous clearing then.



There were two background stars very near the Moon during totality. Jerry Oltion



The Earth's shadow slipping off the face of the Moon. Note how blue the boundary looks. That's a real effect caused by absorption of red light in Earth's ozone layer. Jerry Oltion

EAS Gets New Logo

By Jerry Oltion

The EAS has long needed a logo that will scale down to reasonable size for flyers, letterhead, star party schedule cards, and the like. Our "guy looking through the clouds" graphic was fine for T-shirts, but became too scrunched-up when reduced to logo-size.

President Andy Edelen's daughter, Sinikka, has solved that problem with the new logo presented here. It features stars and a crescent Moon with a telescope mounted on the "A" of EAS and a nighthawk perched upon the telescope. Nighthawks are frequent visitors at our out-of-town observing sites, and have become our unofficial (and now official) mascot.

Board member Ken Martin has arranged with Coaches Athletic Supply to put the new logo into its graphics database so EAS members can order it printed on T-shirts, sweatshirts, hats, etc. New technology allows for single-item orders at a very reasonable price, so we don't have to order shirts in batches anymore and we don't have to stick with popular colors. If you want yours in chartreuse on puce, they'll probably do it (after asking "Are you sure?")

This is still being set up, so wait until the announcement is made on our email list before ordering. Ken will post that as soon as Coaches is ready to accept orders.

Many thanks to Sinikka for a great new logo!

EUGENE ASTRONOMICAL SOCIETY

[2] NGC 4651 (Arp 189), the Umbrella Galaxy, in Coma Berenices Mark Wetzel

Do you have something for the newsletter?

If you have an article, photo, meeting notes, stories, etc. that you would like to share with the members, please contact me, I'd be happy to add them to the newsletter. If you have photos you would like to submit, I'm trying to include more information about the process and equipment used.

Astrophotographers: I want to offer these pages as a way to not only show off your terrific photos, but to provide us with information on how they are taken and processed. Seeing the amount of work that goes into these amazing images is always fascinating, and makes us appreciate them even more!

Bruce Sackett - bruce@busymind.net

[3] M107, the Crucifix Globular Cluster in Ophiuchus Mark Wetzel

Eugene Astronomical Society
PO Box 591
Lowell, OR 97452

Annual Club Dues $25

EAS is a proud member of The Astronomical League.

Member astrophotography in this issue

[1] M94, the Croc's Eye Galaxy in Canes Venatici by Mark Wetzel

Casitas de Gila, Gila, New Mexico, April 8 - 9, 2022
Walton, Oregon, April 23, 2022

During my Spring trip to a dark sky site in New Mexico, M94 was a prime target for imaging. I used my Celestron 9.25" SCT at prime focus (FL = 2350mm, f/10). NGC 4490 was the first target of the night and I captured about 6 hours of data nightly using Luminance, Red, Green, and Blue filters. Two nights in New Mexico did not allow for enough good data to be acquired, so I imaged for one of the very few clear April nights in Western Oregon in to add some RGB and much more Luminance data. I imaged the RGB data with 4 minute exposures and the Luminance with 2 minute exposures to prevent blowing out the core. One goal for me was to capture the faint outer ring of stars, gas and dust. The resulting combined image is adequate, but not completely satisfying. While seeing and transparency were good in New Mexico, the moon was approaching first quarter, so the sky background was brighter and faint details were a bit washed out. In Oregon, conditions started out with good seeing and transparency, but degraded as the night progressed.

M94, the Croc's Eye Galaxy, is a spiral galaxy type SABa located in the constellation Canes Venatici. It was discovered by Pierre Merchain in 1781 and it was observed and cataloged by Charles Messier later that year. This galaxy has very interesting features. It has a very bright core surrounded by tight spiral arms glowing with hot, blue stars. The core and inner arms are surrounded by a large disk of stars, gas and dust that has very few star forming regions. The reddish features hint at the extension of the spiral structures. Outside of the bright ring is a 15' diameter faint ring of stars, gas and dust. These structures hint at gravitational "waves" with high and low mass densities. The cause is not yet determined. Furthermore, it is estimated that M94 has very little dark matter as measured by the rotation rate of the stars. This too is a puzzling finding in that there is no explanation for how the galaxy formed and evolved without a dark matter halo. M94 is about 14 Mly from Earth with a diameter of about 32 kly. (Wikipedia, NASA and SkySafari Pro).

Imaging details:

Celestron 9.25" Edge HD SCT (FL = 2350mm, f/10)
Celestron off-axis guider with a ZWO ASI 174MM mini guide camera
Losmandy G11 mount with Gemini 2
ZWO ASI 2600MM Pro cooled monochrome camera (-10oC)
ZWO 36mm Luminance, Red, Green, and Blue filters
RA: 192.692688, DEC: 41.12649o, Equatorial camera rotation: 0o

Software: Sequence Generator Pro, ASTAP plate solving, PHD2 guiding,
Losmandy Gemini ASCOM mount control and web client interface,
SharpCap Pro for polar alignment with the Polemaster camera,
PixInsight 1.8.9 with StarXTerminator (AI version 10) and StarNet2,
Photoshop CC 2022

Luminance 2 min x 135 subframes (270 min), Gain 100, Offset 68, 1x1 binning
Red 4 min x 30 subframes (120 min), Gain 100, Offset 68, 1x1 binning
Green 4 min x 23 subframes (92 min), Gain 100, Offset 68, 1x1 binning
Blue 4 min x 26 subframes (104 min), Gain 100, Offset 68, 1x1 binning

Member astrophotography in this issue (continued)

[2] NGC 4651 (Arp 189), the Umbrella Galaxy, in Coma Berenices by Mark Wetzel

Casitas de Gila, Gila, New Mexico
April 4 - 6, 2022

During my Spring trip to a dark sky site in New Mexico, I was looking forward to imaging NGC 4651, the Umbrella Galaxy. As the second target in the nightly imaging session, I used my Celestron 9.25" SCT at prime focus (FL = 2350mm, f/10) with Luminance, Red, Green, and Blue filters. For each filter, 4 minute exposures were taken. I was not pleased with the final result as the galaxy structure is not sharp and the colors are not quite right. As with other targets imaged during this trip, atmospheric conditions were variable, with some periods of degraded transparency or seeing. I need more luminance data to bring out more detail and make the umbrella-shaped tidal tail more distinct.

NGC 4651, the Umbrella galaxy, is a small spiral of type Sc in the constellation Coma Berenices. The faint "umbrella" is actually tidal stream of stars stripped from a small satellite galaxy that was absorbed by the larger spiral. The umbrella appears to extend some 100 thousand light-years above the galaxy's bright disk. A small galaxy was likely torn apart by repeated encounters as it swept back and forth on eccentric orbits through NGC 4651. The remaining stars will join the larger galaxy over the next few million years. Thus, this galaxy is a good example of the power of the gravity of a massive object to perform a galaxy acquisition. NGC 4651 is about 76 Mly from Earth and has a diameter of 85 kly. The light from this galaxy was emitted when dinosaurs ruled the Earth (Wikipedia, NASA and SkySafari Pro).

Imaging details:

Celestron 9.25" Edge HD SCT (FL = 2350mm, f/10)
Celestron off-axis guider with a ZWO ASI 174MM mini guide camera
Losmandy G11 mount with Gemini 2
ZWO ASI 2600MM Pro cooled monochrome camera (-10oC)
ZWO 36mm Hydrogen-[?], Luminance, Red, Green, and Blue filters
RA: 187.60586, DEC: 41.63028o, Equatorial camera rotation: 340o

Software: Sequence Generator Pro, ASTAP plate solving, PHD2 guiding,
Losmandy Gemini ASCOM mount control and web client interface,
SharpCap Pro for polar alignment with the Polemaster camera,
PixInsight 1.8.9 with StarXTerminator (AI version 10) and StarNet2,
Photoshop CC 2022

Luminance 4 min x 51 subframes (204 min), Gain 100, Offset 68, 1x1 binning
Red 4 min x 26 subframes (104 min), Gain 100, Offset 68, 1x1 binning
Green 4 min x 27 subframes (108 min), Gain 100, Offset 68, 1x1 binning
Blue 4 min x 29 subframes (136 min), Gain 100, Offset 68, 1x1 binning

Member astrophotography in this issue (continued)

[3] M107, the Crucifix Globular Cluster in Ophiuchus by Mark Wetzel

Casitas de Gila, Gila, New Mexico, April 4 - 8, 2022

During my Spring trip to a dark sky site in New Mexico, M107 was the last target for imaging each night. I used my Celestron 9.25" SCT at prime focus (FL = 2350mm, f/10). I captured between 60 and 90 minutes of data nightly before morning twilight using Red, Green, and Blue filters. I imaged the RGB data with 4 minute exposures. The resulting combined image not very good as the stars are elongated and not very sharp. Atmospheric conditions tended to degrade slightly to the South and M107 was fairly low, reaching about 40o above the horizon at the meridian. Guiding tended to be somewhat poor, with performance ranging between 0.8 and 1.0 arcsec leading to high eccentricity in the stars.

Many of the subframes were rejected during image processing due to poor metrics (SNR, eccentricity, HFR) as analyzed by PixInsight's SubframeSelector tool. My goal for this target was to use the PhotometricColorCalibration tool using a G2V type star. G2V stars are those that have a reddish appearance, giving a globular cluster a more golden yellow color. The resulting image contains mostly yellow-colored stars with a few blue stragglers, which are the correct colors for globular clusters that consist of mostly ancient stars with a few hot, bright blue stars. The downside of using this color calibration standard is that all of the stars in the image have this coloration, including those outside of the cluster.

M107, the Crucifix globular cluster, is located in the constellation Ophiuchus. It was discovered by Pierre Mechain in 1782 and later confirmed by William Herschel in 1793. M107 was not added to the Messier catalog until 1947. It consists of a loose collection of about 50,000 very old stars and it orbits the center of our Milky Way galaxy. It is unusual in that it contains some dark, obscured regions. M107 is about 21 kly from Earth with a diameter of about 80 ly. (Wikipedia, NASA and SkySafari Pro).

Imaging details:

Celestron 9.25" Edge HD SCT (FL = 2350mm, f/10)
Celestron off-axis guider with a ZWO ASI 174MM mini guide camera
Losmandy G11 mount with Gemini 2
ZWO ASI 2600MM Pro cooled monochrome camera (-10oC)
ZWO 36mm Red, Green, and Blue filters
RA: 248.11471, DEC: -13.054342 deg, Equatorial camera rotation: 340 deg

Software: Sequence Generator Pro, ASTAP plate solving, PHD2 guiding,
Losmandy Gemini ASCOM mount control and web client interface,
SharpCap Pro for polar alignment with the Polemaster camera,
PixInsight 1.8.9,
Photoshop CC 2022

Red 4 min x 25 subframes (100 min), Gain 100, Offset 68, 1x1 binning
Green 4 min x 24 subframes (96 min), Gain 100, Offset 68, 1x1 binning
Blue 4 min x 26 subframes (104 min), Gain 100, Offset 68, 1x1 binning

Observing in June 2022

June 7, 7:48 AM	June 14, 4:52 AM	June 20, 8:11 PM	June 28, 7:52 PM
Mercury Rise: 4:45 AM	Mercury Rise: 4:32 AM	Mercury Rise: 4:20 AM	Mercury Rise: 4:21 AM
Venus Rise: 3:51 AM	Venus Rise: 3:46 AM	Venus Rise: 3:42 AM	Venus Rise: 3:40 AM
Mars Rise: 2:37 AM	Mars Rise: 2:20 AM	Mars Rise: 2:06 AM	Mars Rise: 1:48 AM
Jupiter Rise: 2:22 AM	Jupiter Rise: 1:57 AM	Jupiter Rise: 1:35 AM	Jupiter Rise: 1:06 AM
Saturn Rise: 00:51 AM	Saturn Rise: 00:23 AM	Saturn Rise: 11:59 PM	Saturn Rise: 11:27 PM
Uranus Rise: 3:56 AM	Uranus Rise: 3:30 AM	Uranus Rise: 3:07 AM	Uranus Rise: 2:36 AM
Neptune Rise: 2:02 AM	Neptune Rise: 1:35 AM	Neptune Rise: 1:11 AM	Neptune Rise: 00:36 AM
Pluto Rise: 11:40 PM	Pluto Rise: 11:12 PM	Pluto Rise: 10:48 PM	Pluto Rise: 10:16 PM

All times Pacific Daylight Time (March 13 – Nov 5, 2022 = UT -7 hours) or Pacific Standard Time (November 6, 2022 – March 11, 2023 = UT -8 hours)

Date	Moon Rise	Moon Set	Twilight Begin	Sun Rise	Sun Set	Twilight End
6/1/2022	06:53	23:21	03:15	05:32	20:49	23:07
6/2/2022	07:45		03:13	05:32	20:50	23:09
6/3/2022	08:44	00:05	03:12	05:31	20:50	23:10
6/4/2022	09:47	00:41	03:11	05:31	20:51	23:11
6/5/2022	10:52	01:12	03:10	05:31	20:52	23:13
6/6/2022	11:58	01:37	03:09	05:30	20:52	23:14
6/7/2022	13:05	02:00	03:08	05:30	20:53	23:15
6/8/2022	14:13	02:20	03:08	05:30	20:54	23:16
6/9/2022	15:24	02:40	03:07	05:29	20:54	23:17
6/10/2022	16:38	03:02	03:06	05:29	20:55	23:18
6/11/2022	17:56	03:26	03:05	05:29	20:55	23:19
6/12/2022	19:18	03:54	03:05	05:29	20:56	23:20
6/13/2022	20:40	04:31	03:05	05:29	20:56	23:21
6/14/2022	21:56	05:19	03:04	05:29	20:57	23:22
6/15/2022	23:00	06:21	03:04	05:29	20:57	23:23
6/16/2022	23:49	07:35	03:04	05:29	20:58	23:23
6/17/2022		08:55	03:03	05:29	20:58	23:24
6/18/2022	00:27	10:15	03:03	05:29	20:58	23:24
6/19/2022	00:56	11:32	03:03	05:29	20:59	23:24
6/20/2022	01:20	12:44	03:04	05:29	20:59	23:25
6/21/2022	01:41	13:54	03:04	05:29	20:59	23:25
6/22/2022	02:01	15:01	03:04	05:30	20:59	23:25
6/23/2022	02:21	16:07	03:04	05:30	20:59	23:25
6/24/2022	02:42	17:13	03:05	05:30	21:00	23:25
6/25/2022	03:06	18:18	03:05	05:31	21:00	23:25
6/26/2022	03:35	19:22	03:06	05:31	21:00	23:25
6/27/2022	04:09	20:22	03:06	05:31	21:00	23:24
6/28/2022	04:51	21:17	03:07	05:32	21:00	23:24
6/29/2022	05:40	22:03	03:08	05:32	20:59	23:23
6/30/2022	06:37	22:42	03:09	05:33	20:59	23:23

All times are for Eugene, Oregon Latitude 44º 3' Longitude 123º 06'

Items of Interest This Month

Galaxy season is coming to a close and nebula season is arriving as the Milky Way rises higher each night. The steam from the Sagittarius teapot is full of nebulae and star clusters.

All month: The planets are still strung out in a long row in the east before dawn.

All month: Comet C/2017 K2 PanSTARRS will be cruising through Ophiuchus. Probably not naked eye visible, but it should be visible in binoculars or a telescope.

6/1 Jupiter and Mars 2° apart in morning sky.

6/3 First Quarter Friday (first attempt).

6/4 FQF backup date if 3rd is clouded out.

6/10 First Quarter Friday (second attempt if 3rd and 4th are both clouded out.)

6/11 FQF backup backup backup date.

6/16 Mercury at greatest western elongation (visible in morning sky).

6/20 Comet K2 PanSTARRS near open cluster NGC 4665.

6/21 Summer solstice 2:14 AM