



Sedona, Arizona

Keep Sedona Beautiful Dark
Sky Committee

2019 Annual Report

To the International
Dark Sky Association

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Dreamstime Photo

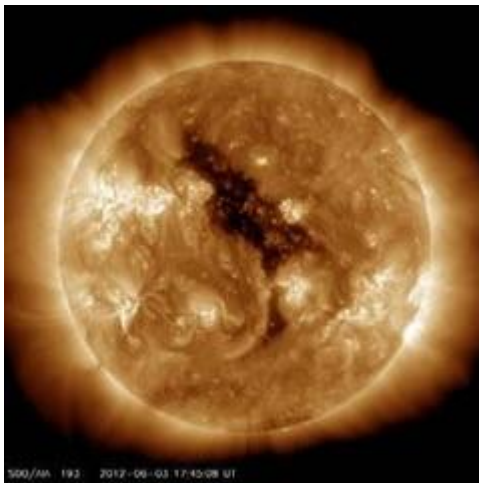
The Keep Sedona Beautiful (KSB) Dark Sky Committee is pleased to report progress in 2019 toward its goal of bringing more community awareness of light pollution and preserving our magnificent natural resource—our dark night sky. This was accomplished through the Committee’s dark sky outreach program, which included educational events and assisting other communities in pursuing the International Dark Sky Community designation.

Astronomy Magazine’s reader poll voted Sedona as their favorite dark sky location.

EDUCATIONAL EVENTS

March 1, 2019: The Sedona Heritage Museum, Living History Talk

The Sedona Heritage Museum hosted Historian Kevin Schindler’s presentation on “Percival Lowell’s Impact on Science and Culture”. Mr. Schindler is from Lowell Observatory. Percival Lowell founded his astronomical observatory in Flagstaff in 1894. He is best remembered for his controversial studies of Mars and the possibility of intelligent life on that planet. His search for a theoretical ninth planet led to the 1930 discovery of the planet Pluto, an event that has brought worldwide attention to Arizona since. In the area of astronomy, Lowell set the stage for Arizona’s place as a critical center for research and astronomy which today brings in some one-quarter billion dollars to the state’s economy.



NASA photo of Sun



Hubble Space Telescope photo
(NASA Photo), Mars

March 30, 2019: Red Rock Ranger Station Solar Viewing and Star Party

Over 225 people attended and looked through telescopes set up by Astronomers of Verde Valley. Solar viewing was in the afternoon, followed by night star gazing. The evening was clear and perfect with great viewing. J.D. Maddy's indoor presentation was standing room only; the Rangers asked J.D. to give a second presentation to accommodate the many people who wanted to hear the presentation. As the crowd filtered out after the presentation, Karen Maddy made an informative constellation presentation, which was well received. The evening star gazing showcased galaxies, Nebulae, Orion M42 being a big hit, M81, M82, M35, Mars, Pleiades, Beehive, Sombrero Galaxy, and more. Many families, children and adults had smiles as they viewed the diamond stars against a black sky. It was truly a marvelous event. The Keep Sedona Beautiful Dark Sky Committee sponsored this event. Dark sky brochures were distributed as well as examples of good dark sky outdoor fixtures.

April 27, 2019: Earth Day Celebration at Red Rock State Park

Keep Sedona Beautiful Dark Sky Committee participated in Earth Day Celebration at Red Rock State Park on April 27. Dark sky information was distributed. We talked with the attendees about light pollution and dark sky compliant fixtures.

Astronomers of Verde Valley also participated in this event. J.D. Maddy and Karen Maddy provided telescope viewing of the sun.



Photo by Dreamstime



May 12, 2019: National Astronomy Day Star Party

The Sirius Lookers Astro Club, Sedona Public Library, and Keep Sedona Beautiful Dark Sky Committee sponsored the National Astronomy Day Star Party on May 12. National Astronomy Day was created in 1973 by Doug Berger, then president of the Astronomical Association of Northern California.

The star party was held in the Bashas parking lot in West Sedona, and began with (SAFE) solar viewing of our closest star, the Sun. Explosions coming off the Sun were seen with a special H-alpha filtered scope. Sunspots were also seen. About 175 people attended this event.

The nighttime stargazing began at 7 p.m. and ended after 10 p.m. Highlights were the

crescent Moon, the BeeHive Star Cluster, and more. Binoculars and giant scopes were on hand for enhanced viewing. The Keep Sedona Beautiful Dark Sky Committee distributed dark sky brochures and discussed the importance of reducing light pollution.



June 1, 2019: Red Rock State Park Star Party

Red Rock State Park hosted a star party, which was sponsored by Astronomers of Verde Valley (AVV) and Keep Sedona Beautiful Dark Sky Committee.

Joanne Kendrick opened the presentation to a sellout audience for this special event, mentioning what Keep Sedona Beautiful does to preserve the night sky. She talked about her involvement with the International Dark Sky Association (IDA) and what the IDA does to help preserve one of our most precious natural resources, the night sky.

Dave Norton gave a PowerPoint presentation about planets, asteroids, and the Alvan Clark-refractor telescope at Lowell Observatory.

After the presentation, AVV members provided multiple telescopes for the crowd to view the night sky. They saw galaxies galore—M81, M82 (Bodes), M51 Whirlpool Galaxy, M104 (Sombrero Galaxy), M57 (Ring Nebula), M87 where they took the picture of a black hole, and many more. Some double stars were seen as well as the Ghost of Jupiter nebula and M13 Globular Cluster.

The Keep Sedona Beautiful Dark Sky Committee distributed dark sky literature and talked with the attendees about light pollution and dark sky compliant lighting fixtures. Light refreshments were provided.



NASA Photo, Whirlpool Galaxy



June 16, 2019: Red Rock State Park Moonlight Hike

Astronomers of Verde Valley led a moonlight hike at Red Rock State Park. After the hike, there was telescope viewing of the moon, Jupiter and all four of the Galilean moons.

September 11, 2019: Keep Sedona Beautiful Speaker Series

Jeffrey Hall, Ph.D., director of Lowell Observatory, gave a wonderful presentation to Keep Sedona Beautiful members, residents and visitors. Dr. Hall talked about dark skies, Lowell Observatory's major expansion to its outreach programs and how Lowell continues to perform cutting-edge research at its 4.3-meter Discovery Channel Telescope. The Observatory has been working extensively with the city of Flagstaff on a retrofit of its streetlight system that will preserve Flagstaff's dark skies.

Dr. Hall has served as director of Lowell Observatory since June 2010. He joined the staff at Lowell in 1992 as a postdoctoral research fellow. He received a B.A. in physics in 1986 from Johns Hopkins and a Ph.D. in astronomy and astrophysics in 1991 from Penn State. His research at Lowell has focused on solar and stellar activity cycles, with the goal of lending an astronomical perspective to solar influences on terrestrial climate.

September 21, 2019: Red Rock Ranger Station Solar Viewing & Star Party

The Astronomers of Verde Valley (AVV) hosted a solar viewing and star party at the Red Rock Ranger Station. Solar viewing was well attended as visitors and locals looked through special dedicated solar telescopes to see sunspots and sun flares. The evening event started with a PowerPoint presentation by J.D. Maddy which included the latest technological advances, fun facts, and discussion of our Universe. After the presentation, Karen Maddy delighted the viewers with a laser tour of the constellations and Milky Way. Multiple telescopes provided by members of the AVV were available for the crowd to view the night sky. Viewers saw Galaxies M31, Double star Albireo, Eta Cassiopeia, Nebula Swan, Lagoon, Gas Giants Jupiter and Saturn, Globular Cluster M13, M22, a beautiful open cluster Butterfly, Ptolemy Cluster, Sagittarius star cloud and more. About 155 visitors and locals attended this event.

The event was sponsored by Keep Sedona Beautiful Dark Sky Committee (KSDSC). The KSDSC distributed dark sky brochures and print outs of dark sky compliant fixtures, and talked about ways to reduce light pollution.



September 28, 2019: Red Rock State Park Star Party

Red Rock State Park hosted a star party which was sponsored by Astronomers of Verde Valley (AVV) and Keep Sedona Beautiful Dark Sky Committee.

The star party began with a presentation by J.D. Maddy, followed by a laser tour of the night sky by Karen Maddy. Then, the astronomers had multiple telescopes available for dark sky viewing. The gas giant planets of Jupiter and Saturn played hide and seek throughout the night; the viewers were impressed with open clusters Owl Cluster and Double Cluster, as well as the pretty Globular Clusters M22 and M13. The Andromeda Galaxy M31 and M110 both could be seen in the eyepiece simultaneously. The observers were in awe that they could see M31 which is located 2.5 million light-years away. About 87 people participated in the evening event.

The Keep Sedona Beautiful Dark Sky Committee distributed dark sky brochures and discussed the importance of reducing light pollution and having dark sky compliant lighting. Light refreshments were served.

Monthly Meetings: Sirius Lookers Astronomy Club

Weather permitting, a star gazing event follows the monthly meetings of the Sirius Lookers Astronomy Club. Dennis Young, President of Sirius Lookers Club, has his telescope ready to show the attendees the beauty of the dark night sky.

With our beautiful preserved dark skies, multiple companies offer private and group star parties to visitors worldwide.

SUPPORT OF INTERNATIONAL DARK SKY COMMUNITY DESIGNATIONS

The KSB Dark Sky Committee assisted Cottonwood, AZ as they completed their application to the International Dark Sky Association for designation.

DARK SKY BROCHURES

The Keep Sedona Beautiful Dark Sky Committee distributes its Dark Sky Brochures at educational events as well as to residents, businesses, and visitors.

KEEP SEDONA BEAUTIFUL WEBSITE

The Dark Sky tab at KSB'S website, www.KeepSedonaBeautiful.org, is kept updated about dark sky events. The Dark Sky Tab includes annual community dark sky awareness events. It links to the International Dark Sky Association (IDA) Video, "Losing the Dark," as well as to the following:

- IDA Website
- IDA Quick Link to Lights at Night Turn Pollinators Off
- IDA Quick Link to My Neighbor's Lighting
- IDA Quick Links to Light Pollution, Wildlife, Energy Waste, Human Health, and More
- IDA Quick Link to Small Changes, Big Impact-Dark Sky Lighting at Home Depot
- IDA Quick Link to International Dark Sky Places
- City of Sedona Outdoor Lighting Ordinance 2001

NEW AND REMODELED BUSINESSES IN SEDONA

The following new building in Sedona was completed and received their Final Certificates of Occupancy (CofO) in 2019:

- Oak Creek Small Animal Clinic, 3130 W. Highway 89A, Sedona, AZ 86336

Part of the City's inspection process includes a lighting nighttime inspection. Issuance of a final CofO is evidence that all inspections, including a lighting inspection, were passed.

There were no significant remodels in Sedona that upgraded their lighting in 2019.

SKY QUALITY MEASUREMENTS

The KSB Dark Sky Committee takes Sky Quality Measurements to ensure that Sedona continues to protect its dark night skies and to reduce light pollution. The measurements were taken in three locations on June 3, 2019 and August 1, 2019. The readings were taken at the same locations as in previous years. Below are the measurements:

SKY QUALITY READING IN SEDONA CITY LIMITS PERFORMED ON June 3, 2019, NEW MOON								
Location	Percent of Cloud Cover	First Sky Quality Reading	Second Sky Quality Reading	Third Sky Quality Reading	Fourth Sky Quality Reading	Fifth Sky Quality Reading	Sixth Sky Quality Reading	Average Sky Quality Reading
Saddle Rock Cir and June Bug Cir; about 1.2 miles west from Y (right before Sedona Bar&Grill)	0%	20.9	20.9	20.9	20.9	20.9	20.9	20.9
Whitetail Rd and Rodeo Ln; 2.1 miles W of Y off Rodeo Road/89A (by Safeway)	0%	20.8	20.9	20.9	20.9	20.9	20.9	20.9
Keep Sedona Beautiful parking lot, 340 Brewer Road, facing away from KSB office	0%	21.1	21.0	21.0	21.1	21.0	21.0	21.0

SKY QUALITY READING IN SEDONA CITY LIMITS PERFORMED ON AUGUST 1, 2019, NEW MOON <small>(one day after new moon)</small>									
Time	Location	Percent of Cloud Cover	First Sky Quality Reading	Second Sky Quality Reading	Third Sky Quality Reading	Fourth Sky Quality Reading	Fifth Sky Quality Reading	Sixth Sky Quality Reading	Average Sky Quality Reading
23:59	Saddle Rock Cir and June Bug Cir; about 1.2 miles west from Y (right before Sedona Bar&Grill)	0%	21.0	20.9	20.9	20.9	20.9	20.9	20.9
23:54	Whitetail Rd and Rodeo Ln; 2.1 miles W of Y off Rodeo Road/89A (by Safeway)	0%	20.9	20.9	20.9	20.8	20.8	20.8	20.9
0:06	Keep Sedona Beautiful parking lot, 340 Brewer Road, facing away from KSB office	0%	21.0	21.0	21.0	21.0	21.0	21.0	21.0

Report submitted by Joanne Kendrick, Chair
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