

# Kartchner Caverns State Park, Benson, AZ

## Dark Sky Report 2018

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Several years ago, Kartchner Caverns State Park became one of the first parks in the world to earn *Global Star Park Status*. The nomination package for an *International Dark Sky Park, Silver Tier* designation was submitted in May of 2017. The designation was officially bestowed at a public ceremony on September 9, 2017.

From October 2017 to the writing of this report, Kartchner Caverns hosted ~275,000 visitors to the cave and campground, and 500 visitors to Dark Sky events, hosted in partnership with the Huachuca Astronomy Club (HAC) and others.

### Sky Quality

Date	Time	SQM reading (average)	Observer	Notes
10/14/17	-	21.42 21.47	Ted Forte (HAC) Bob Gent	Bus parking lot, lights covered, readings taken 100 feet apart
4/7/2018	-	21.45	JD Maddy (HAC)	
6/17/2018	2233h	21.43 (5 readings)	Sarah Truebe (KCSP)	Ranger residences, all outdoor and indoor lights off, clear sky
7/2018	2000h	-	Sarah Truebe (KCSP)	Too cloudy
8/2018	0330h	-	Sarah Truebe (KCSP)	Too cloudy for week around new moon, attempted a 3:30am reading, but too cloudy
9/3/18	2043h	21.38 (5 readings)	Sarah Truebe (KCSP)	Ranger residences, all outdoor and indoor lights off, completely clear, but Milky Way at zenith, rained earlier in the day
9/9/18	2243h	21.39 (7 readings) 21.36 (9 readings, incl. Milky Way)	Sarah Truebe (KCSP)	Ranger residences, all outdoor and indoor lights off, clear, light wind, 26°C, Milky Way near zenith

There are currently no plans to install a permanently mounted sky quality monitor for cost reasons, but we would be happy to partner with others to install such equipment if there is enough interest.

## Lighting

New outdoor lighting was installed in two places on the park this year. The group ramada has new outdoor lights, all of which point downward and are on a timer so they cannot accidentally be left on once a group leaves the ramada. Outdoor safety lighting was required for the new cabins in the campground as well; lamps were donated by the International Dark Sky Association and include 3W narrowband amber LED lamps on motion sensors.

## Outreach

Two annual star parties held at the park celebrate the dark sky and serve to educate visitors about good outdoor lighting practices. Amateur astronomers from the Huachuca Astronomy Club based in Sierra Vista are joined by members of astronomy clubs from further afield including the Astronomers of Verde Valley and the Tucson Amateur Astronomy Association to conduct all-day events.

During the daylight portion of the parties, park visitors are attracted to the telescopes aimed at the sun and by the varied displays set up by the astronomers. Typically, about 100 people stop by the daytime exhibit and interact with the volunteers. An informative talk in the Discovery Center is scheduled for the late afternoon followed by well-attended stargazing activities in the bus parking lot. The October 2017 and April 2018 parties both attracted about 200 evening stargazers.

Astronomers also participated in the February 2018 Cave Fest which featured a dark sky exhibit adjacent to an array of solar telescopes. About 100 people stopped by to chat with the park rangers and volunteer astronomers and to pick up IDA brochures.

Dark sky education is always a prominent aspect of these astronomy-themed outreach events. The telescope operators never miss an opportunity to promote dark sky preservation and the invited speakers are usually professional astronomers or educators that also encourage light pollution abatement. The October 2017 speaker, Dr Kaitlin Kratter of the Steward Observatory, was introduced by dark sky advocate and former IDA president, Bob Gent. Bob and Kaitlin both stressed the importance of dark skies to astronomy and our quality of life to a packed auditorium. Our April 2018 speaker, Dr. Grant Williams of the MMT Observatory on Mt Graham, is an effective dark sky activist who assisted Cochise County and the city of Sierra Vista in their outdoor lighting code revisions. He also stressed the importance of good nighttime lighting practices and expressed appreciation for the public's support of protective codes.

## Community

The municipalities surrounding Kartchner Caverns State Park have demonstrated recognition of the importance of protecting the night sky as a resource and as a public benefit. Cochise County

is home to perhaps the highest concentration of private astronomical observatories in the country and is surrounded by several professional and commercial observatories.

The park resides within the city of Benson AZ which already has a strong outdoor lighting code that defines its intent as to “... *encourage outdoor lighting practices and lighting systems, which will minimize light pollution, light trespass, and glare thus curtailing the degradation of dark skies and protecting citizens from unwanted lighting by others.*”

Benson convened an Outdoor Lighting Code Task Force in 2016 which hammered out recommended revisions to the OLC that were submitted to city officials in 2017.

Recommendations maintain the current commitment to curtailing light pollution and protecting the night sky while implementing lumen limits, color correlated temperature restrictions and addressing new technologies such as electronic message centers. The code revisions are currently in the city’s approval pipeline.

Citizen commitment to light pollution abatement in the surrounding communities is evidenced by effective grassroots action to enforce outdoor lighting codes. One recent noteworthy accomplishment is the successful campaign to mitigate an over-bright service station at the intersection of highways AZ 90 and AZ 82 about 9 miles south of the park. Several complaints to county officials resulted in a refit of the station’s lighting which have now been converted to full cutoff.

## Potential future threats to dark skies at Kartchner

The Villages at Vigneto project seeks to establish a massive planned community a few miles north of the park. Spreading out from a town center will be a development of 28,000 residential units with interspersed civic, recreational. and commercial centers.

Mitigating the threat somewhat, projections predict that the project will take at least 20 years to reach its final size and could possibly take much longer. Other encouraging aspects include the declaration that the area’s “spectacular night sky viewing” is one of the features highlighted in the overview of the project and a “dark skies lighting plan” is listed as one of the architectural elements.

Meanwhile, local dark sky proponents are dedicated to speaking up and demanding that the lighting plan follow Benson city codes and good lighting practices.