

Kissimmee Prairie Preserve State Park

International Dark Sky Annual Report

October 1, 2016- September 30, 2017

General Information

- Current information for the site IDA contact(s):

Kissimmee Prairie Preserve Office Number: 863-462-5360

** Katie Ferguson, Park Services Specialist, Katharine.Ferguson@dep.state.fl.us

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Jen Benson-Hughes, Environmental Scientist I, Jennifer.BensonHughes@dep.state.fl.us

- Estimate number of site visitors in the last year. Of those, how many participated in dark-skies programming? 22,331 people visited and over 600 visitors camped in the Astro Pad (we did not keep accurate records until early 2017). Over 720 visitors participated in dark-skies programming.

Lighting in the Preserve

- Were any new lighting projects completed this year? If so, describe.

This year 1 residence installed a PAR 4 light on their front porch to comply with the LMP. Another residence installed a red-light bulb and replaced the aluminum foil around the fixture to shield the light. These residences are in view of the Astro Pad. They also have thick curtains on their living room window(s) to block any indoor light being emitted and impacting the night environment.

- Is any lighting within the Park/Reserve non-compliant with the LMP (as permitted at the time of IDA designation)? If so, what is the plan to bring the remainder into compliance within the allowed window of time?

As per our application: there are 11 lights that do not comply with the LMP. Last year 2 other noncompliance lights were corrected. We have 3 more years to comply fully with the LMP. Most of our fixtures are easy fixes. Parshield flood light shields and wall-mounted canister fixtures need to be purchased and installed. Flood lights that no longer work (or not necessary) need to be removed.

- Was any new territory added to the Park/Reserve? If so, does any lighting on it comply with the LMP? If lighting on new territory doesn't comply, is there a plan to bring it into compliance?

No new territory was added to the Park. Although 1,992 ac were recently acquired and will be managed by a state entity (Florida Forest Service). This piece of property is adjacent to the Preserve.

Lighting in Communities

- Were any changes made to local/municipal outdoor lighting policy in the past year? If so, describe and include text of any code language added or changed.

Not to our knowledge.

- Were there any new municipal lighting installations (or similar, large-scale installations on commercial property) built in the last year to show as examples built to your dark sky-friendly code?

Not to our knowledge.

Sky Quality in the Preserve

- Were sky quality data taken in the past year? If possible, include a table or figure showing the information.

Yes, see the Table at the end of this report. We had a few issues with the equipment and software. But we have known readings from September, October, November, December 2016 and from September 2017. We have data in between those months but the dates and times are off. We suspect there was a battery issue and that the clock automatically reset after a certain amount of time. Also, we have had a change in staff. Staff in new positions are learning about the 'new' equipment.

- Did sky brightness increase over the previous year? Decrease?

It appears to be very similar. We still solidly qualify for the Silver Tier (no change).

- Is a permanently mounted sky monitor installed, or are there plans to install one?

Yes we have the autonomous UNIHENDRON DQM-DU-DL installed near the Astro Pad on the Preserve as of 9/1/2016.

Conservation and Research in the Preserve

- Any ongoing conservation and/or research programs at the site? If so, who runs them, and what are the goals? No research programs are ongoing related to the dark night sky other than dark sky measurements with the Unihedron. Most research is related to the federally endangered Florida grasshopper sparrow. We have had visitors with permits that are identifying moths.

- Are there any new research results to report? Have any been published this year? No new results this year to our knowledge. The following information is from a couple years ago but not shared with the IDA. Carol Wolfe and crew photographed approximately 670 moths (most being different species) within the Preserve and a few new species as well. She stated, "the species list, in my opinion, has the potential of growing to at least 800-1000 species over the next few years". Unfortunately, she has had some health issues and will not be continuing her research.

Funding

- Currently administering any grants related to dark-skies programming? If so, describe. No
- Were any new grants won this year? No
- Are there plans to apply for any future grants? Not at this time, but we will be opportunistically looking.

Arts and Culture

- Is any programming ongoing or planned blending the arts/culture with dark skies? If so, describe. Not at this time.

Outreach

- Were any new programs begun this year?
 1. "Prairie Days and Prairie Nights" was a new event our Citizen's Support Organization (Friends of Kissimmee Prairie Preserve) organized and implemented in March 2017. Eighty people attended the event.
 2. Our Unit Management Plan (UMP) was reviewed and a public meeting was held in May 2017. Tony Capastrany (a night sky advocate who just moved within 5 miles of the Preserve) set up a night sky booth at the UMP public meeting. Thirty five people attended that meeting.
 3. The Brevard and Seminole State College Astronomical Societies held their annual programs at the Astro Pad on the Preserve and 20-30 members attended.
 4. Staff conducted at least 2 programs this year with at least 40 people attending.
 5. New astronomy signs were made by the Florida Park Service that specifically addresses our need to protect the viewing conditions for our visitors. One sign states "Stars Up, Lights Down. Turn off high beams beyond this point" and will be positioned 1.5 miles before visitors reach the campground. Another sign states "Welcome to the Red Light District" and has the astronomy rules listed (no white lights allowed). Another new sign that was created directs people to the Astro Pad. These signs need to be installed. We received them in September 2017.

- If so, are they complete or ongoing? "Prairie Days and Prairie Nights" is expected to be an annual event. We will be continuing our night sky interpretation programs. **We have two resident volunteers scheduled this winter to conduct astronomy programs** daily (weather permitting) and we hope to have a few staff presenters as well. Astronomy groups are usually helpful and welcome campers over to their sites (data not recorded regularly).

- Are statistics available (e.g., how many visitors served, donations, etc.). See above for visitor numbers. We hope to have a more information about donations specifically about the "dark sky fund" next year from our Friends of Kissimmee Prairie Preserve organization.

Community and Media Relations

- Any new media coverage you would like us to know about? May include e.g., PDFs as attachments Not that we are aware of.

- Any engagement with local governments, community organizations, or private landowners in the past year to report?

Local astronomy clubs including the Brevard Astronomical Society, Treasure Coast Astronomical Society, and the Central Florida Astronomical Society. These astronomy clubs frequent the preserve monthly (excluding summer May-September) on new moon nights to photograph and observe the night sky. Many of the clubs also hold annual meeting and star gazing parties here on the preserve. Another organization that we have engaged are the Friends of Okeechobee Battlefield State Park.

Other Things to Note:

- David Holko, Treasure Coast Astronomical Society member, became a board member on our CSO (Friends of Kissimmee Prairie Preserve).
- Our Unit Management Plan should be finalized this year. Many people, including organizations such as The Audubon Society, wrote in their comments and specifically wanted to see more detailed descriptions about our dark sky efforts in the Preserve. It was recommended to add our Dark Sky Park application to our UMP.
- The Park Manager would like to create a night sky walking trail with interpretive panels that welcomes our visitors and is enjoyable and educational. A draft was drawn up and several options talked about.
- The Florida Park Service now offers an after-hours permit to non-campers which allows them access to the night environment. Many visitors wrote in comments and expressed a need in this area.
 - Visitors must purchase an annual pass and fill out an after-hours permit for the park they want to experience after sunset. They must leave by 11 pm (quiet time begins).
- We have seen an increase in visitors coming to view the night skies. The majority of them found us through your website. Many of them are of the younger generation.
 - We have had an increase in first-time night sky visitors. These folks require a bit more time from our Rangers and staff to educate them about appropriate viewing times, conditions, and dark-time principles.
 - One family came here specifically to do a school project related to light pollution. The boy was very familiar with darksky.org and was very enthusiastic about the project he chose. Interactions like this help preserve our hope of restoring our nation's night environment.
- The fireflies were amazing during the spring and summer months.

Our Plans for this Coming Year (*not set in stone*):

- Determine new lights in the area that are impacting the Preserve's night environment and contact the owners.
- Touch base with the local electric companies.
- Fix five lighting fixtures in the Preserve.
- Add light blocking curtains to all the windows of the 2 residences in view of the Astro Pad.
- Create a dark sky interpretive handout for campers at the Preserve.
- Improve and update our dark sky interpretive panels.
- Reach out to other dark sky advocates in the state.
- Have our Interpretive Chair apply for the Sky Ranger workshop to increase her abilities to create great night sky programs.
- Collect more accurate data, more often, from the permanently mounted Unihedron.

Thank you for continuing to advocate for healthy night skies.
If you have any recommendations or comments, please let us know.

Written by: Jen Benson-Hughes

Collaborated with: Katie Ferguson (Interpretive Chair), Daniel Willis (Park Manager), Frank Verello (Volunteer Coordinator), and Natalie Carlson (Administrative Assistant).



Dark Night Sky Quality Measurements - Unihedron

Kissimmee Prairie Preserve State Park



Date	Time (24hrs, EDS)	Location	Reading (mag/sq. arcsecond)	Observer	Conditions/Notes
9/5/2016	2240	Astro Pad	22.75	Permanently Mounted Unihedron (PMU)	
9/21/2016	2305	Astro Pad	22.77	PMU	9/23 New Moon
9/22/2016	2311	Astro Pad	23.57	PMU	9/23 New Moon
9/29/2016	0048	Astro Pad	22.99	PMU	
10/24/2016	0100	Astro Pad	21.51	PMU	
10/29/2016	0300	Astro Pad	21.53	PMU	
10/30/2016	300	Astro Pad	21.53	PMU	
11/3/2016	0100	Astro Pad	21.6	PMU	
11/5/2016	0200	Astro Pad	22.22	PMU	
11/8/2016	0100	Astro Pad	21.64	PMU	
12/2/2016	2000	Astro Pad	22.5	PMU	
12/29/2017	1900	Astro Pad	22.74	PMU	
1/4/2017	0300	Astro Pad	22.34	PMU	
1/3/2017	0500	Astro Pad	21.71	PMU	
		Astro Pad		PMU	Dates and times below are inaccurate. Readings recorded in 2017 but do not know which months. Not sure of the dates of the following data records, they were sometime in between the Jan42017 data log download and 9/8/2017, but when???
1/2/2000	05:00	Astro Pad	21.47	PMU	Suspected date: 07/02/2017
1/3/2000	09:00	Astro Pad	21.6	PMU	Suspected date: 07/03/2017
1/4/2000	10:00	Astro Pad	21.63	PMU	Suspected date: 07/04/2017
1/5/2000	10:00	Astro Pad	21.55	PMU	Suspected date: 07/05/2017
1/6/2000	10:00	Astro Pad	21.6	PMU	Suspected date: 07/06/2017
1/7/2000	10:00	Astro Pad	21.73	PMU	Suspected date: 7/07/2017
1/8/2000	09:00	Astro Pad	21.25	PMU	Suspected date: 7/08/2017
1/9/2000	09:00	Astro Pad	20.15	PMU	Suspected date: 7/09/2017
1/10/2000	09:00	Astro Pad	19.51	PMU	Suspected date: 7/10/2017
1/11/2000	09:00	Astro Pad	18.88	PMU	Suspected date: 7/11/2017

Date	Time (24hrs, EDS)	Location	Reading (mag/sq. arcsecond)	Observer	Conditions/Notes
1/12/2000	03:00	Astro Pad	18.71	PMU	Suspected date: 7/12/2017
1/13/2000	04:00	Astro Pad	18.94	PMU	Suspected date: 7/13/2017
1/14/2000	03:00	Astro Pad	19.65	PMU	Suspected date: 7/14/2017
1/15/2000	03:00	Astro Pad	21.78	PMU	Suspected date: 7/15/2017
1/16/2000	05:00	Astro Pad	20.45	PMU	Suspected date: 7/16/2017
1/17/2000	03:00	Astro Pad	21.19	PMU	Suspected date: 7/17/2017
1/18/2000	04:00	Astro Pad	21.25	PMU	Suspected date: 7/18/2017
1/19/2000	03:00	Astro Pad	21.82	PMU	Suspected date: 7/19/2017
1/20/2000	05:00	Astro Pad	21.64	PMU	Suspected date: 7/20/2017
1/21/2000	04:00	Astro Pad	22.35	PMU	Suspected date: 7/21/2017
1/22/2000	06:00	Astro Pad	21.37	PMU	Suspected date: 7/22/2017
1/23/2000	03:00	Astro Pad	21.52	PMU	Suspected date: 7/23/2017
1/24/2000	04:00	Astro Pad	21.56	PMU	Suspected date: 7/24/2017
1/25/2000	06:00	Astro Pad	21.41	PMU	Suspected date: 7/25/2017
1/26/2000	06:00	Astro Pad	21.54	PMU	Suspected date: 7/26/2017
1/27/2000	04:00	Astro Pad	21.65	PMU	Suspected date: 7/27/2017
1/28/2000	06:00	Astro Pad	20.88	PMU	Suspected date: 7/28/2017
1/29/2000	04:00	Astro Pad	21.66	PMU	Suspected date: 7/29/2017
1/30/2000	03:00	Astro Pad	21.83	PMU	Suspected date: 7/30/2017
1/31/2000	06:00	Astro Pad	21.29	PMU	Suspected date: 7/31/2017
2/1/2000	04:00	Astro Pad	20.45	PMU	Suspected date: 8/01/2017
2/2/2000	05:00	Astro Pad	20.94	PMU	Suspected date: 8/02/2017
2/3/2000	06:00	Astro Pad	21.15	PMU	Suspected date: 8/03/2017
2/4/2000	06:00	Astro Pad	20.57	PMU	Suspected date: 8/04/2017
2/5/2000	09:00	Astro Pad	21.79	PMU	Suspected date: 8/05/2017
2/6/2000	06:00	Astro Pad	19.02	PMU	Suspected date: 8/06/2017
2/7/2000	10:00	Astro Pad	21.62	PMU	Suspected date: 8/07/2017
2/8/2000	10:00	Astro Pad	21.54	PMU	Suspected date: 8/08/2017

Date	Time (24hrs, EDS)	Location	Reading (mag/sq. arcsecond)	Observer	Conditions/Notes
2/9/2000	11:00	Astro Pad	19.34	PMU	Suspected date: 8/09/2017
2/10/2000	11:00	Astro Pad	18.83	PMU	Suspected date: 8/10/2017
2/11/2000	04:00	Astro Pad	18.53	PMU	Suspected date: 8/11/2017
2/12/2000	03:00	Astro Pad	19.46	PMU	Suspected date: 8/12/2017
2/13/2000	03:00	Astro Pad	20.3	PMU	Suspected date: 8/13/2017
		Astro Pad		PMU	
		Astro Pad		PMU	Dates and times below readings are ACCURATE
9/8/2017	22:00	Astro Pad	20.33	PMU	new batteries put in on 9/8/2017 at 10am, and unihedron clock reset to record actual date starting from 9/8/2017; unihedron offline from 10am-12pm; power shutoff at KP and campground closed
9/9/2017	23:00	Astro Pad	21.04	PMU	power shutoff at KP, campground closed
9/10/2017	01:00	Astro Pad	20.68	PMU	Hurricane Irma; power shutoff at KP, campground closed
9/11/2017	23:00	Astro Pad	21.56	PMU	Hurricane Irma aftereffects, most of state of FL from Lakeland south is without power; power shutoff at KP, campground closed
9/12/2017	21:00	Astro Pad	21.62	PMU	Hurricane Irma aftereffects, most of state of FL from Lakeland south is without power; power shutoff at KP, campground closed
9/13/2017	23:00	Astro Pad	23.63	PMU	Hurricane Irma aftereffects, most of state of FL from Lakeland south is without power; power shutoff at KP, campground closed
9/14/2017	02:00	Astro Pad	21.64	PMU	Hurricane Irma aftereffects, most of state of FL from Lakeland south is without power; power shutoff at KP, campground closed
9/15/2017	03:00	Astro Pad	21.51	PMU	Hurricane Irma aftereffects, most of state of FL from Lakeland south is without power; power restored at KP, campground closed
9/16/2017	03:00	Astro Pad	21.67	PMU	campground closed
9/17/2017	03:00	Astro Pad	21.5	PMU	campground closed
9/18/2017	22:00	Astro Pad	21.84	PMU	campground closed
9/19/2017	03:00	Astro Pad	21.82	PMU	campground closed
9/20/2017	02:00	Astro Pad	21.68	PMU	campground closed
9/21/2017	03:00	Astro Pad	21.6	PMU	campground closed
9/22/2017	21:00	Astro Pad	21.89	PMU	campground closed
9/23/2017	05:00	Astro Pad	21.45	PMU	campground closed
9/24/2017	04:00	Astro Pad	21.57	PMU	campground closed
9/25/2017	04:00	Astro Pad	21.4	PMU	KP open for walkins
9/26/2017	02:00	Astro Pad	21.64	PMU	KP open for walkins