

**APPLICATION FOR  
DARK SKY PARK STATUS  
MIDDLE FORK RIVER FOREST PRESERVE  
CHAMPAIGN COUNTY FOREST PRESERVE DISTRICT  
CHAMPAIGN COUNTY, ILLINOIS**



**July 2018**



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## **Acknowledgements**

The Champaign County Forest Preserve District would like to express its sincere appreciation to the members of the Champaign-Urbana Astronomical Society and the District's Citizens Advisory Committee for their hard work in putting together this application for Dark Sky Park designation. Thank you.

### **Champaign-Urbana Astronomical Society**

David C. Leake  
Mike Lockwood

### **Citizens Advisory Committee**

Eileen Borgia, Chair  
Carl Altstetter  
Fred Bunting  
Roger Digges  
David Easter  
Bill Ford  
Richard Harris  
Denise Ingram  
Marianne Lippi

Scott Hays, Board Representative

### **Board of Commissioners**

Andrew Kerins, President  
Sarah Livesay, Vice President  
Bobbie Herakovich, Secretary  
Scott Hays, Treasurer  
William Goodman, Assistant Secretary/Treasurer

**CHAMPAIGN COUNTY FOREST PRESERVE DISTRICT  
BOARD OF COMMISSIONERS**

**Resolution 2018-14**

Amendment to the 2010 Master Plan  
Dark Sky Park Designation for Middle Fork River Forest Preserve

WHEREAS, the Champaign County Forest Preserve District recognizes that the night sky is part of the cultural and scientific heritage of our community, and

WHEREAS, the night sky represents an important natural resource that contributes to the quality of life for residents and visitors, and is necessary for the health of many native wildlife species, and

WHEREAS, the splendors of a starry dark sky have been filling humans with wonder since the dawn of civilization and it is important in modern times to recognize the tremendous value of a clear, dark sky to observe the Milky Way and other celestial bodies, and

WHEREAS, the Middle Fork River Forest Preserve is located in a portion of Champaign County with excellent nighttime sky quality and is therefore an outstanding candidate for Dark Sky Park designation by the International Dark Sky Association, and

WHEREAS, Dark Sky Park designation represents a significant opportunity for tourism and local awareness of the Middle Fork River Forest Preserve, and

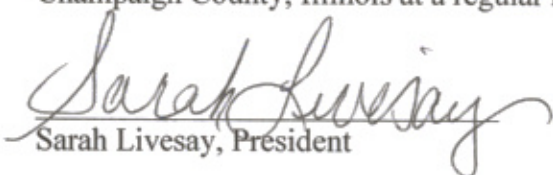
WHEREAS, the Champaign County Forest Preserve District has shown its commitment to supporting practices that limit or minimize light trespass from night lighting fixtures to protect the beauty of the night skies by adopting and implementing a Lightscape Management Plan for the Middle Fork River Forest Preserve, and

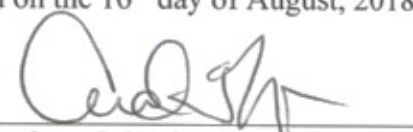
WHEREAS, the Champaign County Forest Preserve District, through its programs, partnerships, and promotional efforts, is committed to educating the public about the benefits of nighttime darkness for humans, nature, and the community.

NOW, THEREFORE, BE IT RESOLVED that the Board of Commissioners of the Champaign County Forest Preserve District hereby:

- 1) supports the application to the International Dark-Sky Association for the Middle Fork River Forest Preserve to obtain designation as an International Dark Sky Park, and
- 2) amends its 2010 Master Plan to recognize dark skies as an important natural, cultural, and scientific resource and identify the actions to be taken in support of preserving dark skies at Middle Fork River Forest Preserve.

Adopted by the Board of Commissioners of the Champaign County Forest Preserve District in Champaign County, Illinois at a regular meeting thereof, held on the 16<sup>th</sup> day of August, 2018.

  
Sarah Livesay, President

Attest:   
Andrew J. Kerins, Secretary

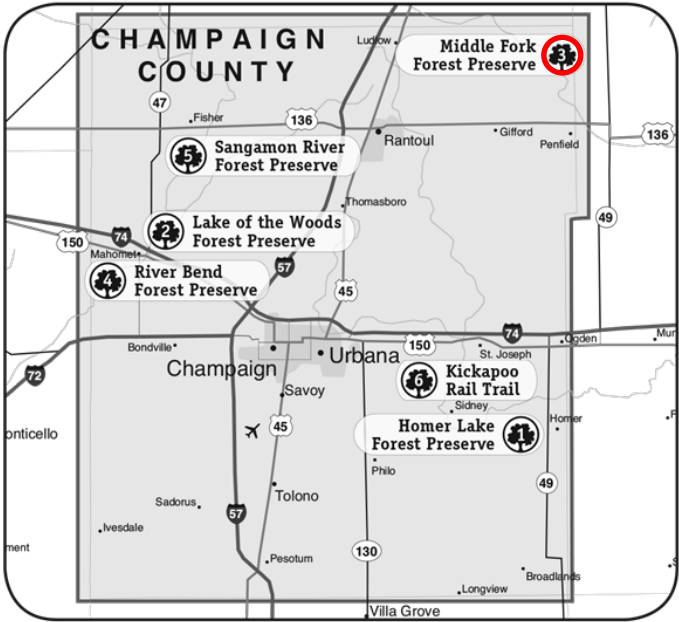
## Introduction

Nominators Champaign County Forest Preserve District and the Champaign-Urbana Astronomical Society, along with our primary collaborative entity, the Forest Preserve District's Citizens Advisory Committee, have worked together to produce this application for designation of Middle Fork River Forest Preserve as an International Dark Sky Park.

Middle Fork River Forest Preserve is located in northeastern Champaign County in east central Illinois. The Champaign Forest Preserve District's ownership and management of this land ensure that Middle Fork River Forest Preserve's rich natural resources and cultural history will be protected in perpetuity. Designation of this area as an International Dark Sky Preserve, as is our intention, would also allow for the preservation of the night sky – a natural resource vital to the health of the land and the people and wildlife that inhabit it.

If approved for this prestigious accreditation, Middle Fork would be the first natural area so designated in the state of Illinois. We believe that our progress on the project to date, our Lightscapes Management Plan, the preserve's exceptional sky quality, and our community support will meet the International Dark Sky Association's *silver* level criteria for Dark Sky Park designation.

Champaign County Forest Preserves



## Champaign County Forest Preserve District Governance

The Middle Fork River Forest Preserve is one of six public preserves, 3,932 acres in total, owned and operated by the Champaign County Forest Preserve District, which is a municipal government agency in Champaign County. (See the map to the right). The District was established by public referendum in 1935, and opened its first preserve in 1948, shortly after World War II. The District's mission is to conserve, preserve, and restore natural areas, provide cultural, historical, and environmental opportunities, and offer outdoor recreation experiences that are compatible with the preservation of land and its unique natural resources. The governing board meets monthly and consists of five volunteer commissioners appointed to five-year terms. The district also maintains a Citizen's Advisory Committee (CAC) consisting of individuals appointed to three-year terms. The CAC meets six times annually and has as its goal to promote citizen awareness of the Forest Preserve District while acting as a liaison between the Board of Commissioners and the public. The CAC has played an integral role in this project and will continue to lead efforts to promote Middle Fork River Forest Preserve and this designation to the public, if this application is approved.

The Champaign County Forest Preserve District's primary partner in this effort is the Champaign-Urbana Astronomical Society, Inc, an affiliate group of the Champaign Park District. The club formed out of group observing for Halley's Comet in 1986. Club members meet monthly at the William M. Staerkel Planetarium at Parkland College in Champaign, Illinois. The CUAS is comprised of about 70 families. They operate an observatory complex southwest of Champaign where they hold free public observing on the Saturdays closest to the first Quarter Moon. New Moon weekends bring members-only observatory events or road trips to the local forest preserves. The CUAS prepared much of the sky quality data for this application and will conduct regular sky quality measurements at Middle Fork.



*Spring wildflowers in bloom along one of Middle Fork River Forest Preserve's many hiking trails*

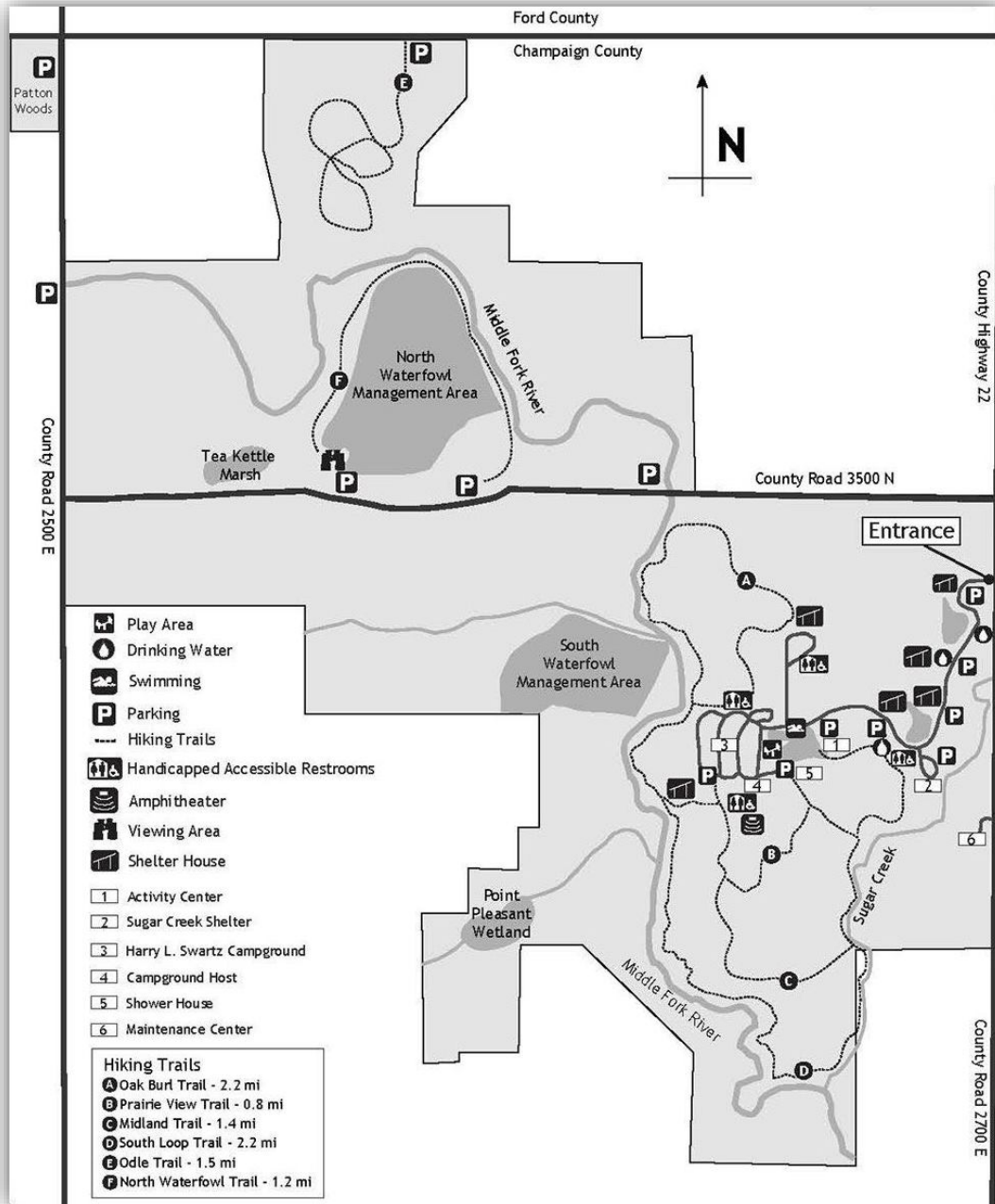
## **Middle Fork River Forest Preserve – the Land, Facilities, and Resources**

The Middle Fork River Forest Preserve is located in the northeast corner of Champaign County, 20 kilometers east of Rantoul and 8 kilometers north of the small town of Penfield, Illinois. As the name implies, the Middle Fork River flows through the preserve and shapes the beauty and natural resources of the land. The Middle Fork River is a tributary of the Vermillion River, which flows southeast to the Wabash River. The river is 124 kilometers long, with roughly seven kilometers located within the boundaries of the Middle Fork River Forest Preserve. It was Illinois' first federally-designated Wild & Scenic protected river.

The 1,700-acre Middle Fork River Forest Preserve is the District's largest public land holding and features more than twelve kilometers of trails that invite visitors to explore. Trails meander through a variety of habitats including upland oak forest, restored prairie, river bottom forest,

and along Sugar Creek and the Middle Fork River. The restored prairie is rich in native prairie wildflowers and grasses. The river, plus three small ponds, provide scenic places for fishing and observing wildlife. The river is known for its smallmouth bass and many other species of water-loving animals and plants.

Sugar Creek meets the river near the southern tip of the Forest Preserve. There are beautiful views, and evidence of beaver and other animal activity can be seen along the creek.



Map of the Middle Fork River Forest Preserve

The woodlands are oak-hickory forest composed of old hardwood timber and reforested lowlands. Such woodlands were a refuge from the prairie for Native Americans and early settlers and to this day they continue to be home to many resident and visiting animal species.



*The Middle Fork prairie in summer*

Grasslands, including prairie, are one of the most endangered ecosystems in the world. The prairies that once covered Illinois were a complex ecosystem supporting a large variety of wildlife. A mix of native grasses and wildflowers that are adapted to the harsh environmental conditions common in grasslands, the restored prairies of the Middle Fork River Forest Preserve are some of the highest quality examples in the region. Several species of wildlife are dependent on the wild, wide open spaces that these prairies provide.

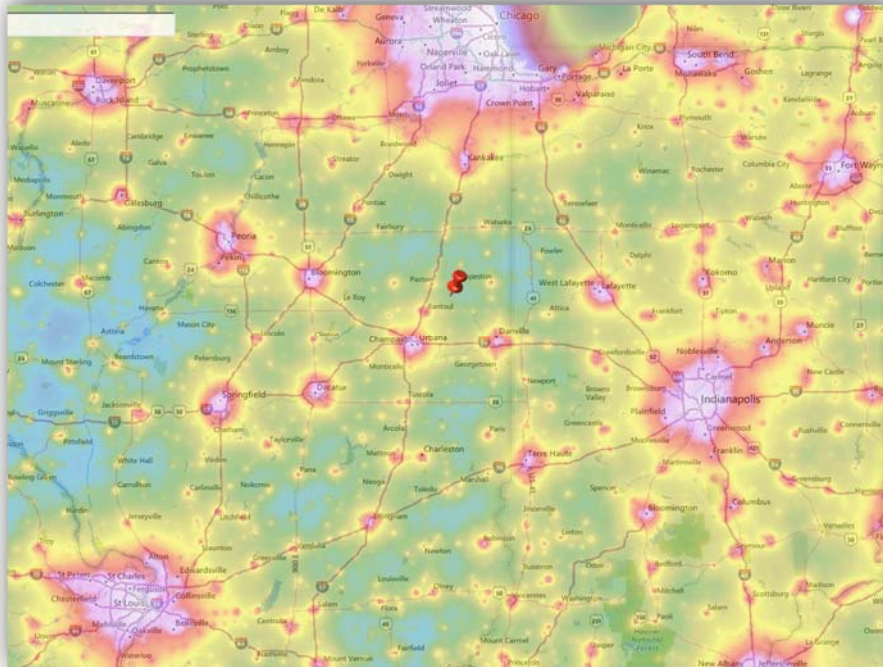
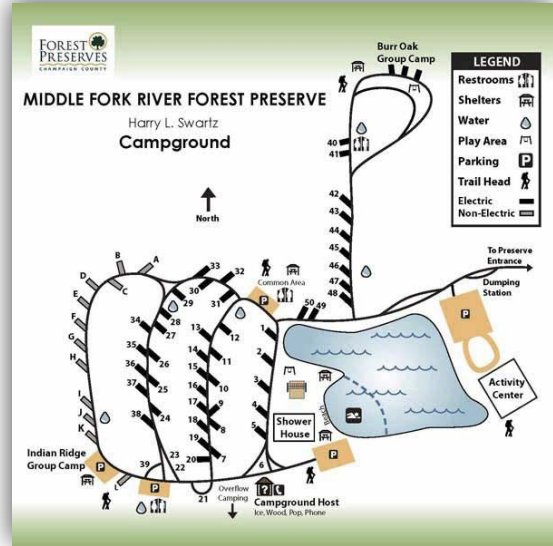
The diversity of the Middle Fork landscape provides important habitat for wildlife. Once-rare species, such as bald eagles, sandhill cranes, and river otters are making reappearances at this preserve. Endangered species, such as whooping cranes, have also been spotted here.

Within the boundaries of the preserve are 130 acres designated as a Waterfowl Management Area. This area is prime nesting habitat for some of these migratory waterfowl. Visitors are restricted from March to June as to not disturb nesting activities.

The area in and around the preserve is also rich in cultural history. Native Americans camped temporarily in the region on their seasonal migrations. European Americans settled in this area. Both took advantage of the hunting, fishing, abundant plant life, fresh water and timber. Settlers moved out into the surrounding wet prairie when, in 1869, a group of immigrants from East Frisia (northern Germany) brought their expertise in drainage techniques. These techniques made the land farmable.

Today, about 50,000 people visit the Middle Fork River Forest Preserve annually, according to traffic counters recently installed near the main entrance. The preserve is also home to the Harry L. Swartz Campground, consisting of 65 camp sites with recently upgraded electrical hookup capacity. Attendance at the campground is about 15,000 people annually.

Middle Fork River Forest Preserve is open daily year-round. No admission fees are charged to enter the preserve. With 24 hour access, no barriers exist for night sky observation at Middle Fork at any time of the year.



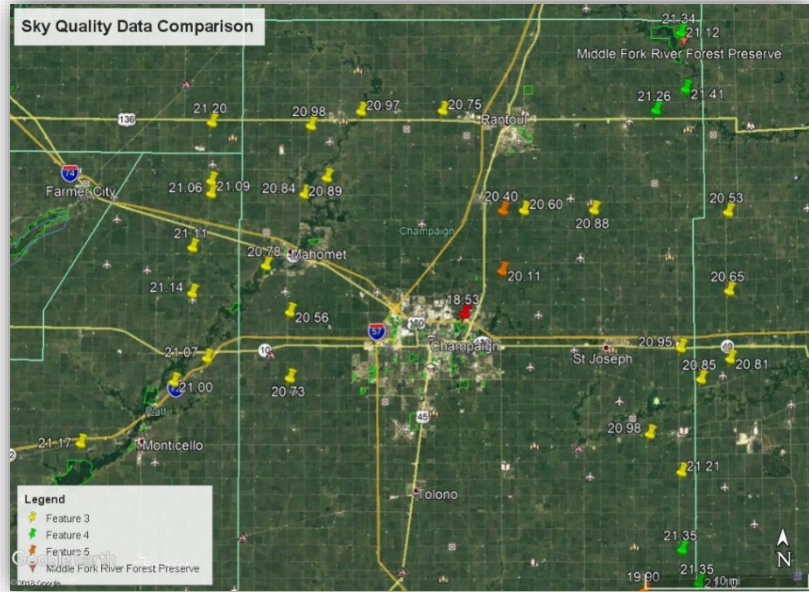
*Lightpollutionmap.info using ATLAS 2015*

## The Region

Middle Fork River Forest Preserve is located in east central Illinois, about 110 miles south of Chicago, 170 miles northeast of St. Louis, and 100 miles west of Indianapolis. Although it is located in rather close proximity to these and other Midwestern metropolitan areas, the figure to the left shows the relative scarcity of light pollution where Middle Fork is situated.

## Commitment to Dark Sky Preservation at Middle Fork River Forest Preserve

In its 2010 Master Plan, as amended, the Champaign County Forest Preserve District recognized the Middle Fork River Forest Preserve as having exceptional night sky quality, in addition to its other unique and biologically important natural resources. This realization and interest in dark sky preservation came about in the mid-2000s. At that time, the Champaign-Urbana Astronomical Society (CUAS) began taking sky quality readings from various locations across the county. (A map of the county-wide locations measured for their sky quality in 2006 is shown here.) The high quality night sky readings at Middle Fork preserve, along with the presence of open space and public park facilities, led the CUAS to begin club-related programming at the site. A partnership with the Forest Preserve District resulted in the development of Starwatch programming a few years later, as noted in the later chapter on educational efforts.



*Sky Quality Measurements, Champaign County 2006*

To demonstrate its recognition of dark skies as an important natural, cultural, and scientific resource that merits protection, in the same way we value the native flora and fauna, the Forest Preserve District has included the following statement in its Master Plan: the District shall “protect the quality of the night sky through responsible lighting techniques and expand opportunities for nighttime programming that focus on educating the public of the natural and cultural value of dark skies.” Seeking Dark Sky Park designation for Middle Fork is also listed as a Master Plan objective. The full excerpt from the amended plan is provided as Appendix D.

## History of the Project

The Champaign-Urbana Astronomical Society's efforts to curb light pollution in Champaign County date back to 2007 when members of the CUAS first contacted the city council and engineering staff of the city of Champaign, the largest municipality within Champaign County, about the prospect of installing dark sky-compliant street lighting. Within a few years, local governments began to talk seriously about imposing restrictions on new lighting – that any new street lights should be energy-efficient, LED, and fully shielded. In 2013, the city of Champaign adopted its “Growing Greener” report, which required new city street lighting to be dark sky-compliant. Champaign County has approved a zoning ordinance requiring that exterior lights on certain new structures within the county's jurisdiction shall also meet dark sky-compliant fully shielded requirements.

Conversations between the CUAS and the Champaign County Forest Preserve District about a possible Dark Sky Place designation within the county first began in 2012. The obvious choice for that designation was the Middle Fork River Forest Preserve, given the quality of its night sky and its use as a Starwatch programming, education, and astronomical research destination. In 2015, discussions turned to action as the District's Citizens Advisory Committee agreed to take on the project. In December of 2015, David Leake, a member of CUAS and the head of Parkland College's Staerkel Planetarium, conducted a presentation for the CAC on light pollution and the prospects for a local Dark Sky Park. The CAC readily agreed to adopt the project and began to identify the tasks and responsibilities that would be required to seek designation for Middle Fork as Illinois' first Dark Sky Preserve.

The project kicked off in early 2016 with a joint CUAS/CAC meeting at the Staerkel Planetarium. The development of a Lightscape Management Plan was the first step in the process. A copy of the plan is provided in the appendix.

### **Middle Fork River Forest Preserve Lighting Upgrades**

A Light Inventory was completed at the Middle Fork River Forest Preserve to assess the type and condition of existing fixtures, determine the need for each light, and estimate the cost of replacement of non-Dark Sky compliant lighting with fully approved models. The lights in the preserve were originally installed in the 1980s and most were globe-shaped fixtures that emit light in all directions. In 2016, the District began the process of removing unnecessary outdoor lighting, while replacing wall-mounted building fixtures with fully shielded lights as the preserve's supply budget would allow. In fiscal year 2017 (January 1-December 31), the District budgeted \$22,500 in capital dollars specifically for the retrofit and upgrade of large roadway, parking lot, and boulevard lights. Of that budget, the total spent to date is \$21,545. As the Middle Fork light fixtures were replaced, several new inventory updates were prepared. (The latest appears in this document).

The following is a summary of the lighting inventory and the progress made to remove or upgrade fixtures.

- ☆ A total of **seven** light fixtures were completely removed as they were determined to be unnecessary for preserve safety, wayfinding, or visitor accessibility.
- ☆ **Fourteen of 18** building fixtures have been upgraded to Dark Sky-compliant, fully shielded lights.
- ☆ **Nine of 17** roadway lights have now also been replaced using the 2017 capital project budget funding noted above.
- ☆ A grant awarded in November 2017 by the Community Foundation of East Central Illinois, in the amount of \$5,000, will allow for two additional roadway lights to be upgraded in 2018 – bringing the total to **eleven** that will be completed this year.
- ☆ A grant awarded by the Illinois Clean Energy Community Foundation in May 2018, coupled with additional budgeted funds in 2019, will allow for the retrofit project to be completed by the end of 2019.

As evidenced by these numbers, tremendous progress has been made to make the park more “dark sky friendly.” Wall-mounted globe fixtures have been replaced with fixtures that direct light downward (as shown below). At the Activity Center, a rental facility adjacent to the



*Maintenance Shop exterior lights – before and after retrofit*



*One example of the roadway lighting retrofit – before and after*

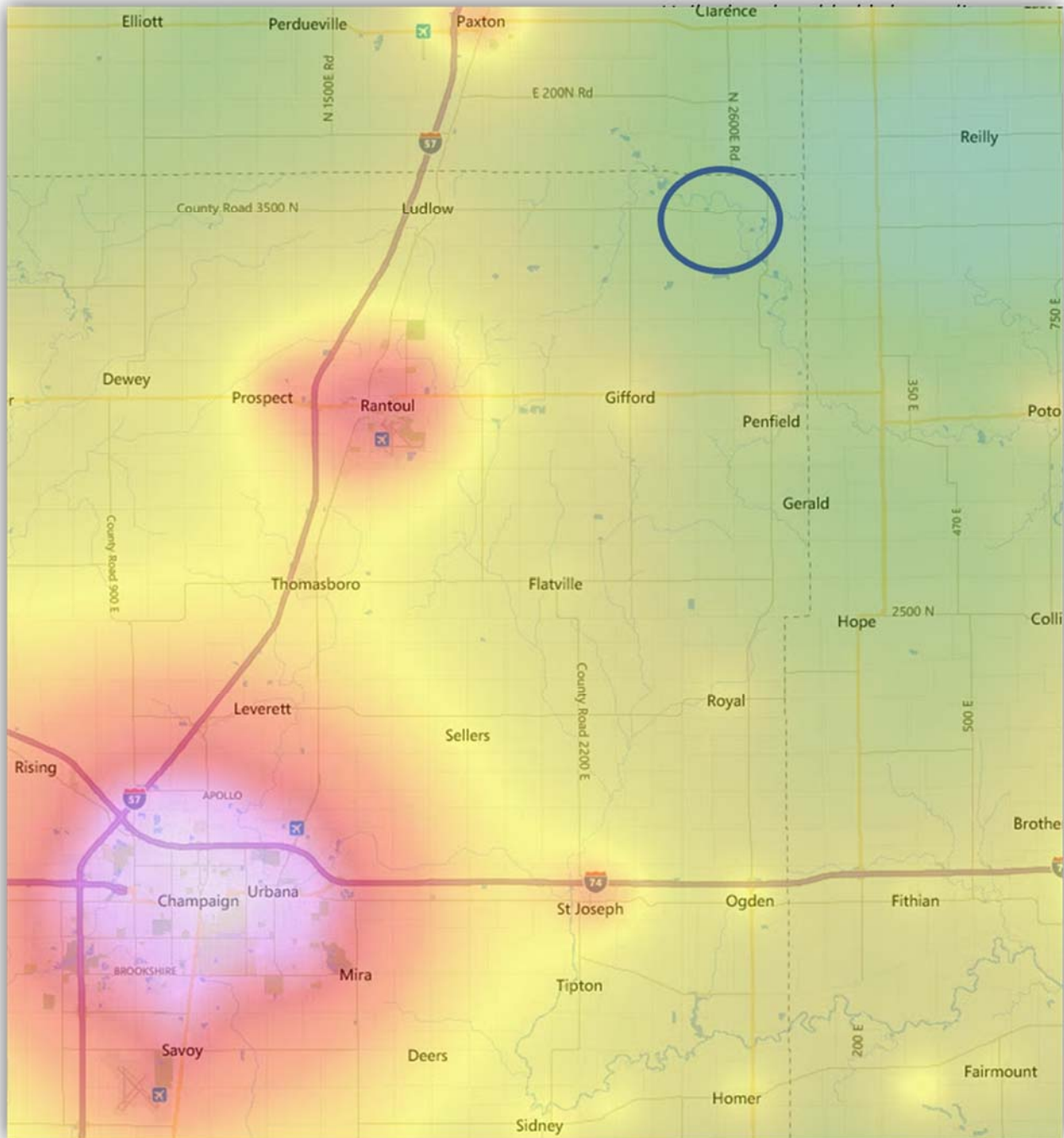
campground, fixtures which emit light above the horizontal have been replaced, and the entrance light has been replaced with recessed lighting. Probably the most dramatic changes are in progress as the District replaces the preserve's outdated and inefficient globe lighting that was used to illuminate roadways and user areas. (Bottom photo on previous page.)

The new lights have been affixed with signs, shown here, that inform preserve visitors of the fixtures' dark sky qualities.

An initial setback to the project was the high cost of the Dark Sky compliant, roadway scale, fixtures. With limited financial resources at our disposal, full conversion to the preferred lighting seemed as though it might take years. However, upon examining fixtures at the St. Louis Zoo during a conference, staff made the decision to manufacture its own light standards, which could be done at a fraction of the cost. In the summer of 2017, a prototype standard was constructed, weather-tested, and found to be a highly suitable option. All roadway and parking lot light standards are now being made in-house at significant cost savings to the District.



## Sky Quality Measurements



*Sky glow from night-time artificial light in Champaign County.  
Middle Fork River Forest Preserve's location is noted by the blue circle.*

Initial measurements were performed at the site by John Stone, a member of the Champaign-Urbana Astronomical Society, over many years beginning in 2006, with periodic re-measurements occurring in subsequent years. An initial measurement in early 2006 produced a reading of 20.97 magnitudes per square arc second (4.5 on the Bortle scale), leading to

ongoing interest in the site as an observing location. Subsequent follow-up measurements registered 21.38 mag/arc sec<sup>2</sup>. The site was known from experience to be substantially darker than other locations in the county, so Mr. Stone began periodically re-measuring the sky brightness at the site and in the surrounding area with progressively more sophisticated means, as described further below.



Sky brightness measurements were taken using a wide-angle handheld SQM meter (shown here). Each measurement was repeated several times in succession, and the median value of the measurements was recorded and posted in the public SQM database at the Unihedron web site (operated by Anthony Tekatch, maker of the SQM meters):  
<http://www.unihedron.com/projects/darksky/database/>

An excerpt of the full public SQM database that shows the SQM readings reported by Mr. Stone for the subject site is provided here:

Date	Time (UT)	Reading
9-Sep-16	4:39	21.12
9-Sep-16	0:35	21.29
23-Aug-09	6:00	21.21
12-Sep-07	7:00	21.38
12-Aug-07	7:00	21.35
12-Aug-07	5:00	21.30
14-Jul-07	4:00	21.20
9-Jun-07	4:30	21.25
25-Nov-06	5:00	21.15
3-Jun-06	6:40	21.34
22-Mar-06	2:15	21.05

*Data Source: John Stone, CU Astronomical Society*

Mr. Stone began collaborating with Mr. Tekatch and Dr. Doug Welch as they developed next-generation sky brightness instrumentation. Beginning with the "DSM" sky meter (which was never sold as a commercial product), and later on the SQM-LE (which are still sold today), it became possible to directly interface the light meter to a computer, and Mr. Stone wrote the necessary software to allow a computer to log SQM-LE measurements along with precise latitude/longitude and time-of-day information provided by a GPS receiver.

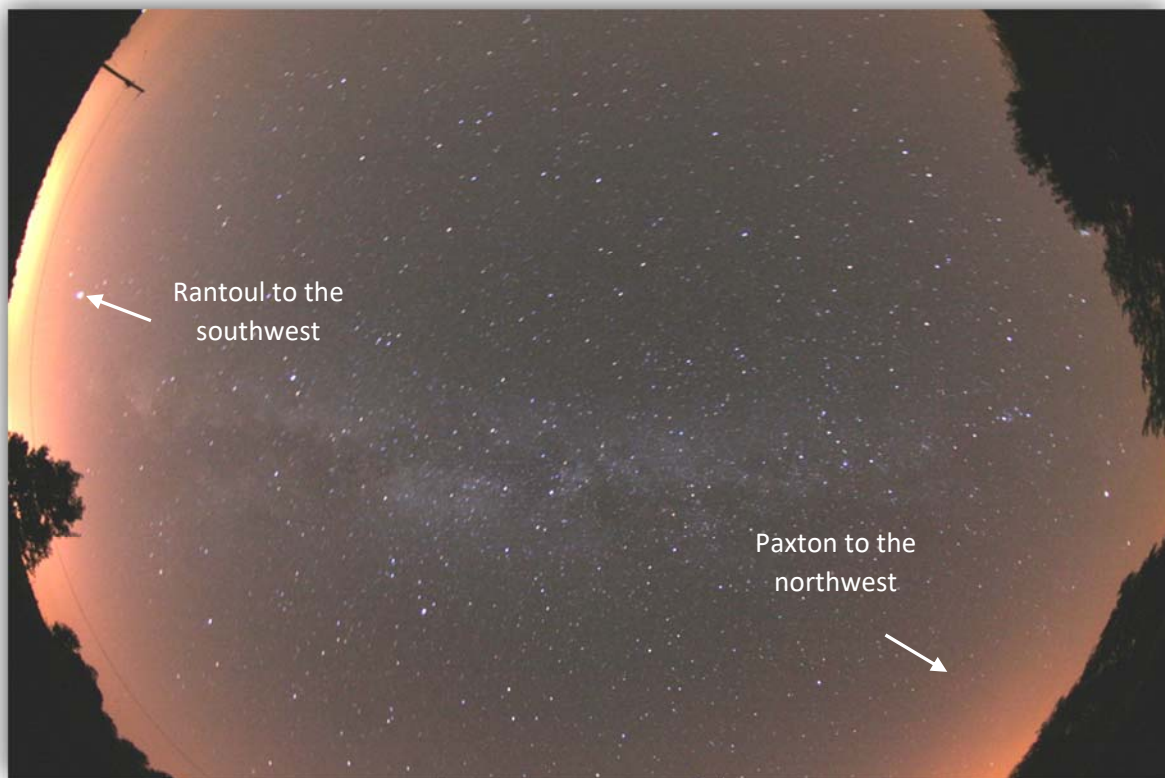
Mr. Stone then constructed a mobile sky brightness recording rig wherein a computer-controlled SQM-LE was attached to a tripod and was interfaced to a laptop computer along with a GPS system, powered by a standalone (low noise) 100 AH deep cycle battery. Custom software managed SQM-LE and GPS data collection, and additional programs generated Google Earth placemarks. Thus Stone could drive around the county with the meter taking data through his

sun roof (with the glass removed). Measurements in the region within 5 miles surrounding the Middle Fork site ranged from 20.94 to 21.03 mag/arc sec<sup>2</sup>, again a 4.5 on the Bortle scale.

Stone repeated the SQM readings on September 3, 2016 from the Waterfowl Observation area parking lot. In his report to the CU Astronomical Society he states:

*I took measurements with two different kinds of SQM meters, both a wide-angle SQM, and a narrow-angle SQM-L. I took the measurements at 11:39pm local time, which is well more than the needed 2 hours between taking the readings and either moonrise or moonset (moon elevation was -46 degrees, and only 3% illumination). The Milky Way was directly overhead during my measurements, so if I had repeated them a few hours later at night I would have had a slightly darker reading on both meters.*

*The measurements I recorded tonight were 21.29 (SQM, wide-angle) and 21.12 (SQM-L, narrow-angle). The narrow-angle result from the SQM-L showed a brighter result (lower mags/arcsecond number) because of the Milky Way being directly overhead during my measurement. This is a very conservative result and we would get a much darker measurement if I measure later at night when the Milky Way is off to the side. These latest measurements compare very well with measurements that I made at the same location at close to the same time of year, on September 12, 2007, on that date I measured 21.38 (SQM, wide-angle, taken at 3am local time with the Milky Way off to the west).*



*The Middle Fork River Forest Preserve's night sky as observed and photographed by John Stone.*

Two more recent readings were taken at Middle Fork this year by the preserve's site superintendent.

- ☆ June 8, 2018; 10:05pm CDT = 21.26 (some cloud cover)
- ☆ June 9, 2018; 10:15pm CDT = 21.44 (clear sky)

At the July 7, 2018 *Starwatch* event held at Middle Fork River Forest Preserve, another set of sky quality readings were taken. This set was taken by David Leake, also a CUAS member and director of the Staerkel Planetarium at Parkland College. Cloud cover was almost non-existent that evening so conditions were nearly perfect for star-gazing as well as data collection.

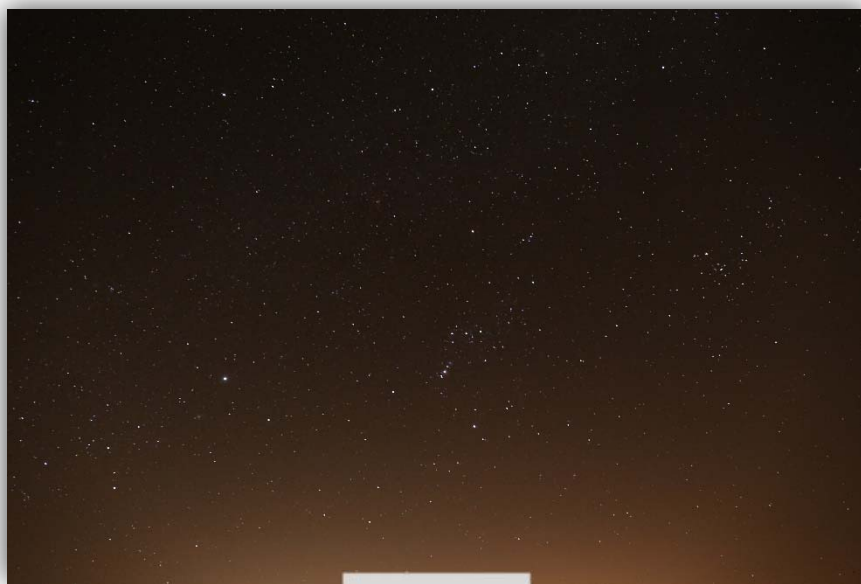
- ☆ July 7, 2018; 10:35pm CDT = 21.35, 21.37, 21.31
- ☆ July 7, 2018; 11:15pm CDT = 21.23, 21.21, 21.28 (Milky Way nearly overhead)
- ☆ July 7, 2018; 11:45pm CDT = 21.26, 21.31, 21.26
- ☆ July 8, 2018; 12:30am CDT = 21.18, 21.21, 21.16

Multiple readings were taken at each time noted. As indicated, the presence of the Milky Way nearly overhead affected the sky brightness as night wore on.

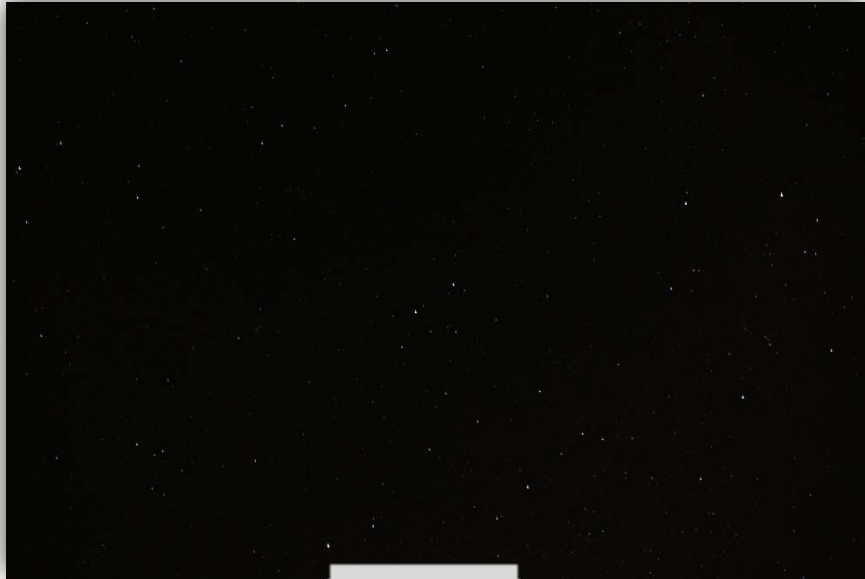
Comparing these recent readings to those taken in prior years by Mr. Stone indicate that dark sky conditions at Middle Fork have not changed significantly over time and, if anything, could be improving, likely as a result of the lighting retrofit project described in this application.

## **Astrophotography**

In addition to stargazing, the CUAS members also capture photographs of what they see during Starwatch events and other visits to Middle Fork. The following photographs were taken on March 11, 2018 at 10:00pm with a Canon EOS 6D, 24-70 zoom lens used at 24mm. Exposure: ISO 1600 at 15 seconds. The first shows Orion, and the second, Gemini. Both photos were taken at the Middle Fork preserve's North Waterfowl Management Area.



The following pages provide a comprehensive set of horizon photographs indicating the locations of light domes. The pertinent data is provided after the final photo on the second page.



*Gemini*

The CU Astronomical Society has agreed to continue periodic readings and sky quality monitoring at regular intervals at the Middle Fork River Forest Preserve, as is required to maintain Dark Sky Park designation.



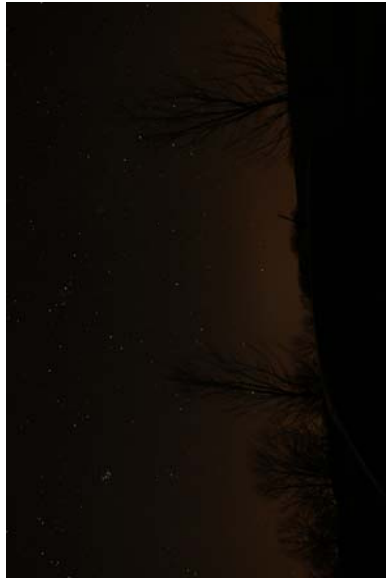
1



2



3



4



5



6



7



8



9



10



11



12

Date: March 11, 2018

Time: 10pm

Camera: Canon EOS 6D

Lens: 24-70 zoom lens used at 24mm

Exposure: ISO 1600 at 15 seconds

Location: Middle Fork River Forest Preserve,  
North Waterfowl Management Area

Photo Number	Direction	Light Dome
1	Due South	Champaign-Urbana
2	Going Clockwise from Due South	
3	Clockwise from previous position	
4	Clockwise from previous position	
5	Clockwise from previous position	
6	Clockwise from previous position	Rantoul
8	Clockwise from previous position	
9	Clockwise from previous position	
10	Clockwise from previous position	
11	Clockwise from previous position	Danville
12	Southeast	

## Leadership in Dark Skies Restoration – Education, Interpretation, Outreach

The Education Department of the Champaign County Forest Preserve District serves more than 30,000 people annually. It consists of two interpretive facilities, the Museum of the Grand Prairie and the Homer Lake Interpretive Center. Full-time and seasonal education staff have offices located at the Museum, Interpretive Center, and Middle Fork River Forest Preserve, but they work throughout all six preserves to provide educational programs that add to the visitors' experience of the natural landscape that surrounds them.

As leaders in the effort to interpret our dark sky project and educate the public of the natural, cultural, and scientific value of nighttime darkness, the Forest Preserve District has been and will continue to partner with the CU Astronomical Society and our own Citizens Advisory Committee to provide dark sky programming for all visitors to the preserves. Most of our dark sky interpretive programs take place at Middle Fork River Forest Preserve to take advantage of the darkest nighttime location in the county. Lately, dark sky programming and interpretive information has also been expanded to other preserves and off-site outreach events, so that we can share the message more broadly. Past, present, and future Dark Sky interpretive programs are described on the pages that follow.

### Starwatch Programs

For many years, the CU Astronomical Society has partnered with the District's Education Department to offer astronomy-related stargazing programs, known as *Starwatch* events, at both the Middle Fork River and Homer Lake Forest Preserves. *Starwatch* events begin with an introductory session presented by CU Astronomical Society members to give visitors an overview of what the night's sky will hold for them. The educational portion of the event includes an explanation of the Dark Sky Park designation project and the importance of preserving nighttime darkness, in our forest preserves, in our communities, and in our own backyards.

After the presentation, *Starwatch* attendees head outside into the darkness for a night of viewing. Astronomy club members share their telescopes and their expertise with young and old alike, while helping novices understand what they are seeing. The partnership between the District and the CU Astronomical Society dates back to April of 2007. *Starwatch* programs of past years are provided in the following table, along with their locations:



*CUAS member, Guy Hampel, sets up a large Dobsonian telescope for a Starwatch event.*

Year	Middle Fork	Homer Lake	Year	Middle Fork	Homer Lake
2017	May 20 July 22	September 16	2011	April 2 April 30 August 27	September 24
2016	May 7 August 6	October 1	2010	April 10 August 7 October 2	
2015	April 18 August 8	October 10	2009	April 18 August 15 October 10	
2014	April 26 September 20	October 25	2008	May 31 August 30	
2013	May 11 June 8	October 5	2007	April 14	
2012	April 21 August 18	September 15			

In 2018, four *Starwatch* programs have been scheduled - three for Middle Fork and one at Homer Lake. Dates and locations are as follows:

- ☆ Saturday, June 9, 2018; 8pm–midnight; Middle Fork/Activity Center (discussion and activities)/North Waterfowl Management Area (viewing)
- ☆ Saturday, July 7, 2018; 9pm–midnight; Middle Fork/North Waterfowl Management Area (discussion and viewing)
- ☆ Saturday, August 11, 2018; 8:30pm-1:00am (Perseid Meteor Shower); Homer Lake Interpretive Center (discussion and activities)/Natural Playscape (viewing)
- ☆ Saturday, September 8, 2018; 8:00pm-1:00am; Middle Fork/Activity Center (discussion and activities)/North Waterfowl Management Area (viewing)

These *Starwatch* events are publicized in our program guide, at Middle Fork’s campground, on the District’s website, and in the Champaign-Urbana News-Gazette. CUAS also publicizes the programs to its membership. *Starwatch* events can draw as many as 60-70 members of the public.

### **Additional Dark Sky Project Interpretation – 2018**

Several new interpretive programs have been added to our program lineup this year to educate the public about the benefits of nighttime darkness and interpret the lighting retrofit project for visitors to Middle Fork River Forest Preserve. Programs are designed to share information about the natural, cultural, and scientific resource value of adequate nighttime darkness and, conversely, the impact that excessive artificial nighttime light can have on our environment and human wellness. The new programs also provide an opportunity to showcase the new dark sky-compliant light fixtures installed at Middle Fork and offer suggestions to the public on how to limit excessive nighttime light in their home environments.

New programs that were or will be held at Middle Fork preserve this year include an International Dark Sky Week celebration, pictured below, that was conducted on April 21, 2018. IDA resources, including several interpretive banners, posters, and a looped video streaming of “Losing the Dark”, helped to educate visitors about the benefits of good lighting and its impacts

on wildlife, energy consumption, safety and human health. For the kids, District education staff arranged a variety of astronomy-themed activities like building telescopes and constellations.

Regardless of some light cloud cover, participants enjoyed viewing the moon and the night's brightest stars on the telescopes set up outside Middle Fork's Activity Center pavilion.



*International Dark Sky Week Celebration  
at Middle Fork River Forest Preserve  
April 21, 2018*

On June 2, 2018, District education staff presented *Navigating Using the Stars*. The program description states “long before atlases and the invention of GPS, explorers used the dark and beautiful night sky as a compass.” This public program explored the ancient history of celestial navigation and will guide participants on a night hike using the types of non-digital tools explorers have used for centuries.

In August, *Capturing the Night Sky: An Astrophotography Workshop* will be held at Middle Fork's Activity Center, in partnership with David Leake of the CU Astronomical Society and Parkland College's planetarium. The public program will offer the basics of nighttime sky

photography and teach visitors how to fully utilize the nighttime photography capabilities of their cameras.

Each of these programs offers the opportunity for the Forest Preserve District and the CU Astronomical Society to demonstrate leadership in the restoration of the night sky. These and other programs will continue as will the following examples of nighttime programming, which help us demonstrate the important natural, cultural, and scientific resource value of dark skies.

### Other Nighttime Programming

The importance and benefits of darkness and a star-filled sky now play a role in all of our nighttime programming. During these programs, our education staff discuss light pollution and its effects on wildlife and humans. 2018 dates for these programs are:

- ☆ Full Moon Hike, Homer Lake Forest Preserve, January 31
- ☆ Owl Prowl, Lake of the Woods Forest Preserve, February 9
- ☆ Owl Prowl, Homer Lake Forest Preserve, February 16
- ☆ Owl Prowl, Middle Fork River Forest Preserve, February 23
- ☆ Nature at Night, Homer Lake Interpretive Center, April 20

These programs also include an explanation of the efforts being made by the Forest Preserve District to reduce unnecessary nighttime lighting and replace outdoor fixtures with those meeting the following criteria:

- ☆ No brighter than necessary
- ☆ Minimize blue light emissions
- ☆ Fully shielded (pointing downward) to put light only where it is needed

### Public Interpretation through Brochures, Exhibits, and Signage



IDA educational brochures are provided for all visitors to Middle Fork. Campers are given the IDA flyers when they check in at the campground hosts' office. Renters receive materials along with the Activity Center's rental facility contract, and stacks of the brochures are available to other visitors at numerous locations throughout the preserve, including the kiosk inside the front gate.

On the newly installed light fixtures at Middle Fork, we have now added these interpretive signs (shown at right) that provide an additional measure of education and interpretation about this project. They give preserve visitors immediate information about the new lights, why they were chosen, and what they accomplish.

The interpretive sign shown on the following page was developed for installation near one of the new light fixtures within the



*Signs affixed to all dark sky light standards at Middle Fork*



campground. It invites campers and other Middle Fork visitors to learn more about the Dark Sky Preserve project, the impact of light pollution on nature, energy consumption, crime, and human health, and what they, as individuals, can do on a personal level to make a difference.

When Dark Sky Preserve designation is achieved, the Museum of the Grand Prairie curatorial staff will feature a temporary exhibit showcasing the effort, explaining the actions that we took to accomplish this designation, and why it is important for the Forest Preserve District and our community. The museum is located within our most visited preserve, Lake of the Woods Forest Preserve in Mahomet, and receives more than 12,000 visitors each year. The exhibit will explain and demonstrate the effects of excessive and unshielded lighting and its impact on nature and humans, and provide examples of more efficient, dark sky-approved lighting alternatives.

### Public Presentations and Outreach

At local farmers markets and community events throughout the summer months, CAC members talk to visitors about our Dark Sky Preserve efforts and educate homeowners on lighting improvements they can make at home to curb unnecessary outdoor lighting. The portable “sandwich board” (shown here), accompanied by free materials and educational brochures provided by IDA, allows our Citizens Advisory Committee and staff members to take the dark sky message on the road.

Here is the 2018 outreach calendar at a glance:

2018 Dates	Outreach Activity
May 5	Urbana Farmers’ Market
May 23	May Bike Month Celebration, Weaver Park, Urbana
June 2	Urbana Farmers’ Market
June 19	Champaign Farmer’s Market
June 28-29	Tolono Fun Day, Tolono
July 20	OUTSIDE Concert at University of IL Research Park, Champaign
July 27-28	Sidney Fun Daze, Sidney
August 4	Urbana Farmers’ Market
August 9-11	Community Fall Festival, St. Joseph



Visitors take in dark sky education at Weaver Park on May 23

August 11	CU Days, Douglass Park
August 14	Champaign Farmer's Market
September 7-8	Prairie Sky Music Fest, Allerton Park, Monticello
October 13	Urbana Farmers' Market

Since word has spread about the District's efforts to achieve Dark Sky Preserve status for Middle Fork preserve, local service clubs and social organizations have begun requesting information about the project. District staff members and representatives of the Citizens Advisory Committee and Champaign Urbana Astronomical Society take every opportunity to share details about the lighting retrofit project and our reasons for undertaking it.

The following is a list of recent Dark Sky presentations given by staff, the CAC, and CUAS:

- ☆ Mahomet Lions Club, January 8, 2018
- ☆ Rantoul Exchange Club, January 31, 2018
- ☆ Windsor of Savoy, February 1, 2018
- ☆ Clark-Lindsey Village, Urbana, February 14, 2018
- ☆ University of IL, Master Naturalists, Champaign, February 19, 2018
- ☆ Hope Meadow Community, Rantoul, March 21, 2018
- ☆ Sunrise Rotary, Champaign, May 3, 2018
- ☆ Urbana Exchange Club, May 10, 2018
- ☆ Urbana Rotary Club, May 15, 2018

Roger Digges, CAC member, recently wrote an article for the Audubon Society that was printed in the local chapter's monthly publication, *The Meadowlark Messenger*. The article highlighted the detrimental effects of light pollution on wildlife, and several bird species in particular. It also noted the efforts of the Forest Preserve District in preserving the night sky and the District's attempt to achieve Dark Sky Preserve designation by IDA. A copy of the article, in its entirety, is included in the appendix to this application.

Also provided in the appendix is an article run by the Forest Preserve District in its 2017 year-end newsletter, *The Leaflet*. The article provides information about the Dark Sky Preserve initiative to friends of the District and requests community contributions in support of the effort. About 4,000 households in Champaign County and surrounding communities receive the newsletter by mail. Response to the request for donations was very good with the District receiving more than \$2,700 to keep our lighting retrofit efforts moving forward.

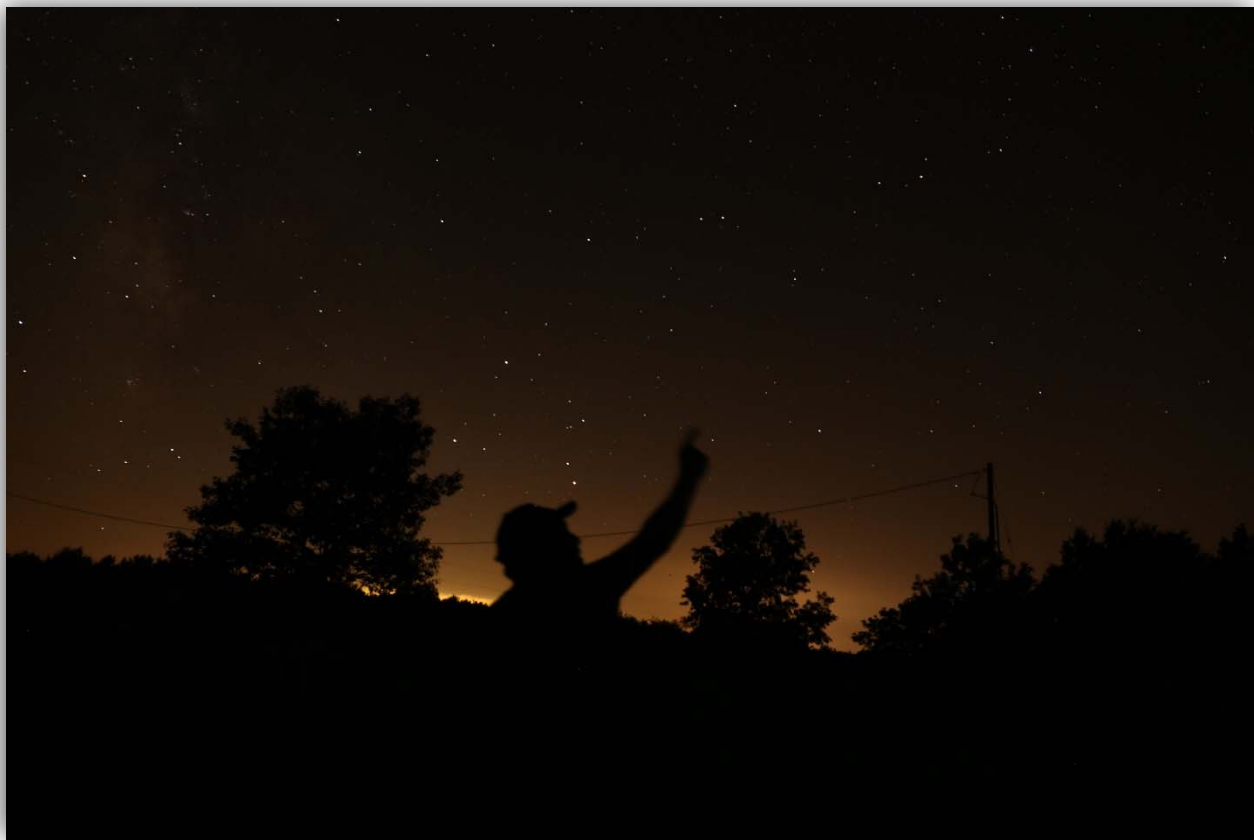
### **Reaching Local Municipalities**

The city of Paxton, located in close proximity to Middle Fork, recently inquired about the new dark sky-compliant lighting fixtures we have installed at the preserve. Paxton adopted a new downtown plan and is interested in requiring fully shielded lighting in the business district. Paxton mayor, Bill Ingold, has now pitched the idea to city council members of seeking "Dark Sky Community" designation from IDA for the city of Paxton, which would be only the second such designation in Illinois. This development was the direct result of our retrofit work at Middle Fork and the outreach efforts we have been making to explain and educate about the project. Mayor Ingold's letter of support for our Middle Fork project is included in the support section of this document.

Staff from the Urbana Park District have also been convinced that dark sky-compliant lighting makes sense for its future development projects. They have agreed to emphasize dark sky principles in the preliminary engineering phase of the Crystal Lake Park redevelopment project. Crystal Lake Park is the second largest city park in the community. They will also incorporate a similar approach in the design and development of Weaver Park – a relatively new green space on the eastern edge of the city that will serve as the trailhead for the Forest Preserve’s Kickapoo Rail Trail. The Urbana Park District has indicated it will include dark sky-compliant lighting as a recommendation for the next iteration of its Master Plan.

### **Publicity for *Dark Sky Park* Designation**

When the community learned of the efforts of the CU Astronomical Society and Forest Preserve District to attain Dark Sky Preserve status for Middle Fork River Forest Preserve, the outpouring



*One starry-eyed observer at a recent Starwatch event at Middle Fork River Forest Preserve.*

of support could not have been more positive. Likewise, the local media took a great interest in the project. A listing of recent media is provided here with print articles provided in the appendix to this document.

- ☆ "Twinkle, Twinkle, Lots of Stars", The Buzz, April 2014
- ☆ "Forest Preserve District Hoping You'll See Stars at Middle Fork", The Champaign-Urbana News-Gazette, January 5, 2018

- ☆ "Communities Can Lend a Hand with Dark Sky Park", The Champaign-Urbana News-Gazette, January 7, 2018
- ☆ "Environmental Almanac: It's Time to Take Light Pollution Seriously", The Champaign-Urbana News-Gazette, January 14, 2018
- ☆ "Environmental Almanac: Dark Skies Benefit People and Wildlife", WILL-AM radio, <https://will.illinois.edu/environmentalalmanac/program/47676>, January 19, 2018

If Dark Sky Park status is awarded to the Middle Fork River Forest Preserve, the District will post prominent signs in the preserve. The news will be featured on the District's website and in its bi-monthly newsletter which is mailed to nearly 4,000 households. Additional press releases will be prepared for the media and the news will be broadcast during our monthly television spot on CiLiving, a weekly news spot featuring the latest happenings in and around central Illinois. And lastly, as noted in its letter of support, the local convention & visitors bureau, *Visit Champaign County*, is anxious to help promote the designation and "astro-tourism" at Middle Fork River Forest Preserve.

## Budget for Dark Sky Park Designation

Item	Description	Estimated Cost	Priority	Budget Year	Notes
Light Fixtures, per Lightscape Management Plan	Replacement and retrofits	\$22,500	High	2017	\$21,545 spent to date to replace 2/3 of fixtures.
		\$7,720	High	2018	To continue retrofit of roadway and boulevard lighting.
		\$10,000	High	2019	Finalize lighting retrofit at Middle Fork.
Application Fee	For IDA Dark Sky Park designation	N/A	High	2017	No fee required.
Administrative Costs	Printings of plans, policies, meeting costs, etc.	\$150 per year	Low	2016 and 2017	Can be reduced by added staff time and electronic dissemination of materials.
Outreach Materials	Pamphlets, handouts, maps, etc. can be seen on the IDA website.	\$250	Med	2017+	Only minimal printing costs in 2017. Will increase in 2018 for new interpretive materials.
Certification Sign (2)	Indicating certification in the program.	\$200	High	2017	CCFPD and CUAS will work together on design, CCFPD to contract for manufacture.
Programs & Exhibits (4+ per year)	Cost per program	Minimal	High	2017+	Museum exhibit costs not yet figured. Other costs noted under outreach above.
Interpretive Sign (1)	Cost per sign	\$750 - \$1,000	Med	2018	Will install near Waterfowl Management Area.
<b>TOTAL ESTIMATE</b>		<b>\$41,570-\$41,820</b>			

January 16, 2018



IDA Board of Directors  
International Dark Sky Association  
3223 North First Avenue  
Tucson, AZ 85719

Dear IDA Board of Directors:

I am exceptionally pleased to submit this application, on behalf of the Champaign County Forest Preserve District, to designate Middle Fork River Forest Preserve for Dark Sky Park status. As the executive director of the Champaign County Forest Preserve District, I can assure you of the commitment and support of our Board of Commissioners and our staff in achieving this honored distinction, and also in preserving the precious resource that is our night sky.

The Champaign County Forest Preserve District, a local government entity, has a stated mission to protect and preserve the natural and cultural resources of Champaign County, Illinois, while providing outdoor recreational opportunities for present and future generations. By taking steps to safeguard the night sky and educate visitors about the many benefits of a truly dark night, we will enhance the preserve's natural resources while also improving the visitor experience. Some of the projects and programs we have already undertaken to achieve Dark Sky Park designation include:

- **Lighting Retrofit:** Beginning in 2016, the light fixtures at this public preserve are being retrofitted to comply with IDA outdoor lighting standards. To date, more than 2/3 of all building fixtures and roadway, boulevard, and parking lot lights have been replaced with fully shielded, low color temperature fixtures.
- **Interpretive Programming:** In cooperation with the Champaign-Urbana Astronomical Society, our staff hosts *Starwatch* programs throughout the year at Middle Fork River Forest Preserve. Offered free of charge, these public programs offer education on astronomy followed by a viewing session near the North Waterfowl Management Area. In addition to *Starwatch* programs, we also offer many other dark sky-related public programs to educate and interpret this project for park visitors; they are described in our application.
- **Other Public Education:** The Forest Preserve District's Citizens Advisory Committee has been heavily involved in the work leading up to and including this submission for provisional status. The volunteer group has taken the lead in providing public education about the natural, cultural, energy, and health benefits attributed to nighttime darkness. CAC members staff booths at public events, farmers markets, and other venues to share Dark Sky Park program details throughout the year.

Thank you for this opportunity to share our efforts with you through this application process. We look forward to fully implementing our Lightscape Management Plan, and we particularly embrace this opportunity to preserve and protect the night sky for the benefit of our natural world and the plants and animals that depend on it.

Sincerely,

A handwritten signature in cursive script that reads "Mary Ellen Wuellner".

Mary Ellen Wuellner  
Executive Director

April 18, 2016

Mr. John C. Barentine, Program Manager  
International Dark-Sky Association  
3223 North First Avenue  
Tucson, AZ 85719

Mr. Barentine,

As a member in good standing of the International Dark-Sky Association, I would like to nominate the Middle Fork Forest Preserve in Champaign County, Illinois, for "Dark Sky Park" status. The Middle Fork is one of five forest preserves in the Champaign County Forest Preserve District (<http://ccfpd.org>), encompassing about 1700 acres along the Middle Fork River. The Champaign-Urbana Astronomical Society, Inc. has a long history of providing astronomical programming to the campers, forest preserve staff, and the general public at this site and the skies are wonderful! One of our members even has a documented history of sky brightness at the site using one of the Sky Quality Meters.

In the last six months, CUAS approached Mr. Dan Olson, executive director of the district (and a biologist by trade) about the Dark Sky Places program. Mr. Olson embraced the mission of the program and immediately discussed it with the district's Citizen's Advisory Committee. I am very pleased to report that the CAC is on-board and have already begun to divide up tasks and set deadlines! In fact, they have already started a lighting inventory at the site! Our astronomical society is excited to collaborate and provide assistance where needed, plus we will continue to interpret the dark skies over Central Illinois for park visitors.

I hope you will accept this nomination of the Middle Fork Forest Preserve to the DSP program. I look forward to working with Mr. Olson and the CAC to make this happen.

Regards,



David C. Leake  
Director, William M. Staerkel Planetarium (Parkland College)  
Champaign-Urbana Astronomical Society, Inc.  
(cell phone) 217-840-0675  
(email) [dleake@parkland.edu](mailto:dleake@parkland.edu)

## **Appendix A: Publicity and Media Coverage of Dark Sky Preserve Project**

- ☆ The Buzz, April 2014, "Twinkle, Twinkle, Lots of Stars"
- ☆ The Champaign-Urbana News-Gazette, January 5, 2018, "Forest Preserve District hoping you'll see stars at Middle Fork"
- ☆ The Champaign-Urbana News-Gazette, January 7, 2018, "Communities can lend a hand with Dark Sky Park"
- ☆ The Champaign-Urbana News-Gazette, January 14, 2018, "Environmental Almanac: It's time to take light pollution seriously"
- ☆ The Meadowlark Messenger, Newsletter of the Champaign County Audubon Society, May 2018, "In Defense of Dark Skies"
- ☆ The Leaflet, Newsletter of the Champaign County Forest Preserve District, December 2017-January 2018 edition, "On a Clear Night, You Can See Forever"

# TWINKLE, TWINKLE LOTS OF STARS

*Middlefork Forest Preserve presents stargazing and night sky sightseeing.*

BY KELSEY BARRY



Photo used with permission of Getty Images.

**A**s spring returns in full bloom, one of CU's best out-of-this world events reoccurs. Led by David Leake, president of the organization, Champaign-Urbana Astronomical Society's (CUAS) dark-sky observing has been an annual night festivity for about four to five years and begins its take off again this month.

"Looking through a telescope for the first time can be a very exciting experience, but knowing what you are looking for can enhance the experience," Leake said. "It's amazing to barely move the eyepiece, and go from galaxy to galaxy."

Being so far away from the downtown areas makes Middlefork Forest Preserve the ideal place for viewing celestial bodies. Official measurements have also shown that Middlefork is far enough away from the downtown area to avoid most light pollution, making it one of the darkest spots in the CU area at night. CUAS works closely with the Middlefork Forest Preserve to ensure that there are no conflicting events.

"I always look forward to visiting the Middle Fork Forest Preserve because of the good people and the dark skies," Leake said. "You don't realize how dark a sky can be until you get away from the city lights. Cities need to be lit, but many of our lights shine up into the sky, and that's wasted energy. To me,

it's like taking a lawn sprinkler to the end of your driveway and watering the street! No one would do that since it's a waste of resources, but we do that with our lighting all of the time."

April is one of the best times to view celestial bodies because according to Leake, it is neither too hot nor too cold. Any later, and mosquitoes could pose as a deterrent for guests, as June has longer days than nights and leaving for less time to view celestial objects. CUAS also pays close attention to the moon phases in order to avoid a full moon. Too much light can make it more difficult to view celestial objects.

"Spring is ripe for galaxies," Leake said. "For something a 'little closer' we will also have Jupiter, Mars and later Saturn in the sky. Mars was closest to our earth about a week ago and, of course, anything close looks large, so I'm anxious to check out Mars, too!"

CUAS will be leading the group at 8 p.m. in the activity center north of the campground for a presentation on what to look for when trying to find celestial objects in the night sky. After the presentation, the group will walk over to the campground, but camping is not required. Every member of CUAS is willing to help aspiring astronomers observe the celestial bodies that will be visible April 26.

# Forest preserve district hoping you'll see stars at Middle Fork

Fri, 01/05/2018 - 7:00am | Tracy Crane (/author/tracy-crane)

PENFIELD — Growing up in the middle of farm country in northern Champaign County, far from street lights or anything that interferes with a view of the sky, Matt Kuntz didn't think much about being able to see lots of stars and constellations on any clear night.

"I always took the dark sky for granted," said Kuntz, who has realized as superintendent of Middle Fork River Forest Preserve — located several miles west of the farm where he grew up — that others, especially in big cities, do not see the same night sky due to light pollution.

That fact has been impressed upon Kuntz by park-goers who come to Middle Fork to take advantage of the dark sky.

"We have so many campers who come from all over with telescopes," Kuntz said.

This year, park-goers with an eye to the sky may realize it's even darker.

Since fall 2016, after a suggestion from David Leake, director of Parkland's Staerke Planetarium, Kuntz and Champaign County Forest Preserve District staff have been making specific lighting changes at Middle Fork that have it poised to become the first certified Dark-Sky Park in Illinois. There are only 55 in the world, and 39 of those are in the United States.

"It looks pretty promising," Leake said of the park district's chances to achieve the designation this spring after its application to the International Dark-Sky Association (IDA) is submitted early this year.

The association's Dark-Sky Places Program was started in 2001 "to encourage communities around the world to preserve and protect dark sites through responsible lighting policies and public education." The program has five types of designations — dark-sky communities, parks, reserves, sanctuaries and developments. Each has its own set of parameters that must be met to achieve the distinction from the international group.

## On way out: Globe lights

So, what is light pollution? The IDA defines it as "inappropriate or excessive use of artificial light."

Besides hindering the view of stars, dark-sky proponents contend that light pollution has negative effects on wildlife, humans and the climate.

"We're not trying to get rid of lights," Leake said, explaining that he advocates for using light more wisely and efficiently.

At Middle Fork, that meant swapping out nearly 40-year-old globe-style street lights for energy-efficient lights with hoods that direct the illumination down to where it's actually needed.

"Honestly, that's the first thing I thought is, 'I get to replace those,'" Kuntz said.

Those changes and others are the result of a lighting inventory, the first step in the park's dark-sky initiative. The next step is coming up with a management plan with specific goals, which are more than two-thirds complete and should be met entirely within six months, when the last of the old street lights are replaced.

## On way in: Astro-tourism

Lisa Sprinkle, the forest preserve district's marketing director, said the dark-sky designation will open up a whole new facet of public education and outreach opportunities at Middle Fork.

"It's exciting to come up with a new twist on what we've been doing," she said.

There's a tourism component, as well.

So-called "astro-tourists" will come, according to Leake. That can mean big business, as the hype over last year's solar eclipse demonstrated.

Leake has witnessed first-hand the wonder of students from Chicago when they first experience a dark-sky outing in Champaign County. The difference between the night sky in C-U and what people will see at Middle Fork is "night and day," he said, with as many as 30 to 40 more stars visible on a clear night.

"People take it for granted a little bit," Leake said of dark skies.

As for Kuntz, he now realizes that Middle Fork offers more than the experience of natural spaces on the ground.

"We offer the sky to the public," he said. "I had never looked at it that way."

## Communities can lend a hand with Dark Sky Park

The initiative to certify Middle Fork River Forest Preserve as the first Dark Sky Park in Illinois is just the start, says **William Ford**, a member of the Champaign County Forest Preserve District's Citizen Advisory Committee.

The district will soon apply for the designation through the International Dark Sky Association's Dark Sky Places Program, which was started in 2001 to encourage communities around the world to preserve and protect dark sites through responsible lighting polices and public education.

As a member of the park district's nine-member Citizens Advisory Committee, Ford said he was in full support of the Dark Sky project as soon as he first heard about the idea, and members of the committee have been involved in the project. But he said it doesn't end with Middle



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Fork gaining the Dark Sky distinction.

"This is just the start. I'm really looking for the surrounding communities to buy into this philosophy to start a movement where we can correct lighting in the communities in Champaign County," he said.

While the forest preserve district won't be seek-

ing Dark Sky designation for all of its parks in Champaign County, it will be applying at Homer Lake and other district properties the same concepts applied at Middle Fork, Ford said, basically making changes, especially in lighting, that will reduce overall light pollution. He said the forest preserve district can make the parks dark sky friendly, but it's not as effective if surrounding communities still put out all the illumination they put out now.

"So we are going to need the cooperation of the communities to adopt some of these principles themselves," said Ford, who will be doing his part to educate others about the Dark Sky concept. He said the Citizens Advisory Committee attends local farmers' markets and other community events to help promote the district parks.

# Environmental Almanac: It's time to take light pollution seriously

Sun, 01/14/2018 - 7:00am | Rob Kanter (/author/rob-kanter)

This column is intended as a follow-up to News-Gazette reporter Tracy Crane's recent article on the application to have the Middle Fork Forest Preserve in northeast Champaign County certified as a Dark Sky Park. Her article focused on the direct benefits to people of having a place to see the night sky unobscured by artificial light.

Most people understand that various products of human activity have the potential to harm wildlife when they're released into the world, whether that's into the air, a body of water or the ground. We routinely call these products "pollutants." Fewer people are accustomed to thinking of carelessly spread artificial light that way, but a growing body of evidence makes it clear we should.

To date, the poster critters for the campaign to change the way we think about careless lighting are sea turtle hatchlings. As they emerge from nests on the beach, they can become disoriented by lights on beachfront structures and wander toward them rather than sprinting directly toward the surf. This increases their risk of being eaten by predators or being caught on the beach and overheating when daytime comes around.

Of course, in central Illinois, we have no sea turtle hatchlings to concern ourselves with as we manage our exterior lighting. But we do have other wild creatures, and light pollution affects them, too.

Take birds, for example. Many of them migrate at night, relying as they do on cues that can be obscured by artificial light. We've seen their bodies litter the sidewalks beside tall buildings where lights are left to shine out of windows at night, and we've seen as well that simple changes in our practices can alleviate the problem. Turn out the lights or block the windows, and far fewer birds run into the buildings.

In a study published last fall, researchers found that the impacts on migrating birds of the annual tribute in lights to the victims of the 9/11 attack in Manhattan abated almost instantly when the lights were turned off.

The tribute is created by training powerful searchlights into the sky to create columns of light resembling the towers of the World Trade Center.

Researchers had observed that migrating birds in the vicinity were drawn to the lights and then became disoriented, slowing down, flying close together and in circles, and calling frequently.

By monitoring bird densities in the area and, when those get too high, simply turning off the lights for 20 minutes, researchers and organizers of the tribute have been able to protect the birds and conduct the memorial at the same time.

The effect of artificial light on night-flying insects has also been the subject of an important recent study.

Scientists in Switzerland found that nocturnal pollinators visited a certain type of flower in plots illuminated by streetlight-like LEDs less than half as often as plots that remained dark at night.

As a result, the flowers in the lit plots produced less seed than the others, raising the possibility of cascading negative effects, since those flowers are also a source of food for the pollinators.

Two things are worth keeping in mind as we move beyond our laissez-faire approach to light pollution. One is that it's reasonable to proceed on the assumption that artificial light has negative effects on wildlife and ecosystems without waiting to tease out precisely what all of them are. I say that simply because a certain amount of darkness constitutes one of the defining conditions under which we and the life around us have evolved.

The other thing worth remembering in this context is that there is no upside to light pollution, no constituency that benefits from it. Lights that shine up into the sky or across the landscape waste electricity and serve no good purpose — who needs that?

For more information about the value of dark skies and to learn how you can help combat light pollution, start at the website of the International Dark Sky Association, [darksky.org](http://darksky.org).

*Rob Kanter is a lecturer and academic adviser with the UI School of Earth, Society and Environment. You can reach him via email at [rkanter@illinois.edu](mailto:rkanter@illinois.edu) (<mailto:rkanter@illinois.edu>). Environmental Almanac can also be heard on WILL-AM 580 at 4:45 and 6:45 p.m. Thursdays.*



# The Meadowlark Messenger

ChampaignCountyAudubon.org

Champaign County Audubon Society • A Chapter of the National Audubon Society

## May Program

### *Chimney Swifts*

*Thursday, May 3, 7pm*

**Urbana Free Library**

*Presenter: Maureen Hurd, 2017 Kendeigh Grant Recipient*

Maureen’s research examined habitat use and foraging behavior of Chimney Swifts, a declining species.

Her project sought to examine the effects of habitat and landscape characteristics on the abundance of Chimney Swifts and on nest success and foraging behavior.

Funding from CCAS helped cover the cost of GPS transmitters to track movements of tagged swifts.

Light refreshments will be served.



## **Illinois Spring Bird Count Saturday, May 5**

This is a statewide count which is organized by county. Birders are assigned to given areas where they count the number of birds of each species seen. They also record time spent, distance travelled, etc.

Beth Chato is the organizer for Champaign County and she is looking for participants. Contact her at 344-6803 or [ejchato@gmail.com](mailto:ejchato@gmail.com) if you are interested.



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## Announcing the 2018 Kendeigh Grant Recipients

Submitted by: Jeff Peyton

### *Congratulations to Samantha Capel and Daniel Goldberg!*

Each year, the Champaign County Audubon Society offers two grants of up to \$1000 for research in ornithology.

**Samantha Capel** is a doctoral student in Biology at the University of Illinois in Urbana-Champaign, and received her bachelor's degree in Biochemistry from Illinois State University with a concentration in Molecular Biology. Samantha's research seeks to use genetic sequencing to assess mate choice and hatchling survival among translocated greater prairie chicken hens. The last century saw a dramatic decline in the numbers prairie chickens in Illinois as a result of habitat destruction, from millions of birds in the 19th century to being nearly extirpated by the end of the 20th, with 46 birds remaining in 1994. In an attempt to rescue the remaining populations, greater prairie chickens have been translocated from out of state populations in Kansas, Minnesota, and Nebraska.

Samantha's project will compare genotypes of offspring of hens translocated from Kansas to those of translocated males, to determine whether hens are preferentially selecting mates from among established Illinois males or translocated Kansas ones. She will then assess hatchling success to determine whether inbreeding resulting from population bottleneck affects hatchling survival in chicks with Illinois paternity. Samantha hopes that her results can help inform conservation practices when it comes to translocating populations, specifically in addressing whether practices can be improved by skewing sex ratios of translocated species. Kendeigh Grant funds will be used for sequencing and to purchase reagents and materials necessary for library construction of extracted DNAs.

**Daniel Goldberg** is a doctoral student at Illinois State University with a master's degree in Biology from the University of California, Riverside. Daniel's project will use acoustic monitoring to analyze population distributions of rallids, the family that includes rails and gallinules. Several rallid species are suffering declining numbers, and three species are listed as endangered in Illinois. Their declining populations as well as their secretive habits – hiding in dense marshy areas and primarily vocalizing at night – make accurate estimations of rallid populations difficult.

Daniel will use call playback and audio recording to monitor wetland sites for rallids during breeding season. Once the presence of rallids is confirmed at a site, Daniel will switch from surveys using call playback to passive recording surveys. Sound data will then be analyzed to determine population distributions of the target rallid species across Daniel's sites. With his data, Daniel will create species distribution maps for the target species. These maps can then be used to select promising sites for future study of rallids, as well as informing conservation practices with wetland habitats.

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*In Defense of Dark Skies, Continued from Page 6*

other mammals. But much more important, every visitor, every participant in its programs will learn about the importance of making our nighttime skies a better environment for all of us.

What can birders and other Audubon Society members do? We can let people know we support the Forest Preserve District's efforts to secure Dark Sky Park status for Middle Fork. But more critical, we can begin to change the way we think about our own outdoor lighting and that of our community, and strive to create a more dark-friendly environment. Who knows? Perhaps, eventually, we can bring back the night, or at least some of it.

Roger Digges, member, Champaign County Audubon Society and Champaign County Forest Preserve District Citizens' Advisory Committee

## In Defense of Dark Skies

*Submitted by: Roger Digges*

The Champaign County Forest Preserve District has applied to the International Dark Sky Association for Dark Sky Park status for the Middle Fork Forest Preserve.

Now you may wonder what a Dark Sky Park or the International Dark Sky Association is. You may never have been to the Middle Fork Forest Preserve, or, if you're new to the area, know anything about the Champaign County Forest Preserve District. You might question why in the world an Audubon member should care about a Dark Sky park.

The Champaign County Forest Preserve District (CCFPD) is an 83-year-old "local property tax-supported government agency charged with the stewardship of six forest preserves covering almost 4,000 acres." One of those preserves is 1,700 acre Middle Fork "composed of old hardwood timber, reforested lowlands, grassy meadows, and in-progress prairie restorations." Middle Fork contains the county's only waterfowl management area and is also home to the Harry L. Swartz Campground. The preserve is located 30 miles northeast of Urbana on Illinois' only Wild and Scenic River, the Middle Fork of the Vermilion River.

Because of its relatively remote location, Middle Fork can boast the darkest skies in the county. For nearly ten years, the Champaign-Urbana Astronomical Society (CUAS) has taken advantage of those skies by offering twice yearly Starwatch programs in which it orients the public to the night sky and offers people views through the telescopes of members of CUAS. The organization plans to not only double its Starwatch offerings, but also provide professional development for members of the Forest Preserve District's staff so the District can offer its own programs. In early 2016, David Leake of CUAS and the CCFPD's Citizens Advisory Committee began a collaboration which resulted in the District's application to the International Dark Sky Association (IDA) to recognize Middle Fork as a Dark Sky Park.

IDA is a 30-year-old non-profit agency whose "mission is to preserve and protect the nighttime environment and our heritage of dark skies through environmentally responsible outdoor lighting." The IDA started recognizing Dark Sky Places in 2001 "to encourage communities around the world to

preserve and protect dark sites through responsible lighting polices and public education." Among IDA's five categories of Dark Sky Place is a Dark Sky Park, a publicly or private owned space which protects the environment, implements dark-friendly outdoor lighting, and provides dark sky programs for the public. The Forest Preserve District is seeking this status for Middle Fork, and is transitioning its outdoor lighting and improving its programming and interpretive materials to enhance the preserve as a dark sky site.

This would be a remarkable achievement. There are no other certified Dark Sky Parks in Illinois. Or Indiana. Or Iowa. Or Missouri. Or Kentucky.

But why should birders or members of the CCAS with other interests care? Because the loss of darkness in our night skies negatively affects all wildlife. In a Nature Conservancy report concerning how to reduce the ecological impact of shale development in the Appalachians, the authors discuss the impact of artificial lighting on wildlife including birds. They note that artificial illumination causes diurnal birds to extend their foraging into darker times of the night, which makes them more prone to predation. On the other hand, it may reduce the foraging time of nocturnal birds like owls. Birds have been shown to alter the times of their dawn chorus which can affect reproductive success because their displays don't show up as well. Some birds won't nest within 300 meters of an artificial light source, which reduces available nesting habitat which already can be difficult for birds to find. In the National Institutes of Health's April, 2015, Kids Environment, Kids Health, a researcher notes, "Melatonin production, which is dark dependent, is suppressed when the dark is interrupted at night. Melatonin is involved in circadian rhythm regulation, sleep, hormonal expression of darkness, seasonal reproduction, retinal physiology, antioxidant free-radical scavenging, cardiovascular regulation, immune activity, cancer control, and lipid and glucose metabolism." In other words, our outdoor lighting diminishes the health not only of birds, but of most animals, including ourselves.

By providing a darker environment as part of its efforts to become a Dark Sky Park, Middle Fork will provides better habitat for birds, insects, bats and

*Continued on Page 4*

# On a Clear Night You Can See Forever

Many of us enjoy the luxury of being outside in the depths of night. The stars fascinate us and the deep darkness where those stars appear is even more intriguing. The night sky is also critical for many animals who need the cover of darkness to avoid predators, find food, and breed.

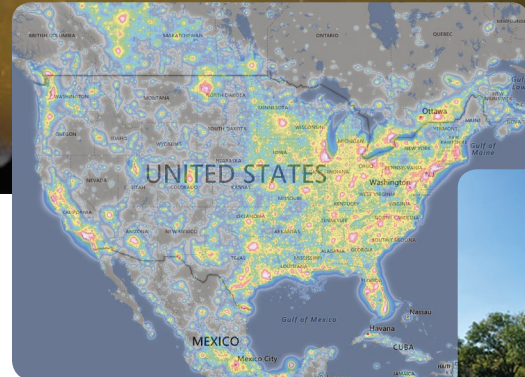
But how can one person preserve the beauty of the night sky? The International Dark-Sky Association (IDA), a non-profit founded 1988 has a way to do it, and it can be done in every community including ours right here in Champaign County. This organization is dedicated to protecting the night skies for present and future generations. IDA's mission and our mission at the Friends Foundation share a common theme. We preserve the land. They preserve the night skies. But WE can do that too.

The Forest Preserve District's Citizens Advisory Committee, in conjunction with the Champaign-Urbana Astronomical Society, is seeking designation of **Middle Fork River Forest Preserve**, in the darkest corner of the county, as Illinois' first Dark Sky Park. This is an exciting project and one that can involve and benefit thousands of people.

## Starry, Starry Night?

Over the years, an increase in artificial light has created a light dome over most American cities. As you can see on the map, most of Illinois and the eastern half of the US is bathed in artificial light. Increased urbanization and development now casts an ever-present glow in the night sky.

So, are we ready to take back the darkness? Already, star watch events are held throughout



the year at Middle Fork River Forest Preserve, so the public can experience a star-filled sky that is imperceptible near the city.

## Making it Happen

There are a number of things that need to be accomplished to get this designation, but it will be well worth our effort and our dollars to complete this project. Boulevard and parkway lights must be changed from the existing globe lights to fully shielded models (*example shown above*). Applications have to be filed, and funds need to be raised to take care of the details. The Foundation cares about preserving the land, but also preserving the skies, and that is why we are involved, and ask you to be part of creating this Dark Sky Park. With your help, we can achieve designation in 2018.

Our goal is to raise \$20,000 to complete this project and tell everyone in Illinois about this special park. You can make a gift now to start the ball rolling. Simply choose the Dark Sky designation when you make your annual gift. It will do a world of good for everyone and make you feel good too. In this case, the sky is NOT limiting us, but is preserving a natural wonder for generations to come.

## **Appendix B: Support**

Designation of Middle Fork River Forest Preserve as an International Dark Sky Preserve has received broad support from state and local government officials, the local tourism bureau, and other environmental and astronomical organizations in the region and throughout the state. Those who have provided letters of support are marked with an asterisk\*, and the letters themselves are provided on the following pages.

### Nominators

Champaign County Forest Preserve District (Mary Ellen Wuellner, Executive Director)\*  
Champaign-Urbana Astronomical Society (David C. Leake)\*

### Collaborator

Citizens Advisory Committee, Champaign County Forest Preserve District (Eileen Borgia, Chair)\*

### Local Government Supporters

State Senator Scott Bennett\*  
State Representative Carol Ammons\*  
Champaign County (C. Pius Wiebel, County Board Chair)\*  
City of Champaign (Deb Feinen, Mayor)\*  
City of Urbana (Diane Marlin, Mayor)\*  
Urbana Park District (Derek Liebert, Supt. Of Planning & Operations)\*  
Village of Rantoul (Charles Smith, Mayor)\*  
City of Paxton (J. William Ingold, Mayor)\*

### Tourism Bureau

Visit Champaign County (Jayne DeLuce, President and CEO)\*

### Astronomical and Environmental Agency Supporters

Adler Planetarium, Chicago (Michelle B. Larson, President and CEO)\*  
Champaign County Audubon Society (Sara Johnson, Brody Dunn, President and VP)\*  
East Central Illinois Master Naturalists (Roger J. Inman, Advisory Board President)\*  
Grand Prairie Friends (James Ellis, President)\*  
University of Illinois, Department of Astronomy (Leslie Looney, Professor and Chair)\*  
Urbana Park District (Savannah Donovan, Environmental Educator)\*  
William M. Staerkel Planetarium, Parkland College (David C. Leake, Director)\*

### Funding Partner

Community Foundation of East Central Illinois (Joan M. Dixon, CEO)

**Citizens Advisory  
Committee  
2017-2018**

Carl Altstetter  
Eileen Borgia  
Fred Bunting  
Roger Digges  
David Easter  
Bill Ford  
Richard Harris  
Denise Ingram  
Marianne Lippi

Scott Hays  
Board Representative

January 2, 2018

Board of Directors  
International Dark Sky Association  
3223 N. First Ave.  
Tucson, AZ 85719

Good day!

We the members of the Citizens Advisory Committee (CAC) of the Champaign County Forest Preserve District (CCFPD) strongly support the efforts of the CCFPD, in partnership with the Champaign-Urbana Astronomical Society, to create a Dark Sky park at Middle Fork River Forest Preserve.

The CAC is a group of volunteers charged by the CCFPD to be a conduit to and from the people in the communities in the district. Primarily, we do outreach and work on special projects where the CCFPD director believes we can add value. One such project is the Dark Sky certification.

While none of us on the committee initially had any night sky expertise (we're learning), we all have a love of the environment and an understanding of the commitment the CCFPD has to adding value to the community via their preserves, facilities, and educational endeavors.

Our assistance on this project has included reaching out to organizations and individuals in the area. We have explained the project and asked for their help with the completion of the effort and with its ongoing success. Their help may include financial help, tapping into their networks to spread the word and/or ideas to ensure success in the future. By making this outreach, we can assert that the community at large is supportive of this effort as well.

Sincerely,

Carl Altstetter  
Eileen Borgia  
Fred Bunting

Roger Digges  
David Easter  
William Ford

Richard Harris  
Denise Ingram  
Marianne Lippi

SPRINGFIELD OFFICE  
218B CAPITOL BUILDING  
SPRINGFIELD, IL 62706  
TEL: 217/782-2507

CHAMPAIGN OFFICE  
45 E. UNIVERSITY  
SUITE 206  
CHAMPAIGN, IL 61820  
TEL: 217/355-5252

DANVILLE OFFICE  
101 W. NORTH ST.  
DANVILLE, IL 61832  
TEL: 217/442-5252

[www.senatorbennett.com](http://www.senatorbennett.com)



COMMITTEES:  
- AGRICULTURE  
- VICE CHAIRPERSON  
- APPROPRIATIONS II  
- COMMITTEE OF THE WHOLE  
- CRIMINAL LAW  
- GAMING  
- HIGHER ED  
- LABOR

## SCOTT BENNETT

STATE SENATOR • 52ND DISTRICT

January 24, 2018

Mary Ellen Wuellner  
Interim Executive Director  
Champaign County Forest Preserve District  
P.O. Box 1040  
Mahomet, IL 61853

Dear Ms. Wuellner,

On behalf of the 52<sup>nd</sup> Senatorial District of Illinois, I'm writing in support of the Champaign County Forest Preserve application for Dark Sky Park status at Middle Fork Forest Preserve. I am thrilled to promote this project, and excited to support astro-tourism in the greater Champaign County area.

As the state legislator for our district, I welcome opportunities to bring tourism to the natural areas and state parks. Our constituents reside between Champaign and Danville, and many visit the Middle Fork River Forest Preserve to enjoy its plethora of outdoor activities. That said, our counties could greatly benefit from the astro-tourism generated by an International Dark Sky Park designation.

I grew up in a small rural town and have always appreciated the lack of light pollution in order to observe the night sky. This designation in our district would be a legacy we could preserve and pass on to future generations.

If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Bennett".

Scott Bennett  
52<sup>nd</sup> District



*Carol*  
**Ammons**  
STATE REPRESENTATIVE 103RD DISTRICT

January 10, 2018

**DISTRICT OFFICE**

407 E. University Ave  
Suite A  
Champaign, IL 61820  
(217) 531-1660  
(217) 666-7521 FAX

**SPRINGFIELD OFFICE**

240A-W Stratton Office Bldg  
Springfield, IL 62706  
(217) 558-1009

**COMMITTEES**

- Appropriations for Elementary & Secondary Education
- Community College Access & Affordability
- Special Needs Services
- Human Services
- Public Benefits Subcommittee
- Personnel & Pensions
- Higher Education
- Small Business Empowerment  
Workforce Development
- Environment

**ILLINOIS BLACK CAUCUS**

Secretary

Mary Ellen Wuellner  
Interim Executive Director  
Champaign County Forest Preserve District  
P.O. Box 1040  
Mahomet, IL 61853

Dear Ms. Wuellner:

I am pleased to write a letter of support for the Champaign County Forest Preserve application for the Dark Sky Park status at Middle Fork Forest Preserve. As State Representative of the 103rd district, I am excited that my district may be the first in Illinois to have a Dark Sky Park.

This opportunity would bring more visitors to this district and provide economic growth for local businesses. In addition to bringing the community together with the experience of having a Dark Sky Park. By granting Middle Fork Forest Preserve the status of being a "Dark Sky Park", you are giving the 103rd district a unique and memorable opportunity.

If you have any questions, please do not hesitate to contact my office.

Sincerely,

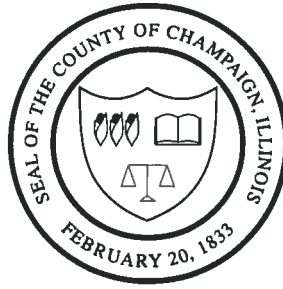
Carol Ammons  
State Representative  
103rd District



**C. Pius Weibel**  
Chair

*cweibel@co.champaign.il.us*

**Giraldo Rosales**  
Vice-Chair



Brookens Administrative Center  
1776 East Washington Street  
Urbana, Illinois 61802  
Phone (217) 384-3772  
Fax (217) 384-3896

**Office of  
County Board  
Champaign County, Illinois**

Mary Ellen Wuellner  
Interim Executive Director  
Champaign County Forest Preserve District  
P.O. Box 1040  
Mahomet, IL 61853

November 21, 2017

Dear Ms. Wuellner,

I am pleased to write a letter of support for David C. Leake's application for "Dark Sky Park" status. Mr. Leake has applied to the International Dark Sky Society for the designation of the Middle Fork Forest Preserve as the first "Dark Sky Park" in Illinois. The Middle Fork Forest Preserve one of five preserve owned and maintained by the Champaign County Forest Preserve District. The District is overseen by a Board, whose members are appointed by me, in my capacity as Chair of the Champaign County Board. The Middle Fork Forest Preserve is an excellent site for "Dark Sky" events because the area is lightly populated and the Middle Fork River of the Vermilion, which bisects the Preserve, is both a State Scenic River (designated in 1986) and a National Scenic River (designated in 1989). The Middle Fork is well known for its outstanding scenic, recreational, and ecological characteristics. I believe that the Middle Fork Forest Preserve is well-qualified site for designation as a "Dark Sky Park."

Please feel free to contact me if you wish to discuss this application in further detail.

Sincerely,

A handwritten signature in blue ink that reads "C. Pius Weibel". The signature is written in a cursive style.

C. Pius Weibel  
Chair, Champaign County Board  
District 7 Representative

January 3, 2018

102 North Neil Street  
Champaign, Illinois 61820-4042  
Telephone (217) 403-8720  
Fax (217) 403-8725  
[www.champaignil.gov](http://www.champaignil.gov)

Attn: Ms. Mary Ellen Wuellner  
Champaign County Forest Preserve  
109 S. Lake of the Woods Rd.  
Mahomet, IL 61822

On behalf of the City of Champaign, I support the Champaign County Forest Preserve District and its Citizens Advisory Committee in working cooperatively with the Champaign-Urbana Astronomical Society (CUAS) to achieve designation of the district's Middle Fork River Forest Preserve as an International Dark Sky Park.

There are many benefits to retaining a dark night sky as we seek to preserve the nighttime features by minimizing unnecessary lighting during hours of darkness. The saving of energy and reduced impact on wildlife, vegetation and humans are goals that can be worked toward through this designation. This is also an opportunity to add star gazing to the list of reasons to visit Champaign County, as Middle Fork has the darkest sky in the area.

Currently, there are no dark sky parks in Illinois and we are excited to bring "astro tourism" to Central Illinois and promote our local Forest Preserve as a Dark Sky Park.

Sincerely,



Deborah Frank Feinen  
Mayor



**Office of the Mayor**  
**Diane Wolfe Marlin**

**City of Urbana**  
400 South Vine Street  
Urbana, IL 61801  
Office: (217) 384-2456  
dwmartin@urbanaininois.us

January 5, 2018

Mary Ellen Wuellner, Interim Director  
Champaign County Forest Preserve District  
PO Box 1040  
Mahomet, IL 61853

Dear Ms. Wuellner,

I am writing in support of efforts to designate the Middle Fork River Forest Preserve as the first certified "Dark Sky Park" in the State of Illinois. This designation will support astro-tourism efforts in east Central Illinois. It will provide a unique recreational, education and outreach opportunity on and around the Middle Fork River, which is the only National Scenic River in Illinois, and will encourage measures to reduce light pollution in one of our most valuable natural areas.

I appreciate the leadership of the Forest Preserve District and Parkland College's Staerkel Planetarium Director David Leake in seeking the "Dark Sky Park" designation and am happy to assist your efforts.

Sincerely,

Diane W. Marlin





Mary Ellen Wuellner  
Executive Director  
Champaign County Forest Preserve District  
P.O. Box 1040  
Mahomet IL 61853

March 20, 2018

Dear Ms. Wuellner,

The Urbana Park District enthusiastically supports the nomination of Middle Fork Forest Preserve for Dark-Sky status. Astronomy programs offered with the CU Astronomical Society at the Urbana Park District have been very well received but as a park district located in an urban area, viewing opportunities have been more limited. Middle Fork Forest Preserve is a wonderful location for enjoying and learning about the night sky, and the Champaign County Forest Preserve District's efforts to further reduce light pollution at this location are commendable. In addition to enhancing opportunities for astronomy programs, these efforts will afford improved protections for the wildlife of Champaign County, greater energy efficiency for the forest preserve, and an overall improved experience for campers and evening visitors. The Urbana Park District appreciates your leadership on this initiative and is evaluating opportunities for similar improvements at our parks and facilities.

Please let us know if there is more we can offer in support of this Dark-Sky application.

Sincerely,

Derek A. Liebert  
Superintendent of Planning and Operations  
Urbana Park District



333 S. Tanner Street  
P.O. Box 38  
Rantoul, IL 61866

Phone 217.892.6800  
Fax 217.892.5501

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To the International Dark-Sky Association,

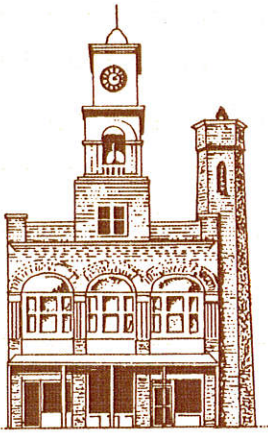
I am writing on behalf of the Village of Rantoul in support of the nomination of the Middle Fork River Forest Preserve as the first International Dark-Sky Park in Illinois, as well as one of the first Dark-Sky designations in the state.

The Village of Rantoul is located on interstate 57 approximately 17 miles away from the Middle Fork River Forest Preserve. Our community is home to one of the two closest interstate exits to the Middle Fork River Forest Preserve as well as some of the closest hotels and restaurants in the county. With this in mind, I feel our community could benefit greatly from the astro-tourism generated by International Dark Sky Park designation.

One of the greatest assets of being a rural community is our relative lack of light pollution. To have such a designation so near to our community would be a great honor, especially in knowing the experience could be preserved for generations to come.

Sincerely,

Mayor Charles Smith



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# CITY OF PAXTON

---

CITY HALL  
145 SOUTH MARKET STREET  
PAXTON, IL 60957  
PHONE: (217) 379-4022  
INFO@CITYOFPAXTON.COM  
WATER DEPARTMENT: (217) 379-2425  
FAX NO: (217) 379-2027

---

J. WILLIAM INGOLD  
*Mayor*  
GWEN SMITH  
*Clerk*  
JULIE BURGESS  
TAMMY JENSEN  
*Comptroller/Treasurer*  
MARC MILLER  
*Attorney*

ALDERMEN  
First Ward  
*Eric Evans*  
*Linda Glad*  
Second Ward  
*Susan Satterlee*  
*H. J. Flesner*  
Third Ward  
*Bill Wylie*  
*Rob Pacey*  
Fourth Ward  
*Rob Steiger*  
*Mike Wilson*

MARK LECLAIR  
*Public Works Director*  
COY CORNETT  
*Interim Chief of Police*  
MATT ROCK  
*Building Administrator*

8 December 2017

Mary Ellen Wuellner  
Champaign County Forest Preserve District  
PO Box 1040  
Mahomet, Illinois 61853

Ms Wuellner,

The City of Paxton would support the Middle Fork Forest preserve being designated as a "Dark Sky" area.

Although not in Ford County, many Paxton residents spend free time camping and enjoying Middle Fork. It is close to Paxton and offers that "get away" for an enjoyable and inexpensive weekend to relax and get back to nature.

My grandchildren talk of walking the trails, watching the wildlife and if there is a place to star gaze, so much the better.

Paxton is in the midst of increased economic development, we have just built a 41 room hotel, we have a dozen antique shops, new restaurants and plans for much more.

Adding star gazing in a dark sky area would add one more reason for visitors to visit the preserve and to visit Paxton to shop, eat and spend the night. I sum this up with my favorite term, "mutually beneficial". Very good for the Middle Fork Forest Preserve and very good for towns in the area.

Sincerely,

J William Ingold  
Mayor, City of Paxton

(217)379-4022 office  
(217)249-6000 mobile

December 1, 2017

Mary Ellen Wuellner  
Interim Executive Director  
Champaign County Forest Preserve District  
P.O. Box 1040  
Mahomet, IL 61853

Dear Ms. Wuellner:

On behalf of Visit Champaign County, I'm writing in support of the Champaign County Forest Preserve application for Dark Sky Park status at Middle Fork Forest Preserve. We are beyond excited to promote this project and we're anxious to promote astro-tourism in the greater Champaign County area.

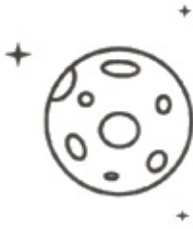
Our organization has a solid track record of identifying early tourism trends and developing programs that promote them to visitors all over the world. An example is our long-standing AgriTours Illinois program, which promoted Champaign County as an agriculture destination long before agritourism was trendy. This program has attracted thousands of visitors over the years and continues to thrive to this day. Similar opportunities exist with concepts like astro-tourism, and we're thrilled to have the chance to expand our efforts to encompass this area.

If you have any more questions or need more information, please do not hesitate to contact me.

Sincerely,



Jayne DeLuce  
President & CEO



**MICHELLE B. LARSON, PHD**  
PRESIDENT & CEO

312.322.0325  
MLARSON@ADLERPLANETARIUM.ORG

January 8, 2018

IDA Board of Directors  
International Dark-Sky Association  
3223 North First Avenue  
Tucson, AZ 85719

Dear International Dark Sky Association Board of Directors,

On behalf of the Adler Planetarium, I am writing to express support for the efforts of the Champaign County Forest Preserve District (CCFPD) to designate the Middle Fork Forest Preserve, 3485 County Road 2700 E, Penfield, IL, as an International Dark Sky Park. This designation would establish the first International Dark Sky Park in the State of Illinois.

Core to the Adler's mission is the understanding that the sky above is shared by all, and everyone deserves the opportunity to be inspired by it. The road to inspiration begins with a chance to actually see the night sky, and preservation efforts such as this are a strong step in the right direction. We welcome and encourage this and future opportunities to preserve dark skies for our regional community here in Illinois, and respectfully ask that the IDA approve CCFPD's application.

Sincerely,

Michelle B. Larson  
President and CEO



## Champaign County Audubon Society

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P.O. Box 882, Urbana, IL 61803-0882  
ChampaignCountyAudubon.org

April 28, 2018

Mary Ellen Wuellner  
Executive Director  
Champaign County Forest Preserve Dist.  
P.O. Box 1040  
Mahomet, IL 61853


Dear Director Wuellner,

We write you on behalf of our membership in regards to the Champaign County Forest Preserve District's application to designate the Middle Fork Forest Preserve as a Dark Sky Park.

As an Audubon chapter, our primary mission is to protect birds. Light pollution has been found to affect, among other things, the dawn chorus, mating cycles, navigation, and migration of birds. Beyond these direct impacts are tangential issues for which we also care: the impact on insect, amphibian, and human life too.

As bird lovers and conservationists, we understand the importance of every acre of forest preserve. We also understand that it is not enough to merely set aside the land. We must also protect that land and the creatures in them proactively. We believe that a Dark Sky designation is a necessary step in that proactive approach to conservation and declare our formal support for the endeavor.

Thank you,



Sara Johnson, President



Brody Dunn, Vice-president

*Promoting interest, enjoyment, and understanding of all aspects of our natural environment,  
and actively encouraging the protection of wildlife and native habitats.*



December 21, 2017

Mary Ellen Weullner  
Interim Executive Director  
Champaign County Forest Preserve  
District Headquarters PO Box 1040  
Mahomet, IL 61853


Dear Ms. Weullner,

I was pleased to learn of your application to have the Middle Fork Forest Preserve certified as a Dark Sky Park. As a resident of central Champaign I can barely see parts of the big dipper from my back yard. In Illinois it is not just the cities and towns that pollute the night sky, but also the tens of thousands of brightly lit farm yards covering seventy-five per cent of the state. I understand and appreciate the need for outdoor lighting that minimizes light pollution. Also, my wife Cathy's family once farmed part of what is now the Middle Fork Forest Preserve. Their farm house now serves as the Site Superintendent's residence.

I know how difficult it is to find a truly dark place in central Illinois. The measures you are taking are important and will help to make the Middle Fork Forest Preserve a destination for all of us, from astronomers to novices viewing meteor showers, who would like to see the night sky more clearly without the fog of reflected lights.

I thank you for your good work and hope you are successful in your application.

Sincerely,



Roger J. Inman  
President of the Advisory Board  
East Central Illinois Master Naturalists



# GRAND PRAIRIE FRIENDS

P.O. Box 36 Urbana, IL 61803

Mary Ellen Wuellner  
Interim Executive Director  
Champaign County Forest Preserve Dist.  
P.O. Box 1040  
Mahomet, IL 61853

December 11, 2017

Dear Interim Director Wuellner,

Grand Prairie Friends is honored to write a letter of support for the Champaign County Forest Preserve District's (CCFPD) application to receive Dark Sky Park status.

Grand Prairie Friend's mission is to preserve and restore natural communities in east-central Illinois and promote an understanding and appreciation of natural resources. As a conservation land trust since 1984, Grand Prairie Friends (GPF) has collaborated with the CCFPD on a variety of conservation, restoration and outreach projects. These projects have afforded collaboration with multiple departments within the CCFPD including Planning, Administration and Natural Resources departments. Project scale has varied from single-acre prairie cemetery preservation to large-scale parcel restoration and support services. CCFPD is routinely successful at their project completions due to thorough planning, budgeting and cooperative relationships within the central-Illinois natural resource community.

CCFPD has an award-winning and highly certified Museum & Education department which provides outreach throughout all of the five preserves in the county. All full-time educators within the District hold certification as a National Association for Interpretation (NAI) Certified Interpretive Guide (CIG). This highly accredited national interpretation certification ensures a highly dedicated team that is committed to the appropriate and scientifically-accurate education of our natural resources. As a member to the Dark Sky Parks Program, CCFPD's education staff would serve as excellently-trained ambassadors.

For these reasons, Grand Prairie Friends supports CCFPD's application for Dark Skies Park status without hesitation.

Sincerely,

James Ellis  
President, Grand Prairie Friends  
[james.ellis72@gmail.com](mailto:james.ellis72@gmail.com)



UNIVERSITY OF ILLINOIS  
AT URBANA-CHAMPAIGN

**Department of Astronomy**  
College of Liberal Arts and Sciences  
103 Astronomy Building, MC-221  
1002 West Green Street  
Urbana, IL 61801 USA

**Professor Leslie Looney**  
123 Astronomy Building  
Phone: (217) 244-3615  
Fax: (217) 244-7638  
E-mail: [lwl@illinois.edu](mailto:lwl@illinois.edu)

Mr. John Barentine, Program Director  
International Dark Sky Association  
3223 N. First Avenue  
Tuscon, AZ 85719

15 January 2018

Dear Mr. Barentine,

It is my great pleasure to write a letter of support for the Dark Sky Park status of the Middle Fork Forest Preserve. As the Chair of the only Astronomy Department at a public university in Illinois and as an instructor of introductory astronomy courses at the University of Illinois, I recognize the importance of such a site for the community of Champaign County and the state of Illinois.

At our events providing public access to the telescopes on campus, either the monthly open houses or the night observing sessions for introductory astronomy students, we routinely have youth who have **never** seen the night sky (outside of the Moon and some bright stars). Since many of our visitors and students are from urban or suburban areas, this is not surprising. So they are amazed and excited when they catch their first peek of Saturn's rings or the Galilean moons around Jupiter! Although it is wonderful to show students these natural wonders, it would be better if students could have seen them sooner than their last science course in college.

The entire research faculty, teaching instructors, postdoctoral fellows, and graduate students are excited about a Dark Sky Park in Illinois that would provide a great location for people of all ages to experience the night sky, especially children. Schools and local astronomy groups could organize "star parties" to facilitate public viewing of the night sky. This would be amazing for children, because astronomy is often a natural gateway for getting children interested in STEM fields. The Middle Fork Forest Preserve has made the correct choices for access, safety, and also for providing dark skies in which we can share the beauty of the night sky. With the addition of such a park in Champaign County, the Department of Astronomy will have more outreach opportunities.

Sincerely,

Leslie W. Looney  
Professor and Chair of Astronomy  
University of Illinois at Urbana-Champaign



December 15, 2017

Mary Ellen Wuellner  
Interim Executive Director  
Champaign County Forest Preserve District  
P.O. Box 1040  
Mahomet, IL 61853

Ms. Wuellner,

I am writing to support the Middle Fork River Forest Preserve in its nomination to become a Dark Sky Park. When I worked as the Environmental Public Program Specialist at the Champaign County Forest Preserve District from 2009-2013, some of my most impactful programs were the Sky Watches I conducted in collaboration with the Champaign-Urbana Astronomical Society. At each program, participants (often traveling from Champaign-Urbana or the University of Illinois campus) were astounded by the clarity of the sky and the number of stars that could be seen from this location. On more than one occasion, I witnessed individuals brought to tears by the emotional impact of such a scene.

The beauty of the night sky at this preserve was one of the reasons I chose to get married at this location. Most of my wedding guests camped at the park that night, and we set up telescopes for enhanced viewing. I remember my aunt remarking that she had never seen the sky "this way" before. Upon seeing the vast Milky Way and learning about our visual perspective of our galaxy, she said that she had never before thought about her place in the world and in the universe. Her life was changed in that moment, and I was humbled to be a part of that.

In my own neighborhood in Urbana, a night full of stars is a rare sight to see. The many and too bright streetlights leak light into my bedroom such that I have to wear a mask to get a good night's sleep. I feel sympathetic for the urban wildlife that I'm sure are equally disturbed by the light pollution. A dark sky refuge like Middle Fork River Forest Preserve is a place to be proud of and protected. I hope that we are able to preserve and protect this vanishing resource—a truly dark sky—for many generations to come.

Thank you,

Savannah Donovan  
Environmental Public Program Coordinator  
Anita Purves Nature Center  
1505 N. Broadway Ave., Urbana, IL 61801  
sydonovan@urbanaparks.org | 217-384-4062

December 10, 2017

Mary Ellen Wuellner  
Champaign County Forest Preserve District  
P.O. Box 1040  
Mahomet, IL 61853

Ms. Wuellner,

I am writing in support of the forest preserve's application to acquire Dark Sky Park status for the Middle Fork River Forest Preserve. I write with two hats on, one being the director of the Staerkel Planetarium at Parkland College in Champaign and the other as president of the Champaign-Urbana Astronomical Society, Inc.

At each planetarium show we perform, we talk about light pollution in the area. We like to show how the sky changes when you are transported to rural area and more stars appear. We also like to show "Loosing the Dark" as part of our public offerings. This is a topic I'm very passionate about!

The CUAS has a long history of working with the forest preserve district. We currently do two annual programs at the Middle Fork and one at Homer Lake, consisting of an interactive discussion of how to find things in the sky (with star charts) and public observing with club telescopes. We, as a club, pledge to double the number of offerings at the Middle Fork, plus offer any requested staff development to those staff and administrators who may want to lead programs in the park. We also pledge to regularly measure the sky brightness to include in the annual reporting.

Best of luck on the application process.

Regards,

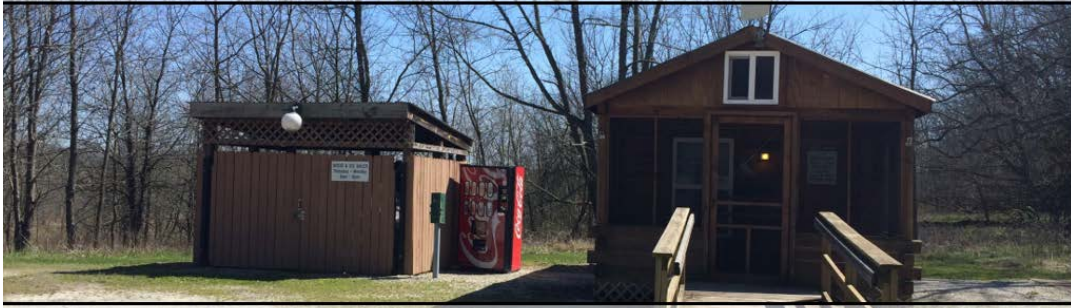


David C. Leake  
Director, William M. Staerkel Planetarium  
Parkland College  
2400 West Bradley Avenue  
Champaign, IL 61821  
(day phone): 217-351-2567  
(Email): [dleake@parkland.edu](mailto:dleake@parkland.edu)

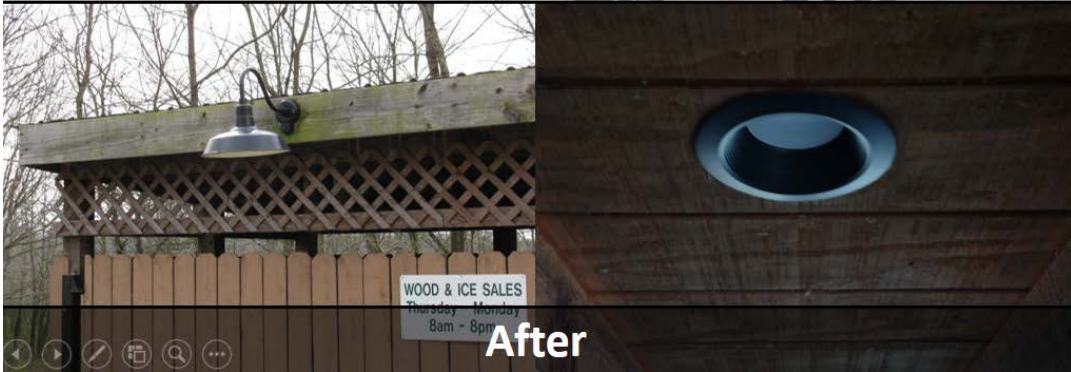
Appendix C: Photographs



## Campground Host Cabin



Before



After

## Maintenance Shop Entrance



Before



After

## Roadway and Area Lighting



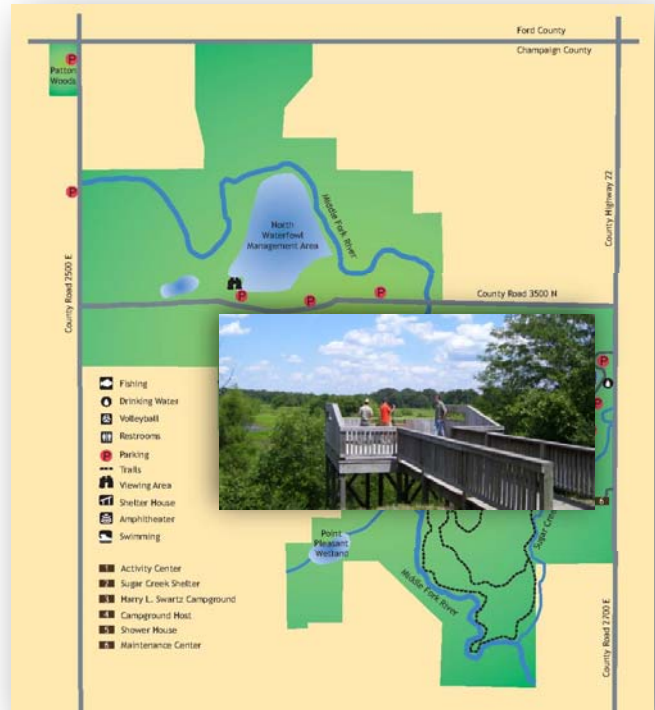
## Roadway and Area Lighting



**Middle Fork River Forest Preserve *Penfield***

The Forest Preserve District began purchase of the Middle Fork River Forest Preserve in 1974, and by 1982 had acquired approximately 1,530 acres from nine owners. Since 1982, 78 acres have been acquired to bring the total acreage to 1,608. This is the largest and most diverse property in the District system.

The land is composed of scattered older mature oak-hickory forest in the uplands and bottomland forest near the river. There are also several reforestation plantings and prairie restorations. The preserve offers many hiking trails. Middle Fork contains one of Illinois’ premier Waterfowl Management Areas. More than 130 acres of prime nesting habitat for migratory waterfowl are located here. An easily accessible viewing area allows visitors the opportunity to observe a wetland teeming with life. A more secluded, smaller sanctuary purposefully does not invite visitation so as to protect the habitat.



Facilities onsite include the Activity Center, an enclosed building, and the open-air Sugar Creek Shelter. Both are used for programming and are available to the public to rent. There is also a 64-site campground with a shower house and swimming beach. There are 50 electric sites, 12 nonelectric sites and two group camp areas.

The Middle Fork River is one of the most pristine rivers in Illinois and the Midwest as evidenced by the designation of a section in Vermilion County as a National Wild and Scenic River. The Middle Fork River forms the core of the preserve, and its continued protection is vital. The river originates in Ford County as a dredged ditch. The river traverses through good woodland from the western edge of the preserve to the county line, a distance of about 2.2 miles.

South and east of the current holdings, the Middle Fork River continues for about 3.9 miles to the Vermilion County line. The protection of this portion of the river corridor is important to the health of the river and the National Wild and Scenic River portion downstream. There may be an opportunity to work jointly with the Illinois Department of Natural Resources and the Vermilion County Conservation District on a multi-county approach to river corridor protection.

*Beginning in 2007, the Champaign-Urbana Astronomical Society approached the Forest Preserve District with a partnership idea to hold annual “Starwatch” programs at the District’s Middle Fork River Forest Preserve. In the mid-2000s, members of the CUAS began to measure the nighttime sky quality at the preserve and noted that it held exceptional opportunity for stargazing. Located in the northeast corner of the county, quite far from the most heavily urbanized*

*areas, Middle Fork's night sky is one of the darkest and clearest in the region. The presence of public land, wide open space, and camping facilities enhances the value of Middle Fork for astronomical research, public educational programming, and astro-tourism.*

❖ Continue to seek out acquisition opportunities for inholdings and adjacent lands as well as land along the Middle Fork River.
❖ Make improvements to Middle Fork's extensive trail system to minimize damage from seasonal flooding.
❖ Establish a new trail extending to the "Odle Property" on the far north end of the preserve.
❖ Develop an access road and bridge across Sugar Creek from the Maintenance Area to reduce operational costs and provide continuing access for staff use.
❖ <i>Protect the quality of the night sky through responsible lighting techniques and expand opportunities for nighttime programming that focus on educating the public of the natural, cultural, and scientific value of nighttime darkness.</i>
❖ <i>Seek Dark Sky Park designation from the International Dark Sky Association, creating additional opportunities to highlight and promote the nighttime sky quality of the preserve while enhancing its environmental, educational, and tourism potential.</i>
❖ Develop a business plan for Middle Fork to identify revenue-generating opportunities that would fund additional position(s) to maintain property and manage its natural resources.

**Appendix E: Lightscape Management Plan**

**MIDDLE FORK RIVER FOREST PRESERVE  
LIGHTSCAPE MANAGEMENT PLAN**



**A partnership between the International Dark Sky Program, the Champaign  
County Forest Preserve District Citizens Advisory Committee, and the  
Champaign Urbana Astronomical Society**

August 2016

**Authored and Reviewed by**  
David Leake, David Easter, Daniel Olson, Mike Lockwood

## **Executive Summary**

The partners involved with bringing the International Dark Sky Association's Dark Sky Certification to the Middle Fork River Forest Preserve recognize the multi-faceted benefits that can be achieved by certification efforts. This program can bring increased tourism and visitation to the area when skywatchers enjoy reduced light pollution. It will help maintain the all of the partner's continuing commitment to education about the benefits of dark skies. It will have considerable positive impacts on nocturnal and diurnal wildlife. And, this plan addresses sustainability efforts to reduce the use of energy and decrease operating costs for the Middle Fork River Preserve.

The certification guidelines do not necessarily aim to reduce the amount of lighting at the Preserve. Instead, the guidelines are ensuring that lighting is adequate for the need of patrons and that the effects of lighting are directed into areas where the light is necessary but not skyward.

Completion of this Lightscape Management Plan is the first substantial step towards certification in the program. We believe a goal of applying for certification for the Dark Sky Park Program can be achieved by June of 2018, making Middle Fork River Preserve the first Dark Sky Park in Illinois.

## **Purpose**

Implementing a Dark Sky program at the CCFPD improves a myriad of problems that can be associated with improper lighting. Our greatest returns on investments will come from: 1) Energy savings when good policy, procedures and infrastructure are put into place, 2) Lowering light to help restore and protect sensitive ecological habitats, 3) Improving human health by limiting artificial lighting, 3) Creating a compatible outdoor recreational opportunity for all ages and 4) Increasing public safety by evaluating hazardous conditions made by implementing lighting as well as evaluating light and shadow areas.

The purpose of this Lightscape Management plan is to serve as the foundation and guidebook for implementing dark skies in and around the Middle Fork River Forest Preserve (MFRFP). It may also be used as a template for similar efforts throughout the Champaign County Forest Preserve District in the future.

## **Site Location**

The mission of the Champaign County Forest Preserve District includes to “conserve, preserve, and restore natural areas.” By creating this Lightscape Management Plan (LMP), we recognize that the starry skies over the Illinois prairie are a vital part of those “natural areas.”

The Middle Fork River Forest Preserve is one of six preserves in Champaign County, Illinois. It consists of 1700+ acres composed of hardwood timber, reforested lowlands, grassy meadows, and in-progress prairie restorations. The Middle Fork also contains one of the region’s premier Waterfowl Management Areas, offering more than 130 acres of prime nesting habitat for migratory waterfowl.

The Middle Fork welcomes an estimate of 50,000 visitors annually. Approximately 15,000 of those visitors camp at one of the sixty-five campsites in the Harry L. Swartz Campground. Patrons are treated to a swim beach, fishing, cross-country skiing, birdwatching, picnicking, building rentals and more than eight miles of hiking trails. Plus preserve staff regularly engage in environmental educational programs for patrons, including joint programming with the Champaign-Urbana Astronomical Society (CUAS).

The CUAS, based in Champaign, roughly 40 kilometers (24 miles) to the southwest of the preserve, performed a rough sky brightness survey of the entire county using a Sky Quality Meter adapted to automatically take regular readings through a vehicle’s moon roof. The Middle Fork River Forest Preserve proved to be one of the darkest spots in the county of nearly 1000 square miles. This prompted CUAS members to approach the park leadership about possible “Dark Sky Place” status. With farmsteads (and their accompanying lights) spread across Central Illinois, a DSP would create a refuge where skywatchers, young and old, could enjoy a pristine sky.

## **Goals**

The Champaign County Forest Preserve District (CCFPD) joined together with interested volunteers of the CUAS to agree to the following Lightscape Management Plan Objectives:

- To preserve dark skies in this Central Illinois haven and protect it from light pollution from both inside the park and from the surrounding communities.
- To examine and adjust current and future preserve lighting in order to meet dark sky standards, provide adequate safety measures for preserve patrons, and meet financial and environmental sustainability goals.

- To improve the integrity of the surrounding wilderness and wetlands by providing a high quality nocturnal habitat.
- Regular monitoring of sky glow from within the park.

This LMP is designed to meet or exceed standards set by the Champaign County Zoning Commission (<http://www.co.champaign.il.us/pandz/forms/150625ZoningOrdinance.pdf>). Section 7.1.2, part M states “any exterior lighting for outdoor storage and/or operations, and/or parking area, and/or a new building with exterior lighting . . . shall be required to minimize glare from exterior lighting onto adjacent properties and roadways.” It goes on to say “all exterior lighting shall be fully shielded type lighting fixtures and shall be located as to minimize glare and light trespass onto adjacent properties.” No light shall be emitted above the horizontal and no lamp shall be greater than 250 watts. A 2010 “nuisance ordinance” lists glare as a condition for a public nuisance. (<http://www.co.champaign.il.us/pandz/forms/nuisanceord.pdf> p. 8)

The CCFPD proposes to create lighting zones within the preserve’s boundaries based on the zones recommended by the International Dark Sky Association (Appendix A). The park shall maintain:

- **LZ0: No ambient lighting**  
Areas where the natural environment will be seriously and adversely affected by lighting. Impacts include disturbing the biological cycles of flora and fauna and/or detracting from human enjoyment and appreciation of the natural environment. In these areas, human activity is subordinate in importance to nature. The vision of human residents and users is adapted to total darkness, and they expect to see little or no lighting. When not needed, lighting should be extinguished. This area is shown in red outline on the following map.
- **LZ1: Low ambient lighting**  
Areas where lighting might adversely affect flora and fauna or disturb the character of the area. The vision of human residents and users is adapted to low light levels. Lighting may be used for safety and convenience but it is not necessarily uniform or continuous. After curfew, most lighting should be extinguished or reduced as activity levels decline. This area is shown in a blue outline on the following map.

Within these zones, the CCFPD plans to remove unneeded light fixtures (as detailed in the lighting inventory) by 2018 and plans to retrofit any non-compliant lighting fixtures by at least 2021. All new and retrofitted fixtures will meet the following requirements:

- Be used only in support of the safe performance of specific nighttime tasks and/or in situations where park management determines that a nighttime public safety risk exists that can only be mitigated through the use of outdoor lighting.
- Be operated only when necessary. In other words, alternatives to lighting will be used in every possible case with lighting used as a last resort. Areas of higher traffic utilized after dusk will use motion sensors so lighting is activated only when people are in the area.
- Be fully shielded and direct lighting downward
- Not exceed 500 lumens unless necessary for safety or dealing with emergencies
- Utilize compact fluorescent sources (CFL) or light emitting diode (LED) for energy efficiency whose correlated color temperature does not exceed 3000K.

There are approximately 40 exterior permanent light fixtures within the Preserve. Pictured below are examples of the majority of lights found within the preserve boundaries. The globe fixtures are inefficient due to their radiation patter, and they cause glare. These fixtures will be replaced. The image below on the right is from beneath the roof line at the shower house, adjacent to the Willow Pond area. Though the fixture contains a CFL source, it is unshielded.



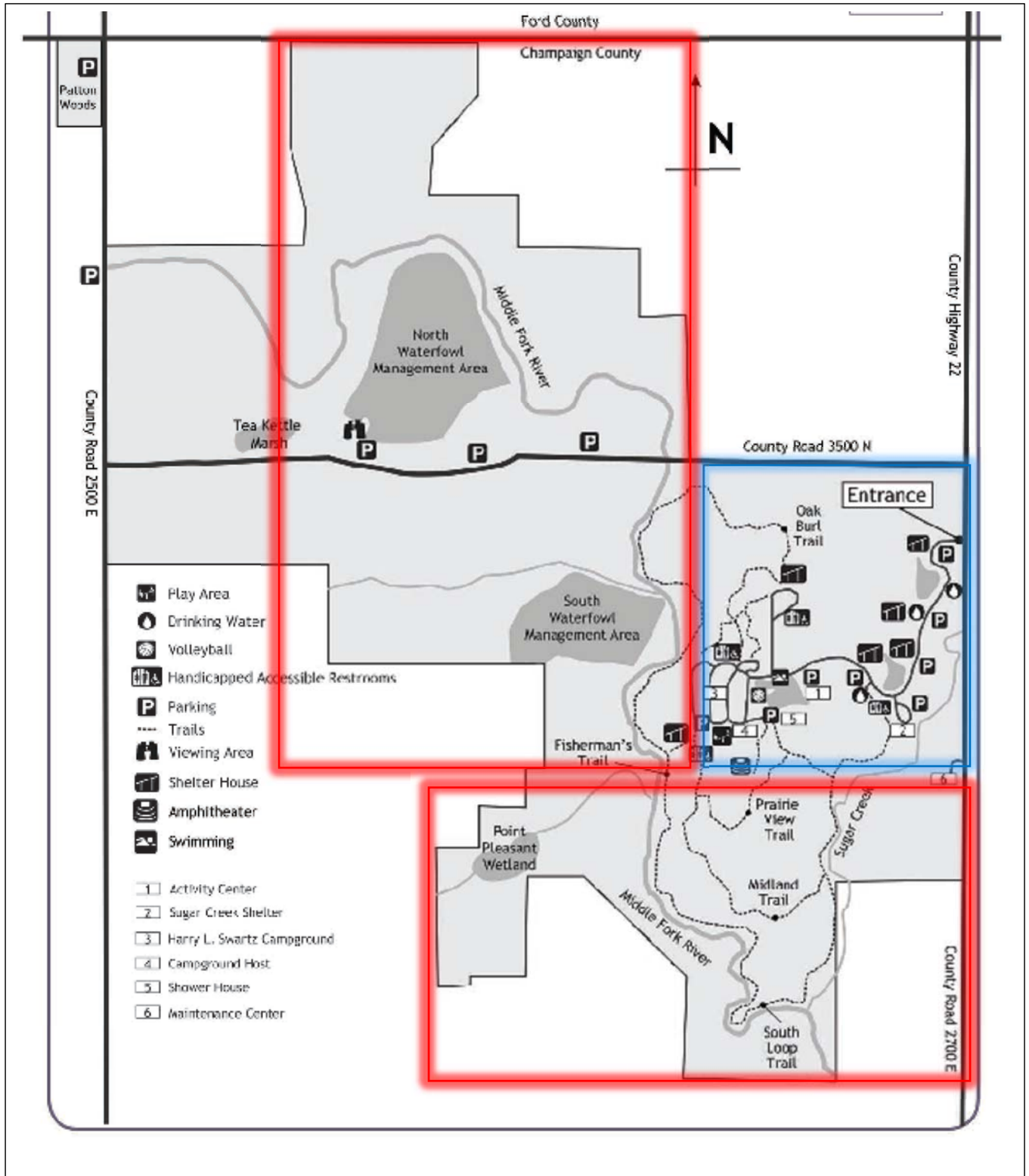
**Figures** – Examples of current light infrastructure at Middle Fork River Forest Preserve that do not meet the current Dark Sky Program standards.

### Summary

Of all of CCFPD’s landholdings, the Middle Fork River Forest Preserve appears the most suitable place to begin the Dark Sky Program and this plan addresses only the Middle Fork Preserve. However, the Salt Fork River Forest Preserve, as well as other landholdings may also be suitable for similar efforts in future years.

This Lightscape Management Plan serves as the foundation for beginning to work towards better lighting situations at the Preserve.

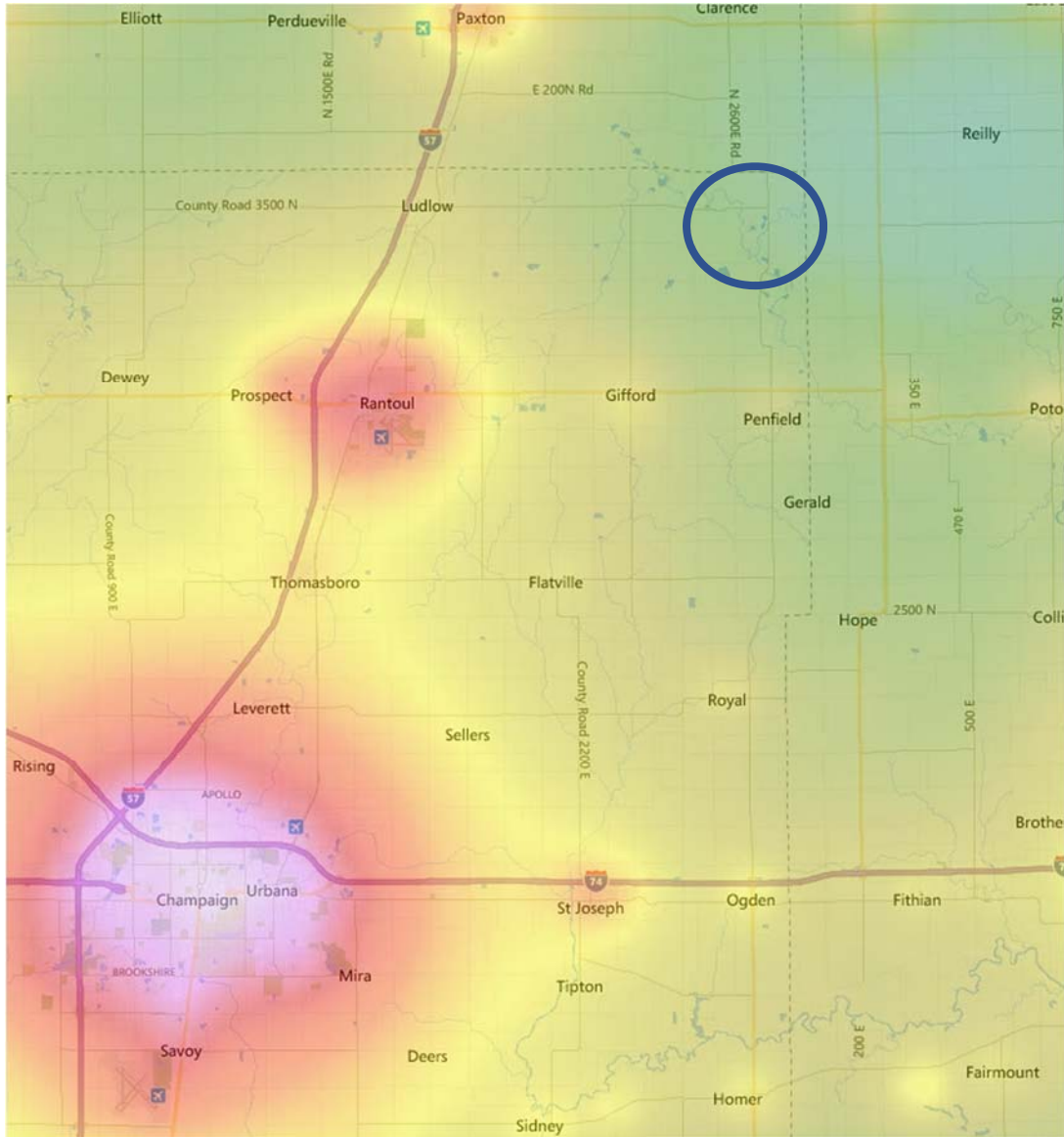
**Appendix A** – Lighting Zones for Middle Fork River Forest Preserve in Penfield, Illinois. LZ0 (red) should have no ambient lighting and LZ1 (blue) represents low ambient lighting.



## Sky Quality Measurements

Initial measurements were performed at the site by John Stone, a member of the Champaign-Urbana Astronomical Society, in the fall of 2008. Mr. Stone used a Sky Quality Meter. Initial measurements produced a reading of 20.97 magnitudes per square arc second (4.5 on the Bortle scale). Subsequent follow-up measurements registered 21.34 mag/arc sec<sup>2</sup>. Stone then constructed an interesting rig where a computer-controlled SQM-LE was set-up on a tripod and interfaced

to his laptop computer along with a GPS system, all powered with a 100 AH deep cycle battery. Custom software managed the system and additional programs generated Google Earth



placemarks. Thus Stone could drive around the county with the meter taking data through his sun roof (with the glass removed). Measurements at the Middle Fork ranged from 20.94 to 21.03 mag/arc sec<sup>2</sup>, again a 4.5 on the Bortle scale.

Stone repeated the SQM readings on September 3, 2016 from the Waterfowl Observation area parking lot. In John's report to the CU Astronomical Society he states:

*I took measurements with two different kinds of SQM meters, both a wide-angle SQM, and a narrow-angle SQM-L. I took the measurements at 11:39pm local time, which is well more than the needed 2 hours between taking the readings and either moonrise or moonset (moon elevation was -46 degrees, and only 3% illumination). The Milky Way was directly overhead during my measurements, so if I had repeated them a few hours later at night I would have a slightly dark reading on both meters.*

*The measurements I recorded tonight were 21.29 (SQM, wide-angle) and 21.12 (SQM-L, narrow-angle). The narrow-angle result from the SQM-L showed a brighter result (lower mags/arcsecond number) because of the Milky Way being directly overhead during my measurement. This is a very conservative result and we would get a much darker measurement if I measure later at night when the Milky Way is off to the side. These latest measurements compare very well with measurements that I made at the same location at close to the same time of year, on September 12, 2007, on that date I measured 21.38 (SQM, wide-angle, taken at 3am local time with the Milky Way off to the west).*

The CU Astronomical Society has agreed to monitor sky brightness levels at regular intervals as is required for Dark Sky Park status.

### **Interpretive Program**

The Champaign County Forest Preserve District has partnered with the Champaign-Urbana Astronomical Society, Inc. to offer programs at both the Middle Fork and Homer Lake Forest



Preserves. The partnership dates back to April of 2009. In the past, two public programs were done at the Middle Fork annually and then usually one at Homer Lake. The Middle Fork programs consist of a talk at the Activity Center (pictured at left) followed by observing with club telescopes at the Waterfowl Observation Area. Telescopes were set-up in the parking lot. The “Starwatch” events were publicized

in the Swartz Campground, on the Preserve’s web site, and in the Champaign-Urbana News-Gazette. CUAS also publicized the programs. The talks always include a section on light pollution, how to read a star chart (and simple charts were distributed to patrons), upcoming special sky events, and then close-up views of some of the deep sky objects that were to be observed that evening.

Should Dark Sky Park status be conferred to the Middle Fork, the CUAS has agreed to double their offerings in the park, plus offer professional development to the park staff so they can

offer their own programs, with or without telescopes. The CCFPD is planning a workshop on celestial navigation in 2018. Light pollution will become part of the program for night hikes and “owl prowls.”

In addition, plans are in the works to have a light pollution exhibit at the Museum of the Grand Prairie, which is adjacent to Lake of the Woods. Interactive panels are being planned for the Middle Fork and campers will be given an IDA brochure as part of their check-in package.

If Dark Sky Park status is conferred on the Middle Fork River Forest Preserve, signs will be posted in the park and the news will be featured on the CCFPD web site for the preserve. Press releases will be prepared for the media and the county convention & visitors bureau is anxious to help promote the designation and “astro-tourism.”

# Appendix F: Lighting Inventory

Middle Fork Forest Preserve Light Inventory - April 12, 2016

Revision #6 - February 20, 2018

Location	Original Fixture	Original QTY	Original Fully Shielded	Special Purpose < 500 Lumens	Original Application / Necessity	Original Conformity with LMP	Original Condition	Recommendations	Date Replaced	Model Number	New QTY Conforming with LMP	Photocell / Timer
Maintenance shop entrance	Globe mounted on wall, 23 W CFL	1	No	No, 1600	Entrance / yes	No	ok	Replace w/ shielded LED	Sep-16	Westinghouse Orson #62034	1	Switch only
Maintenance shop north	Street light mounted on wall, 175 W Mercury	1	No	No, 6630	Area, Security / No	No	Good (currently not in use)	Remove, no longer needed	Disconnected prior to LMP	N/A	1	Photocell (1)
Maintenance shop south	Street light mounted on wall, 175 W Mercury	1	No	No, 6630	Area, Security / yes	No	Good	Replace w/ recessed can	<b>To be replaced in 2019</b>	Lithonia #LK5	0	Photocell (2)
Residence front door	Lantern mounted on wall, 23 W CFL	1	No	No, 1600	Entrance / yes	No	Good	Replace w/ LED & add timer or photocell	<b>Mar-18</b>	Westinghouse Orson #62034	1	Switch only
Residence back porch	Lantern mounted on wall, 23 W CFL	1	No	No, 1600	Entrance / yes	No	Good	Replace w/ LED & add timer or photocell	<b>Mar-18</b>	Westinghouse Orson #62034	1	Switch only
Residence garage (left)	Lantern mounted on wall, 8.5W LED	1	No	No, 800	Driveway / yes	No	Good	Replace w/ LED & add timer or photocell	<b>Mar-18</b>	Westinghouse Orson #62034	1	Switch only
Residence garage (right)	Lantern mounted on wall, 8.5W LED	1	No	No, 800	Driveway / yes	No	Good	Replace w/ LED & add timer or photocell	<b>Mar-18</b>	Westinghouse Orson #62034	1	Switch only
Sign at main entrance	Flood surface mounted at grade, 75 W Halogen	2	No	No, 1250	Wayfinding / yes	No	Good	Replace w/ sign mounted LED	<b>To be replaced in 2019</b>	2 linear sign mounted lights	0	Photocell (3)
Main entrance drive	Globe mounted on pole, 23 W CFL	2	No	No, 1600	Roadway / yes	No	ok	Replace w/ LED bollard or post mounted light	<b>To be replaced in 2019</b>	4 ANP Lighting Bella Vista LED	0	Photocell (3)
Dump station	Globe mounted on pole, 23 W CFL	1	No	No, 1600	Dumping / yes	No	ok	Replace w/ LED bollards or post mounted light	Jul-17	1 ANP Lighting Bella Vista LED	1	Photocell (3)
Activity center p-lot entrance	Globe mounted on pole, 23 W CFL	1	No	1600	Roadway / yes	No	ok	Replace w/ LED bollard or post mounted light	Jul-17	1 ANP Lighting Bella Vista LED	1	Photocell (4)
Activity center p-lot	Globe mounted on pole, 23 W CFL	4	No	1600	Parking / yes	No	ok	Replace w/ LED post mounted parking lights	<b>To be replaced in 2019</b>	4 ANP Lighting Bella Vista LED	0	Photocell (4)

Middle Fork Forest Preserve Light Inventory - April 12, 2016

Revision #6 - February 20, 2018

Location	Original Fixture	Original QTY	Original Fully Shielded	Special Purpose < 500 Lumens	Original Application / Necessity	Original Conformity with LMP	Original Condition	Recommendations	Date Replaced	Model Number	New QTY Conforming with LMP	Photocell / Timer
Activity center drop-off	Globe mounted on pole, 23 W CFL	2	No	1600	Drop-off / yes	No	ok	Replace w/ LED bollards - add 2	To be replaced in 2018	2 Goodrich Avalon LED Barnlights	0	Photocell (4)
Activity center main entrance	Lantern mounted on wall, 23 W CFL	1	No	1600	Entrance / yes	No	Good	Replace w/ surface mount ceiling fixture	Dec-16	Lithonia #LK5	1	Photocell (4)
Activity center patio	Lantern mounted on wall, 23 W CFL	2	No	1600	Entrance / yes	No	Good	Replace w/ LED wall mount	Dec-16	Westinghouse Orson #62034	2	Photocell (4)
Activity center south floods	Flood mounted on wall, Halogen	2	No	N/A	Area / no	No	Good	Remove, no longer needed	Feb-17	Removed	2	Photocell (4)
Activity center east	Globe mounted to wall, 23 W CFL	2	No	1600	Area / yes	No	ok	Remove, no longer needed	Feb-17	Removed	2	Photocell (4)
Water filling station	Globe mounted on pole, 23 W CFL	1	No	1600	Water fill / yes	No	ok	Replace w/ LED bollard or post mounted light	Jul-17	1 ANP Lighting Bella Vista LED	1	Photocell (4)
Burr oak entrance drive	Globe mounted on pole, 23 W CFL	1	No	1600	Area / yes	No	Bad	Replace w/ LED bollard or post mounted light	Jul-17	1 ANP Lighting Bella Vista LED	1	Photocell (5)
Burr oak	Globe mounted on pole, 23 W CFL	1	No	1600	Area / yes	No	ok	Remove, no longer needed.	Jul-17	N/A	1	Photocell (6)
Across from commons	Globe mounted on pole, 23 W CFL	1	No	1600	Area / yes	No	ok	Replace w/ LED bollard or post mounted light	Jul-17	1 ANP Lighting Bella Vista LED	1	Photocell (7)
Across from host	Globe mounted on pole, 23 W CFL	1	No	1600	Area / yes	No	ok	Replace w/ LED bollard or post mounted light	Jul-17	1 ANP Lighting Bella Vista LED	1	Photocell (8)
Double site, third row	Globe mounted on pole, 23 W CFL	1	No	1600	Area / yes	No	ok	Replace w/ LED bollard or post mounted light	Jul-17	1 ANP Lighting Bella Vista LED	1	Photocell (9)
North end, third row	Globe mounted on pole, 23 W CFL	1	No	1600	Area / yes	No	ok	Replace w/ LED bollard or post mounted light	Jul-17	1 ANP Lighting Bella Vista LED	1	Photocell (10)

Middle Fork Forest Preserve Light Inventory - April 12, 2016

Revision #6 - February 20, 2018

Location	Original Fixture	Original QTY	Original Fully Shielded	Special Purpose < 500 Lumens	Original Application / Necessity	Original Conformity with LMP	Original Condition	Recommendations	Date Replaced	Model Number	New QTY Conforming with LMP	Photocell / Timer
Across from primitive sites, third row	Globe mounted on pole, 23 W CFL	1	No	1600	Area / yes	No	ok	Replace w/ LED bollard or post mounted light	Jul-17	1 ANP Lighting Bella Vista LED	1	Photocell (11)
Host cabin porch	Lantern mounted on wall, 23 W CFL	1	No	1600	Entrance / yes	No	Good	Replace w/ LED & add timer or photocell	Feb-17	Lithonia #LK5	1	Switch only
Host wood, ice, vending	Flood mounted to wall, LED, 22.4 W	1	No	1600	Vending / yes	No	Great	Replace w/ LED wall mounted	Feb-17	1 Northern Tool Barn Light #23201091-B	1	Photocell (12)
Shower house south area	Flood mounted to wall, LED, 22.4 W	1	TBD	TBD	Area / yes	No	Good	Replace w/ LED wall mounted	<b>To be replaced in 2018</b>	2 Goodrich Avalon LED Barnlights	0	Photocell (13)
Shower house toilet entrance	Recessed can lights, LED (W TBD)	2	Yes	TBD	Entrance / yes	Yes	Great	Remain in place	Replaced prior to LMP	2 cans	2	Photocell (13)
Shower house north soffits	Recessed can lights, LED (W TBD)	2	Yes	TBD	Area, security / yes	Yes	Great	Remain in place	Replaced prior to LMP	2 cans	2	Photocell (13)
Shower house north entrance	Flood mounted to wall, 13 W CFL	1	TBD	TBD	Entrance / yes	No	Ok	Replace w/ LED wall pack	<b>To be replaced in 2019</b>	1 Rab wall mount	0	Photocell (13)
East barn	Street light mounted on wall, 175 W Mercury	1	No	6630	Area / no	No	Bad	Remove, no longer needed	Sep-16	Removed by Eastern Illini Electrical Coop	1	Photocell (14)