



## International Dark Sky Park Annular Report – 2018 Zselic Starry Sky Park

### Conservation and research

During this period we started a new project: (EFOP-3.6.2-16-201-00014; “Development of international research environment for light pollution studies” supported by the European Union and co-financed by the European Social Fund). A main element of the project is the “Living Lab for Lighting” - a village with an entirely new public lighting system which not only helps to reduce light pollution but helps in performing scientific research. The principal Lighting Laboratory is the largest village, Bárdudvarnok in the direct vicinity of the Zselic IDSP. The work has been started with bio- and lighting-monitoring at the location. We have organised an international light pollution measurement workshop in the Living Lab in April 2018.



*Participants of the measurement workshop*

The Light Pollution: Theory, Modelling and Measurement (LPTMM) Conference 2019 ([lptmm.org](http://lptmm.org)) will be held at the vicinity of the IDSP – that will provide an excellent opportunity to present the results of the research performed at the Living Lab.

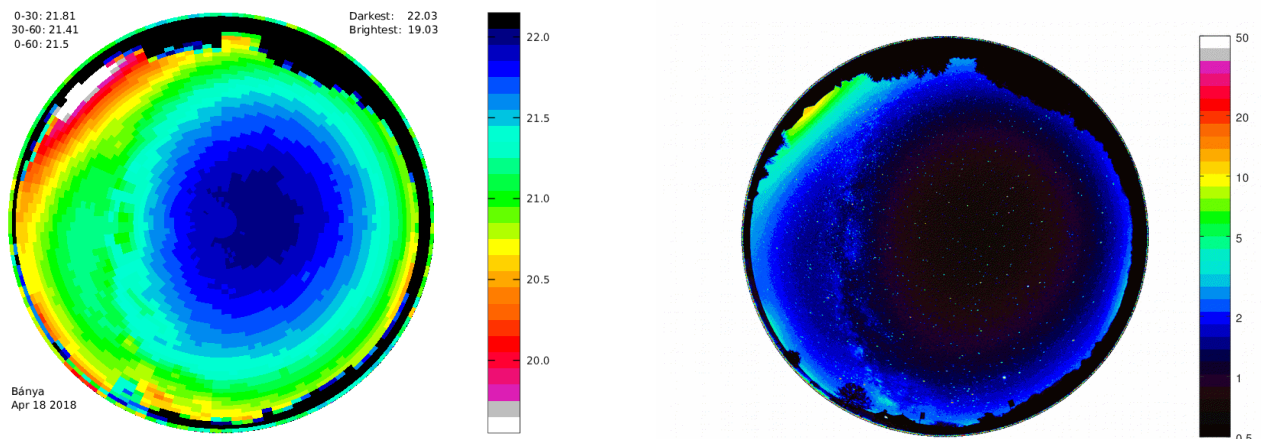
### Lighting

There were no changes in the park. However, the first stage of the lighting remodelling in the adjacent village Bárdudvarnok has been started. We expect the change of the luminaries at Bárdudvarnok at the end of October 2018, and we start the test and monitoring with the new system during this fall. That will be a significant improvement in a large area next to the park, and it will provide a positive example for similar reconstructions.

### Sky quality

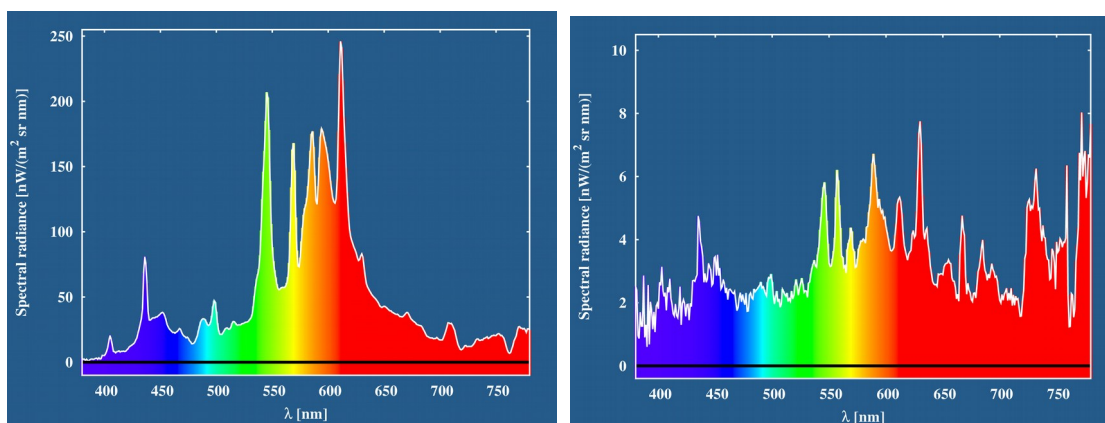
We are continuously monitoring sky brightness in the Park. We have not found any degradation of sky brightness during the last year. Indeed, we observed the darkest night in the history of our

whole sky measurements during the measurement workshop in April. Then the zenith sky radiance was close to 22 mag/as<sup>2</sup>.



*Measurement of the sky quality based on fisheye photography. Note, that the Milky Way was not removed  
Left: false colour representation in mag/as<sup>2</sup>; Right colour coded in Natural Sky Units (NSU).*

As a new element of light pollution monitoring, we started to measure the visible spectrum of the night sky. It helps in understanding the effect of different sources and also in the calibration of other instruments.



*The spectrum of the night sky visible from the Zselic. Left: The light-dome of Kaposvár it is dominated by the mixture of white LEDs, Sodium and compact fluorescent lamps. Right: Spectrum of the sky close to the horizon, 90 degrees from the direction of Kaposvár. The artificial bands are still clearly visible, but the natural bands of the airglow can be easily identified.*

## Outreach

The visitor centre (“Zselic Park of Stars” - <http://zselicisillagpark.hu/en.php>) is open six days a week. They have regular interpretive programs, which include public talks, planetarium shows and telescopic observations. There are special full-dome shows about the Park and light pollution.

Besides the significant role of the visitor centre in public outreach, the Duna-Dráva National Park Directorates, the Hungarian Astronomical Association and other NGOs still and continuously

organise joint events in the Park. In addition to the monthly walks held by the staff of the visitor centre, the National Park arranged two additional stargazing walks. The visit of school groups in the Park has become a standard event due to the help of the visitor centre. Reports about the research project and the planned lighting remodelling appeared in Hungarian newspapers, radio and television programmes.

Our presence in the “Soul of Zselic Festival” has become a tradition, in 2018 we presented a program on light pollution, nights-cape photography and connections to arts.

October 01, 2018

Zoltán Kolláth



*The venue of the international measurement workshop held in April 2018. The rising Milky Way was clearly visible, and the zenith sky luminance reached 21.9 mag/as<sup>2</sup> during the event.*