Hortobágy National Park
- a proposed Dark Sky Reserve in Hungary

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Darksky 2008 - 8th European Symposium for the Protection of the Night Sky
August 22-23 - Kuffner Observatory, Vienna, Austria
Conferences about light pollution in Hungary

Pécs, 27. October 2006.

2004
- Proposal for the legislation
- Recommendations for lighting standards
- National declaration about light pollution
- Press conference (wide publicity)

2006
- Proposal for establishing a Dark sky preserve in the Zselic LPA
- Cooperation agreement between the Duna-Dráva National Park Directorate and the Hungarian Astronomical Society
- Awareness campaign
Further progress

- Media (tv, public radio, newspaper) interest
- Light pollution website (http://fenyszennyezes.csillagaszat.hu)
- Conferences, workshops, articles
- National Environmental Program 2009-2014
- Management Plans of the protected areas
  - 35. § (1)
    new d) section:
    *In protected areas (nature reserves, landscape protection areas, national parks) the fixed artificial outdoor lightings must be designed and operated on a way not to disturb, endanger or deplete wildlife species which are protected and are subject of community interest (Natura 2000).*
The Hungarian protected area network (national parks, wildlife reserves) almost overlaps with the dark-sky areas – according to the satellite evaluation (P. Cinzano). This fact indicates their mission in protecting dark skies as nature conservation is deeply interrelated with protecting the natural landscape - naturally the nocturnal landscape is an important part of it.
The Hortobágy National Park is one of the darkest areas in Hungary, which is a good candidate to be the second national “Dark Sky Reserve”. Its significance is mostly related to the protection of the high biodiversity.
The Hortobágy National Park – the biggest Hungarian biosphere reserve (82000 hectares), part of the World Heritage - has mainly dry, mostly alkaline grasslands, and has also wet-marshy habitats (Ramsar site), both forming a peculiar mosaic-structured natural habitat-place.
„Where the Earth and Sky meet.”
The park’s significance is firstly due to the great number of nesting - and during autumn and springtime – migrating and resting bird species.

The diversity of the insect fauna is also very high. Both need dark skies!
Why Hortobágy?

- One of the less light polluted area in Hungary – it is „simply” enough to conserve the recent status

- Big and continuous nature conservation area – it is already protected

- Part of the world heritage and has several other designations (biosphere reserve, Ramsar site, Natura 2000 site, etc.)

- Protection of wildlife and landscape values needs to conserve the natural night environment
What are the benefits?

- Protection of wildlife and the natural landscape
- Protection of the starry sky – events, camps, star parties, astronomical observations, beauty of the sky
- Awareness campaign, education
- Ecotourism
Definition of International Dark Sky Reserve:

An International Dark Sky Reserve is a public or private land possessing an exceptional or distinguished quality of starry nights and nocturnal environment that is specifically protected for its scientific, natural, educational, cultural, heritage and/or public enjoyment mission of a large peripheral area.

The International Dark Sky Reserve consists of a core area meeting the minimum criteria for sky quality and natural darkness, and a peripheral area that supports dark sky values in the core and while receiving similar benefits. The International Dark Sky Reserve is formed through a partnership of multiple land owners and/or administrators that have recognized the value of the starry night through regulations, formal agreements, and long term planning.

La Palma declaration

10 Sites included in the World Network of Biosphere Reserves, Ramsar Wetlands, World Heritage Sites, National Parks, and all those protected areas which combine exceptional landscape and natural values relying on the quality of their night sky, are called to include the protection of clear night skies as a key factor strengthening their mission in conserving nature.
International Darksky Association’s recommendations

- Lighting regulation – night sky friendly lighting fixtures
- Management plan, zoning
- Cooperation with the other stakeholders
- Monitoring
- Education
Establishing the dark sky reserve

The plan of establishing the dark sky reserve is included to our new development plan (2009-2014).

Protection of the dark sky, and its zoning regulations will be included to the management plan of the National Park.

We plan to negotiate with the mayors of the neighboring villages, and to sign an agreement, to include a night sky friendly lighting code in their regulatory plans. In this agreement the Lighting Society of Hungary will be involved, too.

Inside the Park there is only a limited volume of artificial light source. The outdoor lighting fixtures are related to the traditional grazing facilities and the fishing company. During a renovation and extension of these buildings the lighting system will be replaced with a night sky friendly system.

Sky quality and biomonitoring (application for the Norwegian fund). We have started the monitoring of the night sky background in the region with sky quality meter (SQM). We will construct a detailed light pollution map of the Park and its neighborhood. Our preliminary results suggest that on clear nights the quality of the sky is better than 21 magnitudes per square seconds. It is estimated that the requirements of IDA for dark sky reserves will be satisfied within a year, and the Hortobágy National Park will be nominated as a silver level dark sky reserve.

Establishing a public observatory and a „starry night nature trail” for educational purposes of the benefits of the dark skies (gives information on astronomy, light pollution and the nocturnal habitat of local species). Astronomical events, star parties.
Monitoring I.

Sky background measurements in the Hortobágy region.

The average brightness of the night sky around the zenith was measured by an Uniherdon Sky Quality Meter (+GPS).

The sky brightness is given in magnitudes per square arcsecond.
Monitoring II.

Light pollution monitoring using digital camera (DSLR)

Like the US National Park Service’s night sky program
(Evaluation made by Dr. Zoltan Kollath)
Monitoring III.

Biomonitoring of the effects of light pollution on nocturnal insects using traps on existing lighting fixtures.
Education

The „Fecskeház” Field Study Center”
Development of the „Fecskeház” Field Study Center
Some results

- Turning off the fishing company’s lights
- Prevention of setting up new lighting on the road No 33 at the “Nine hole bridge”
- Elimination of electric open wire-lines
Eliminated power lines in 2007-2008
Thank you for your kind attention!