HOW TO REDUCE THE ECOLOGICAL IMPACTS OF LIGHTING

The Bat Conservation Trust states that smarter lighting, rather than less lighting, is key to mitigating the effects of light pollution. Light should only be erected where it is needed, illuminated during the time period it will be used, and at levels that enhance visibility. Any bare bulbs and any light pointing upwards should be eliminated. The spread of light should be kept near to or below the horizontal. Narrow spectrum bulbs should be used to lower the range of species affected by lighting and light sources that emit ultra-violet light must be avoided. Reduce the height of lighting columns as light at a low level reduces ecological impact. For pedestrian lighting, low level lighting that is as directional as possible should be used and below 3 lux at ground level (preferably 1 lux).

For Solutions use

- Light shields
- Tree screening/vegetation to prevent light spillage onto water
- Passive infrared (PIR) sensors and use Controlled management systems (CSM) to switch off the lights when not being used. When designing lighting, start at the feature (the river) and work backwards with 0 lux at the feature. This may mean using low transmittance glass on windows, sensors and vegetation screening.

Sports Facilities – Sports pitches are often considered the most suitable disposal for floodplain land as these areas cannot be developed for housing. This often means that floodlights will have a major impact on riverside habitats as well as the water body, where there are no users of that light. Shields can be retro-fitted to lights and full cut offs are displayed on this sports pitch light. However if bat surveys indicate these areas to be good foraging area for bats then light curfews should operate during the summer months

Politely Inform – Tell the owners of intrusive lighting who may not realise the extent of light spillage from their property. After showing major retailers operating along the river at in Kingston the impact of their lights, they were very keen to modernise their technology. The message needs to reach other riparian residents along the river, which is a purpose of the leaflet. By sending this leaflet to planning authorities when external lighting is proposed along London's rivers, it may increase the thought that accompanies the proposals.

Urban gradient – The extent of urbanised land is increasing, which could have a negative impact on habitat quality and wildlife corridors. Studies show that activity of pipistrelles (our most common bat species) is reduced in areas where the proportion of built surface exceeds 60%. Protecting and establishing tree networks and river corridors may improve the resilience of some bat populations to urbanisation. If we don't switch lights off we may be rendering parts of London's rivers no longer suitable as wildlife corridors.

CASE STUDY – WARREN FOOTPATH IN TWICKENHAM

The Thames Landscape Strategy implemented a lighting system designed at 20 lux ambient light level (lower than the standard 55 lux) with LEDs at 30 watts (streetlights are normally about 70 watts). Dimming regimes were installed and individual lights dimmed to the lowest level, when the lamps were not in use. The system works because it is dynamic in nature and spillage can be directed away from the features used by bats, i.e. the vegetation and water remain dark. This broad spectrum light however can still be seen by bats and will alter their behaviour. A study in the Netherlands is experimenting with narrow spectrum light which may have less of an impact on bats though may not suit all human situations where colour definition is needed.

FURTHER INFORMATION

- http://www.cpre.org.uk
- http://www.batsandlighting.co.uk/
- http://www.lbp.org.uk/downloads/Publications/Management/lighting_and_bats.pdf
- http://www.bio.bris.ac.uk/research/mammal/bats.html
- http://www.bats.org.uk/pages/bats_and_lighting.html
- http://www.furesfen.co.uk/bats_and_lighting.pdf
- http://wrg.co.uk/uploads/article948/Bat%20Report%20Appendix%20C.pdf
- http://www.britastro.org/dark-skies/
- http://www.energysavingtrust.org.uk
- http://www.cpre.org.uk
- http://www.rcep.org.uk/reports/sr-2009-light/documents/RCEP_artificiallight.pdf
- http://www.cpre.org.uk/what-we-do/countryside/dark-skies/in-depth/item/1676-light-pollution-maps-where-you-live?
- http://www.need-less.org.uk/

This leaflet has been produced by the Richmond Biodiversity Partnership and funded by Richmond Council. Text by A. Fure and P. Briggs. Photographs by A. Fure, J. Wedd, P. Waring and Daubenton bat courtesy of Hugh Clark/ BCT

Please contact us if you need this in Braille, large print, audio tape, or another language on 0845 612 2660.

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اگر در فهمیدن این نشریه مشکلی دارید لطفا به میز پذیرش در آدرس قید شده در زیر مراجعه نمایید تا ترتیب ترجمه تلفنی برایتان فراهم آورده شود:

إذا كانت لديك صعوبة في فهم هذا المنشور، فنرجو زيارة الإستقبال في العنوان المعطى أدناه حيث بإمكاننا أن نرتب لخدمة ترجمة شفوية هاتفية.

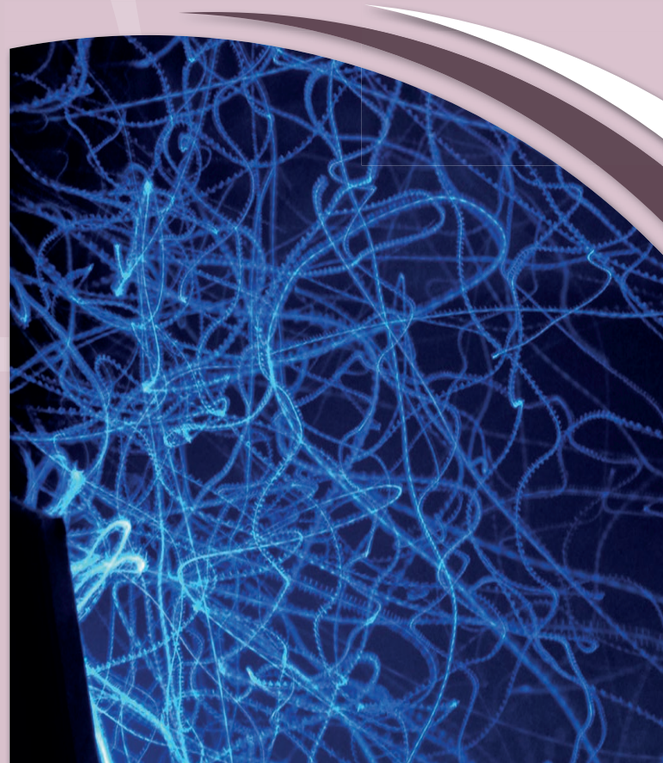
ਜੇਕਰ ਤੁਹਾਨੂੰ ਇਸ ਪਰਚੇ ਨੂੰ ਸਮਝਣ ਵਿਚ ਮੁਸ਼ਕਲ ਪੇਸ਼ ਆਉਂਦੀ ਹੈ ਤਾਂ ਹੇਠਾਂ ਦਿੱਤੇ ਗਏ ਪਤੇ ਉੱਪਰ ਰਿਸੈਪਸ਼ਨ 'ਤੇ ਆਓ ਜਿੱਥੇ ਅਸੀਂ ਟੈਲੀਫ਼ੋਨ ਤੇ ਗੱਲਬਾਤ ਕਰਨ ਲਈ ਇੰਟਰਪ੍ਰਿਟਰ ਦਾ ਪ੍ਰਬੰਧ ਕਰ ਸਕਦੇ ਹਾਂ।

THE ROYAL PARKS

RICHMOND BIODIVERSITY PARTNERSHIP

LONDON BOROUGH OF RICHMOND UPON THAMES

Rivers & Light Pollution



RIVERS AND LIGHT POLLUTION

Richmond and Kingston are both very important boroughs for bats in London, with ten of the 18 UK species known to be present. Bats are an important but threatened part of our environment. The large areas of green space in these boroughs contain features such as mature woodland and water bodies that provide excellent roosting and foraging habitat for bats and other wildlife. However, as elsewhere in London and the rest of the UK, these important habitats are at risk of degradation and fragmentation due to the constant pressure of development, with increased lighting being a particular problem for bat populations. This is a major issue along the river Thames, which is used for foraging and commuting by a wide range of bat species, but due to ever increasing lighting this important dark corridor is becoming more and more fragmented. This poses a major threat to the survival of bats.

WHAT IS LIGHT POLLUTION?

The Institute of Lighting Professionals (ILP) states that lighting should be used when needed and where necessary. This means when employing lighting, a user who will benefit from the lighting should be identified and present when the lighting is on. Where there is no user present – this is light pollution.

A key use of lighting is to improve security, but a blanket use of security lighting could lead to anti-social behaviour especially where there is no observer to see a breach of security. This is a problem along waterways, as addressed by guidelines issued by the Metropolitan Police and British Waterways which state, 'encouraging access to the waterway after dark may increase levels of criminal activity that would not otherwise occur. Lighting should be used to draw pedestrians away from urban watercourses at night'. From 1993 to 2000 light pollution in England increased by a quarter (26%) and the amount of light-saturated night sky rose to 7%. Councils spend a collective £532 million on street lighting each year and the lights can account for around 5-10% of a council's carbon emissions.

IMPACTS OF LIGHTING ON BATS

Bat movement – Bats such as the Daubenton's bat use river corridors to move to their foraging areas and roost sites. Light pollution causes fragmentation of the corridors and inhibits movement. Bat retinas are specifically adapted for low light conditions.

Light at a roost – Bats often roost together during the day in buildings. Ensure a bat survey is undertaken on buildings with a high potential for bats before erecting external lights, or you might affect an existing bat roost. This will include any building near water. Illumination near to a roost can have a bad effect on bats. It can affect the size of young and the ability to survive hibernation. Don't bother putting up bat boxes near lights.

Insect prey – Insects form the basis of bat prey. They are also important for all bird species in order to feed their young. Insects can be attracted to light. Lamps with a high ultraviolet (UV) content can "hoover" up to 75% of the insects from a habitat. This is called the vacuum effect. Around one third of these insects will die.

LIGHTING ALONG WATERWAYS

Designation – Most rivers in the London region are designated as wildlife corridors. The Thames as a Site of Metropolitan Importance for Nature Conservation (SMINC) has the highest designation. Yet throughout the night it receives wasted and unwanted light pollution from residential and commercial properties.

Accent/uplighting/vanity lighting – Light from these buildings spills more than 200 metres onto the river Thames and the vegetation lining Barge Walk. Light affects the wildlife corridor, illuminates the water, and the tree canopies that only bats (and other wildlife) are using.

ECOLOGICAL IMPACTS OF LIGHT POLLUTION

The Royal Commission on Environmental Pollution, led by Sir J. Lawton (2009), reported on the nuisance caused by badly designed lighting and the effects of artificial light on nature and ecosystems. It stated that lighting could be removed from urban parks. The commission concluded that there was a need for government to recognise that artificial light in the wrong place at the wrong time is a pollutant, which can harm the natural environment.