

ARTIFICIAL LIGHTING AND GREATER HORSESHOE BATS

DEVON
GREATER
HORSESHOE
BAT PROJECT

This document is aimed at domestic property owners and small businesses who are considering adding lighting, or are concerned about new lights. If you are planning a development then you should seek advice from lighting experts and ecological consultants to assess the impacts this may have on bats.



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Why are bats important?

Bats have an important role to play in showing the health of our environment. As all British bats are insect eaters they can provide 'pest control' but having a healthy bat population shows that there are lots of insects around. This gives an indication of the condition of the wider local environment. i.e. lots of bats is a good thing!

Why are bats light sensitive?

Bats are nocturnal mammals, meaning that they are active at night mainly as a means of avoiding predators. They are adapted to very low light levels, therefore artificial light in their environment can be extremely disturbing and cause them a number of negative impacts. In particular this affects the slower flying species such as greater and lesser horseshoe bats, long-eared bats, the *Myotis* bats and *barbastelle*. Impacts can vary depending on where the light is, the type of lighting and how bright it is. Significant impacts have been recorded from lit areas of 3.6 lux or lower (Stone et al. 2012) and some bat species have been found to avoid coming out when there is a full moon (0.2 lux) (Emery 2008).

What are the potential impacts?

If light is added to a roost entrance:

- It can delay emergence time (Downs et al. 2003), which can impact on the amount of time to hunt for food (greatest insect activity is around dusk)
- It can cause bats to abandon or even become entombed within the roost (Packman et al. 2015)

If light is shining on or adjacent to commuting routes or feeding grounds (rivers, hedgerows, woodland edges):

- It can cause bats to abandon certain feeding areas by creating a barrier to movement along the commuting route (Stone et al. 2013)
- It can cause insects to be attracted to certain types of light (with UV content), providing a feeding advantage for light opportunistic bats (such as the faster flying *Pipistrellus* species), as well as drawing insects from adjacent areas, so that light sensitive species have fewer insects to feed on, creating a 'vacuum effect'

There is also some evidence to suggest that artificial lighting can cause reduced juvenile growth rates reducing the chances of survival (Duvergé et al. 2000).



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**Funding raised by
The National Lottery**
and awarded by the Heritage Lottery Fund



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What is the legal position?

In England it is illegal to disturb bats in their roost, damage or destroy a roost even if no bats are present and to obstruct access to a roosting place (The Conservation of Habitats and Species Regulations 2017 and the Wildlife and Countryside Act 1981 (as amended)).

It is possible that artificial lighting can cause all of these offences, whether deliberate or not, and therefore care must be taken when planning the addition of artificial lighting at known roost sites. Under the same regulations it is also an offence to disturb bats in a way that would significantly affect local distribution and abundance or affect their ability to survive, breed or rear young. Artificial lighting which restricts bats' ability to access feeding grounds could cause this offence and therefore consideration needs to be made on how bats use the wider landscape where artificial lighting is being added.

Under planning laws the Local Planning Authority has a duty to protect biodiversity and can therefore ask for compensatory works to prevent loss of commuting and foraging habitat if this is deemed necessary. If a bat roost is affected by development works, an appropriately licensed ecologist must be employed to apply for and obtain the necessary licences from Natural England before work commences. For more information on bats and the law please go to http://www.bats.org.uk/pages/bats_and_the_law.html.

In addition the Greater Horseshoe Bats in the South Hams (comprising 6 roosts designated as SSSI's) form a complex of sites which are designated as a Special Area of Conservation (SAC) under European law. This means that any activity which has the potential to impact on the species at a population level will need to follow Habitats Regulations procedures. This also covers important habitats used by the SAC bat population including commuting and foraging habitats as well as roosts. It is accepted that introduced light levels in this area which have the potential to impact on the SAC features should be no more than 0.5 lux. For more information on the South Hams SAC please go to <http://www.devon.gov.uk/core-doc-y1-greater-horseshoes-bat-consultation-zone-planning-guidance.pdf>.

What can you do to minimize the impacts of artificial lighting where it is deemed necessary?

Day-to-day lighting issues

- Use only the amount of light needed for the task
- Only have lighting on when required/use a timer/trigger
- In addition install and/or maintain barriers (hedges/fences) to stop light spill onto commuting or foraging areas

If you are planning to change any aspect of lighting, or are planning building works to the property

- Take expert advice from a lighting engineer and ecologist at the start of any project where artificial lighting may impact bats, they can ensure:
- Only the amount of lighting needed for the task is used
- Lighting is only on when required (use of a timer/trigger may be appropriate)
- Light spill is reduced by correctly positioning lights to combat horizontal spread
- Roost entrances/exits are not lit nor are commuting routes to and from them
- Valuable bat habitats such as rivers, ponds, lakes, meadows etc. are not lit
- Consider whether the same effect can be achieved by a different means e.g. using reflective street signs rather than lit signs.

- As a last resort, and in addition to the above, install barriers(hedges/fences) to stop light spill onto commuting or foraging areas – if hedges are to be planted, then consider a temporary fence until the hedge has matured

What can you do if you think lighting is an issue?

If the lights are not directly impacting a roost

- Contact the person who the light belongs to and share this lighting guide
- If you think that the lights required planning permission, then please contact your local planning authority
- If you are concerned about lighting more generally consider talking to your local town/parish council and try to get lighting included in the neighbourhood plan

If the lights are directly impacting a roost

- Contact your local police force and report it as a wildlife crime - make sure you get a crime number. Please also contact the Bat Helpline on 0345 1300 228 who can provide further help and advice

References

- Bat Conservation Trust (2009) *Bats and Lighting in the UK: Bats and the Built Environment Series*
- Bat Conservation Trust (2014) *Artificial Lighting and Wildlife, Interim Guidance: Recommendations to help minimize the impact of artificial lighting*
- Downs, N. C. et al (2003) *The effects of illuminating the roost entrance on the emergence behaviour of Pipistrellus pygmaeus*. Biological Conservation 111, 247-252
- Duvergé, P. L., G. Jones, J. Rydell & R. D. Ransome (2000). *The functional significance of emergence timing in bats*. Ecography 23, 32-40
- Emery, M. (2008) *Effect of Street Lighting on Bats Urbis Lighting*
- Packman, C., Zeale, M., Harris, S. & Jones, G. (2015). *Management of bats in churches – a pilot*. English Heritage Research Project: 6199
- Stone, E.L., Jones, G., Harris, S. (2012). *Conserving energy at a cost to biodiversity? Impacts of LED lighting on bats*. Glob. Change Biol. 18, 2458–2465
- Stone, E.L. (2013) *Bats and Lighting: Overview of current evidence and mitigation* University of Bristol, UK

Further Information

- <https://www.theilp.org.uk/home/>
- <http://www.bats.org.uk/>
- <http://www.britastro.org/dark-skies/>
- <http://www.southdevonabn.org.uk/our-work/active-projects/completed-projects/reducing-light-pollution>

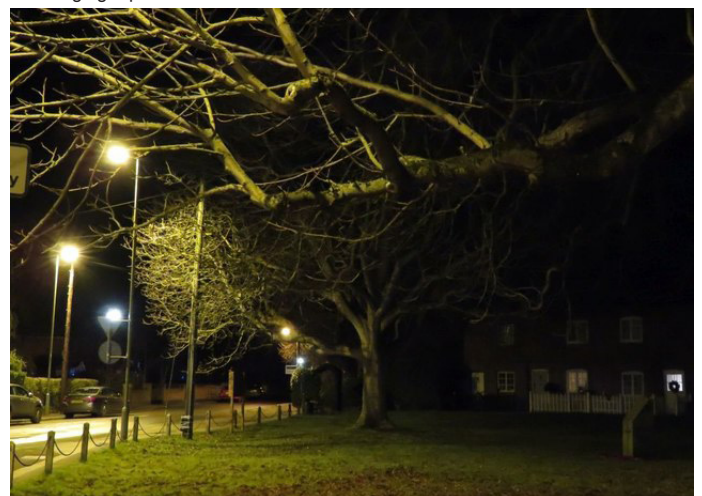


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