

Early life exposure to artificial light at night affects the physiological condition

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Behavioural Ecology and Ecophysiology

Research questions

- What are the effects of early life exposure to light pollution?
- How does artificial light at night affect immunity, health, and physiological condition?
- How does artificial light at night affect body mass, haptoglobin (Hp), nitric oxide (Nox) and oxidative status?



Fig.1: Great tit nestling



Fig.2: Great tit nestlings in nest box

Study methods



- Experiment, light inside nest box, paired design (control and light exposed nestlings) and within-individual measurements
- Body mass measured and small blood samples taken from great tit nestlings (*Parus major*)
- Laboratory analyses on physiological parameters, haptoglobin, nitric oxide and oxidative status



Fig.3: Nestlings are taken out of the nest box (a) and put inside a bag (b, c) until a small blood sample (d) and their body mass is taken (e)

Results

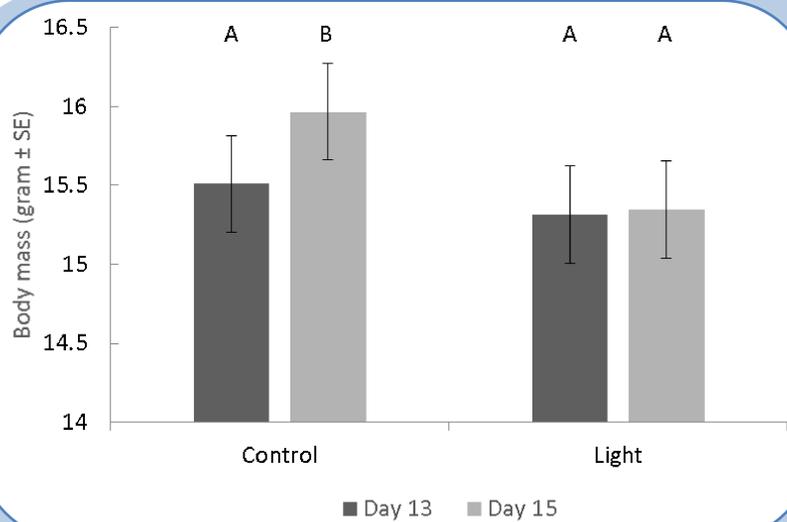


Fig.4: Light exposed nestlings do not gain body mass

Light exposed nestlings:

- did not gain any body mass
- had increased Hp and decreased NOx levels
- but showed no changes in oxidative status

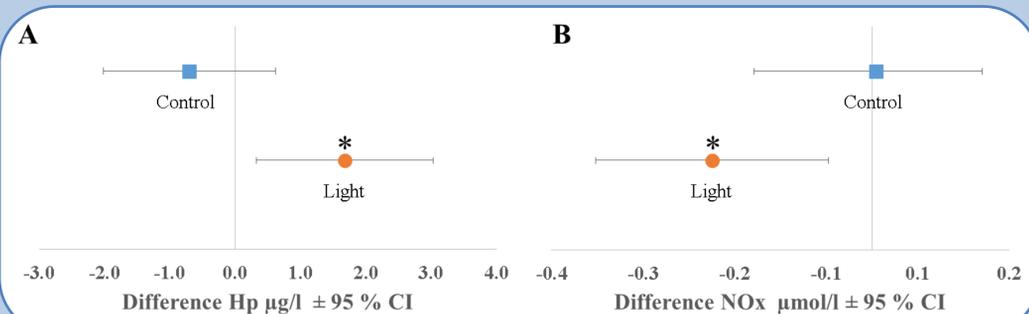


Fig.5: Light exposed nestlings had increased Hp and decreased NOx

Artificial light at night could have adverse consequences lasting throughout adulthood

- Raap, T., et al., Early life exposure to artificial light at night affects the physiological condition: An experimental study on the ecophysiology of free-living nestling songbirds, *Environmental Pollution* (2016), <http://dx.doi.org/10.1016/j.envpol.2016.08.024>
- Raap, T., et al., Light pollution affects body mass but not oxidative status in free-living nestling songbirds: an experimental study



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