

To protect threatened bat species, street lights out

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Slow-flying, woodland bats -- which tend to be at greater risk from extinction than their speedier kin—really don't like the light, according to a study published online in *Current Biology*, a Cell Press publication. Lesser horseshoe bats will stray from their usual flight routes to steer clear of the artificial glow from lights that are similar to everyday street lights, the new report shows.

The echolocation [bats](#) depend on to navigate their way in the dark doesn't help them much when it comes to spotting potential predators, said Gareth Jones of the University of Bristol.

"Bats are not well adapted for detecting predators, and they are vulnerable to attack from birds of prey if they fly in lit conditions," Jones said. "Indeed, predator avoidance is probably the main reason why bats are nocturnal." Slower species, like the lesser horseshoe bat in particular, "are very vulnerable to predators, and emerge in very dark conditions. They seem to be hardwired to avoid light."

In the new study, PhD student Emma Stone installed high-pressure sodium lights that mimicked the intensity and light spectra of street lights along commuting routes of lesser horseshoe bats. The research team found that bat activity in those areas declined dramatically. The bats also delayed their commutes in the presence of lighting, with no evidence for habituation.

While the results did not come as a particular surprise, the researchers

were taken aback by the magnitude of the effect.

The researchers suspect that the majority of bats selected alternative routes in response to the disruption of their preferred commute. If those detours led bats to suboptimal terrain in terms of quality or distance to feeding grounds, the animals may suffer significant consequences. For instance, alternate routes may provide reduced shelter, leaving bats, and particularly slower juveniles, at greater risk of predation. They might also leave them more exposed to the elements, such as wind and rain. Longer flight distances would also come with energetic costs.

The findings highlight the importance of adopting species-specific approaches to understanding the consequences of artificial [light pollution](#), the researchers said, noting that some fast-flying bats are actually attracted to lights because of the bugs that swarm them. "Conservation consequences are likely to depend on factors such as predation risk, and will vary according to light type, environmental, and site-specific characteristics," the researchers wrote. "Yet light pollution is rarely considered in habitat management plans and street lighting is excluded from English and Welsh light pollution legislation. This study provides evidence that light pollution may force bats to use suboptimal flight routes and potentially causes isolation of preferred foraging sites, and therefore must be considered when developing conservation policy."

Although questions remain, Stone said she expects that win-win compromises may be possible. "We really need to know what levels of lighting particular bat species can tolerate, and mitigate appropriately," she said. Possible mitigation measures might include turning the lights down at commuting times, directing lights away from flight routes, and constructing alternative flight paths.

Source: Cell Press ([news](#) : [web](#))

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