



Noise pollution affects pollination and chances of seed germination

A study on the effects of noise pollution from natural gas wells in the US reveals that it may have reduced the number of young trees growing locally by changing the types of animals that visit the area. However, in the same woodland environment, flowering plants pollinated by hummingbirds seem to benefit from the noise.

Noise pollution caused by traffic and machinery is recognised as a significant human health problem, with noise levels likely to increase in the future. Effects on specific species of animals and plants are also known, but our understanding of the wider effects of noise on ecosystems and biodiversity is limited. While some species avoid noisy areas, possibly because noise interferes with communication or their ability to find prey, others may seek refuge in noisy areas because there is a lack of predators or competing species.

The researchers compared pollinating and seed foraging behaviour – as well as the number of new seedlings – at noisy and quiet sites in an area of New Mexico, USA. The study area contains woodland, composed largely of piñon (a type of pine) and juniper trees, and natural gas wells are spread throughout. Some wells have noisy compressors that run constantly at around 95 dB(A), which were used as 'noisy' sites. Wells without compressors were used as 'quiet' sites.

The results demonstrate that the effects of noise within a given habitat can be complex. The researchers found four times as many piñon seedlings growing at quiet sites compared to noisy sites. However, the reasons behind this difference were unclear.

Seed scattering experiments and observations suggest that the noise had changed the community of animals that collect, store and eat seeds in these areas. For instance, they saw more deer mice at the noisy sites, and collections of seeds by western scrub-jays were only found at the quiet sites. As the mice eat most of the seeds they collect – either immediately or after hoarding them – their increased presence at noisy sites may have reduced the number of piñon seeds that germinate. Scrub-jays also hoard seeds, although many are not eaten, so can germinate to produce seedlings.

On the other hand, pollination of flowering plants by hummingbirds appeared to increase in noisy areas. The researchers created patches of artificial flowers, designed to mimic scarlet gilia, filled with a sugary solution to attract black-chinned hummingbirds and different coloured fluorescent powders to trace how the birds transferred pollen between flowers. The birds visited noisy flower patches more often, and pollination within and between noisy patches was more common. The results are supported by other research suggesting that black-chinned hummingbirds are more likely to visit and nest in noisy areas.

In the EU, environmental noise pollution is monitored and controlled by Member States under the Environmental Noise Directive¹. Although the focus of noise mitigation is on reducing human health impacts, changes to noise levels also have important consequences for ecosystems and the species that inhabit them.

1. <http://ec.europa.eu/environment/noise/home.htm>

Source: Francis, C.D., Kleist, N.J., Ortega, C.P. and Cruz, A. (2012). Noise Pollution Alters Ecological Services: Enhanced Pollination and Disrupted Seed Dispersal. *Proceedings of the Royal Society B*. DOI: 10.1098/rspb.2012.0230.

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