

Frog and Lizard in the City

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At the end of this century, the world's population will reach approximately eleven billion. To accommodate for this increase, cities will need to expand, and new settlements will need to be developed. This process is known as *urbanization*. Urbanization has many negative effects on biodiversity – one of the main examples of this is habitat loss. However, within cities, green spaces like parks or gardens can be a substitute for the lost natural habitat.

Many different species have adapted well to urban conditions. In particular, some bird species seem to flourish in our neighbourhoods. However, little is known of the urban lives of the species with strong flight instincts, those who are masters of concealment. Herpetofauna, i. e. amphibians and reptiles, are not well investigated in urban settings. These species are likely to experience more pressure from urbanization due to their particular attributes; for example, both groups have limited mobility and external thermoregulation, i.e. they depend on sources of warmth other than their own body to regulate their body temperature.

Many herpetofauna species are in global decline. Most causes of this decline are linked to human actions such as land development and pollution. Of all challenges to herpetofauna, the largest is habitat loss. Habitat loss affects 92% of all amphibian and 71% of all reptile species in Europe.

This study utilized citizen science in the form of a questionnaire and a refugia survey to gather occurrence information on herpetofauna in private gardens, parks and allotments in the towns of Woodley and Earley, in the United Kingdom. The aim was to pinpoint relevant habitat parameters that favour the presence of amphibians and reptiles. The results therefore aim to show a guideline on how to improve urban habitats for herpetofauna.

This project showed that two parameters are in particular benefiting amphibians and reptiles. First, the larger a patch of suitable land, e.g. the size of a group of connected gardens, the more likely is their presence. This is surprising because their home ranges are relatively small and have not been expected to be significant for their habitat choice. Second, the structural diversity of the land, i.e. the number of different types of natural components like grass, wood or water. An increase in structural diversity of a green patch also increases its attraction for herpetofauna, which reflects their high demands.

On the other hand, habitat isolation in urban settings does not seem to affect the occurrence of herpetofauna. However, isolation might still be important for urban herpetofauna populations. It could just be that the mere distance between habitats isn't important for amphibians and reptiles. Rather, barriers like streets and buildings might be more important.

Further research should therefore concentrate on human built structures as barriers. Furthermore, genetic approaches should be included in studies aiming to identify how far apart urban populations of herpetofauna are in terms of genetic distinctiveness. In conclusion, my findings show that there is plenty of room for improvement in current urban habitats in relation to herpetofauna presence. Households and public green space managers can increase the attractiveness of their semi-natural spaces by making them more diverse. Furthermore, new land developments should try to incorporate larger, rather than separate smaller, green spaces.

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