



SURE Research Publication Service

1) Reference of your publication:

Knapp, S., Winter, M., Klotz, S. (2017) Increasing species richness, but decreasing phylogenetic richness and divergence over a 320 year period of urbanization. *Journal of Applied Ecology*, 54 (4), 1152-1160

2) Hyperlink to the publication:

<http://onlinelibrary.wiley.com/doi/10.1111/1365-2664.12826/full>

3) Abstract:

1. Urbanization is increasing faster than ever, contributing to a global extinction crisis. Recently, scientists have debated whether species richness on local and regional scales is mostly declining, but long-term changes in phylogenetic richness and divergence were largely disregarded. Space-for-time approaches revealed that plant phylogenetic divergence is lower in urban than in non-urban areas. However, such approaches cannot fully disentangle the relative importance of the biotic processes that drive temporal changes in diversity.

2. Using a unique European urban flora covering 320 years in seven time steps, combined with a comprehensive plant phylogeny, we examined (i) how species richness changed with urbanization over time; (ii) whether trends in phylogenetic richness and divergence parallel trends in species richness; and (iii) whether species extirpation or immigration is driving these changes.

3. We found that over time urban species richness increased, but phylogenetic richness and divergence decreased. Extirpations of phylogenetically distinct native species and immigrations of phylogenetically common native and non-native species caused a non-random loss of phylogenetic diversity. Our analyses suggest that if future extirpations and immigrations continue to follow the patterns observed over history, this loss will continue.

4. Synthesis and applications. Measures to protect phylogenetic diversity should combine the protection of threatened habitats and their species with the maintenance of habitats that mitigate heat and safeguard evolutionary history. Urban planners should consider a phylogenetically diverse set of species when designing green spaces.

4) Contact details (Name, affiliation, email address)

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