Figures and figure supplements

Mammal communities are larger and more diverse in moderately developed areas

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Figure 1. The percent of detections for each species of carnivores (left) and herbivores (right) in each development level along the urban-wild gradient in Washington, DC and Raleigh, NC, USA accounting for the effort (i.e. camera nights) within each level, sorted from lowest to highest proportion urban/suburban in DC. The dashed line shows 50% of total detections. Some species were predominantly rural/wild (i.e. bobcats and fox squirrels) while others were mainly detected in urban/suburban habitats (i.e. red fox, raccoon). Patchy distributions at different gradient levels were seen for species at the edge of their ranges (i.e. chipmunks and woodchucks in Raleigh). Urban habitats were not sampled in Raleigh.

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Figure 2. Mean Shannon diversity and total detection rate along a gradient of housing density in two cities, Washington, DC and Raleigh, NC USA taken from camera traps. Bars show 95% confidence intervals, lines are fit using a generalized additive model with a polynomial term. Diversity peaked at intermediate levels of urbanization (exurban in DC and suburban in Raleigh). Total detection rate peaked at the urban level in DC and exurban level in Raleigh.

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Figure 2—figure supplement 1. Rarefaction curves estimating species richness in five development levels (urban, suburban, exurban, rural, wild) in two cities, Washington, DC and Raleigh, NC, USA, using camera traps between 2012 and 2016. Shaded areas represent 95% confidence intervals. DOI: https://doi.org/10.7554/eLife.38012.005
Figure 2—figure supplement 2. Shannon diversity index estimates from camera trapping in two cities, Washington, DC and Raleigh, NC, USA, across five development levels (urban, suburban, exurban, rural, wild). Diversity is separated by four plot types: large forest, small forest, open and residential.

Figure 2—figure supplement 2 continued on next page.
yard. Data were collected using camera traps between 2012 and 2016. Bars show 95% confidence intervals. Urban small forests were not sampled in Raleigh, open areas were not sampled in DC and urban/wild yards, urban open areas and urban large forests were not sampled in either city.

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Figure 2—figure supplement 3. Rarefaction curve estimating species richness in three plot types (residential yard, small forest, large forest) in two cities, Washington, DC and Raleigh, NC, USA, using camera traps between 2012 and 2016. Shaded areas represent 95% confidence intervals. DOI: https://doi.org/10.7554/eLife.38012.007
Figure 3. Comparison of carnivore (i.e. bobcat, coyote, gray fox, red fox) occupancy probabilities at each developmental level in two cities with global values from Rich et al. (Rich et al., 2017), representing 93 carnivores from 13 protected areas on five continents (Global Wildlands). Each box for our dataset represents the distribution of marginal occupancy probabilities for each of four carnivore species in that city (i.e. four probabilities). The boxes for Global Wildlands represent the distribution of marginal occupancy probabilities for 93 species. We found no statistically significant differences between any habitat levels in our study or between our study and global wildland occupancy probabilities but noted a decreasing trend in occupancy from urban-wild. We included only predators from Rich et al. (2017) and removed omnivores (i.e. raccoon, coati) to better reflect our data.

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Figure 3—figure supplement 1. Occupancy estimates from single season occupancy model for four carnivore species (bobcat, coyote, gray fox and red fox) in five development levels (urban, suburban, exurban, rural, wild) in two cities, Washington, DC and Raleigh, NC, USA, using camera traps between 2012 and 2016. Bars represent 95% credible intervals. Uncertainty was high with no significant differences between the habitats for any species.

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