Introduction

Urbanization is changing the face of our planet (Acuto et al. 2018). Today, not only do more people live in urban than rural environments (CITATION), throughout many parts of the world urban areas are expanding at roughly twice the rate of their population size (Angel et al. 2011). This urban expansion – where the built environment is created to accommodate urban populations and their activities – drives global environmental change and threatens biodiversity worldwide (Grimm et al. 2008, Seto et al. 2012). The cumulative effects of urbanization on the planet are made even more astounding given that only a small percentile of Earth’s total land cover is classified as urban (Schneider et al. 2010). As a result, understanding how global and ecological processes change as a function of urbanization has become an increasingly large area of research in the last 50 years (Magle et al. 2012, Fidino and Magle, 2017, SOME OTHER REVIEW).

To study the spatial influence of urbanization on varying processes, research along gradients has proven fruitful. Traditional models of urban growth and subsequent ecological explorations or urban environments were monocentric and assumed urban areas decreased in density in radial concentric circles from their urban core outwards (McDonnel YEAR). Yet, most cities today do not follow such a pattern, as edge cities along the periphery of major metropolitan areas grow.

habitat loss (CITATION),

drive global environmental change (Grimm et al. 2008), and threaten biodiversity worldwide (Seto et al. 2012). This is an impressive feat given that currently only a small percentile of Earth’s total land cover is classified as urban

– the process where the built environment is created to accommodate urban populations and their activities –

And though a small percentile of Earth’s total land cover is classified as urban (CITATION) their influence on glob

The process of urbanization significantly alters ecological processes (CITATION) and threatens biodiversity worldwide (CITATION). Though on

The face of the planet has not only been changed by urbanization (Acuto et al. 2018), but more people live in cities today than ever before (CITATION).

Urbanization is changing the face of our planet (Acuto et al. 2018). On average,

Urbanization – the process where the built environment is created to accommodate urban populations and their activities – occurs at twice the rate of population growth on average (Angel et al. 2011).

Though urban areas Urbanization is changing the face of our planet (Acuto et al. 2018). Though only 10% of the Earth’s total land surface area is classified

To accommodate the current human migration from rural environments to cities has resulted in increased rates of urbanization worldwide (Citation), which in turn si

To meet the demands of an ever-growing urban population, urbanization rates have increased worldwide. only 10% of the Earth’s

The process of urbanization is changing the face of our planet (Acuto et al. 2018). While only 10% of the Earth’s total land surface area is classified as urban (McGranahan, 2005) over 50% of the world’s population now resides cities (CITATION). The migration of humans into cities continues to increase rates or urbanization (CITATION), significantly alter ecological processes (CITATION), and threaten biodiversity worldwide (CITATION). As a result,

With a growing urban population rates of urbanization continue to increase worldwide (CITATION). Consequently, lands of conservation value that were once safely outside a city’s boundary are often become ingrained within a spreading urban landscape and are typically diminished in size (CITATION).

In fact, the cumulative effects of urbanization is transforming the ecology of our planet.

With the expansion of cities protected areas become ingrained within an urban

1. Urbanization is a big and important thing
2. Study along gradients has been fruitful for ecological research.
   1. ‘simpler gradients’ such as impervious cover, housing density
   2. Socio-economic potentially reveal other issues.
3. However, cities are not identical to one another, and therefore revealing trends along an urbanization gradient of one city may not translate to another.
   1. Some of the potential reasons
   2. These differences BETWEEN cities may therefore cause rise to observed differences in how common a species is or where it is located WITHIN a city
   3. The only way to explore this idea is to study gradients OF cities instead of a gradients within a single city.
4. UWIN is a way to answer questions at this scale.
   1. Large-scale and systematic survey, wherein partners follow a common study design (Magle et al. 2019).
   2. The goal of this study was to determine if (1) how densely populated a city is and (2) how much available green space within a city influences how common different species are or where they are located within a city.
   3. We predict that in densely populated cities, wildlife species would become less common and that they would be located within less densely populated portions of a city. Likewise, we predict that wildlife in cities with more greenspace would become more common (observed in more habitat patches) and that this could potentially allow species to be located within more densely populated portions of a city (WHY DO WE REALLY THINK THAT).

METHODS

Study sites

1. (Look at Magle paper and briefly cover this). Maybe talk to Travis about putting together a map that shows the sites but with a housing density layer instead of NLCD data?

Data collection

1. Cameras placed 4 times a year in January, April, July, and October.
2. Put on a tree roughly 1.5 meters from ground, angled in a downward facing direction towards a scented lure nailed to another tree roughly 0.1 meters from the ground.
3. Some cities included data from additional years (maybe a table?)
4. 8 species included in the analysis? DO WE REMOVE ANY?

Analysis

1. Single-season occupancy model
2. To explore differences within and between cities, we used group-mean centering of our single within-city variable.
   1. Math it
   2. Explain why it is useful
3. Write out the model with some math
4. Bayesian framework, lots of iterations, checked for convergence

Results

Discussion

Come up with some really cool unifying remarks about what an analysis of this type teaches us about urban ecology, and steps moving forward.

Schneider, A., Friedl, M. A., & Potere, D. (2010). Mapping global urban areas using MODIS 500-m data: New methods and datasets based on ‘urban ecoregions’. *Remote Sensing of Environment*, *114*(8), 1733-1746.