Urbanization…
as it transforms natural biotic systems into human-dominated landscapes, has become recognized as one of the greatest threats to bird diversity throughout the world.

Urban patterns in bird communities:
• decrease in diversity
• increase in density
• shift in community composition
• human commensals replace native species.

Urban development:
• alters the natural landscape
• creates a mosaic pattern
• has varying landscape designs and vegetation structures

RESEARCH QUESTIONS
1. Does the fine scaled vegetation structure within the residential yards differ between mesic and xeric designs?
2. How do birds respond to different vegetation structures?
3. Does bird community structure differ between mesic and xeric design?

RESULTS

RESEARCH QUESTIONS
• We ran a Discriminant Analysis to partition the fine-scaled vegetation structure in mesic and xeric designs. Drought tolerant trees aligned with xeric yards and broad-leaved and dense canopy trees aligned with mesic yards with a 12% misclassification rate (Figure 3).

Bird Community
• We applied Nonmetric Multidimensional Scaling (NMDS) to display vegetation associations with the bird community. Desert species demonstrated strong associations with drought-tolerant trees while opportunistic and alien species demonstrated strong associations with water-dependent trees (Figure 4).

Habitat Preference
• Eight bird species exhibited significant preferences for particular vegetation structures (p<0.10). For example:
  - The Verdin, a desert specialist, had a preference for neighborhoods with thin-leafed evergreen trees (Linear Regression, p=0.08) (Figure 5).
  - European Starling and Xeric landscape design (ANOVA, p=0.09 and p=0.08, respectively).

CONCLUSION AND FUTURE RESEARCH

Opportunistic and alien species appear to inhabit novel urban environments broadly and may outcompete desert species for resources. For example, the dense canopy of the coniferous trees might provide opportune habitat for generalist species such as the Great-tailed Grackle, whereas desert specialists such as the Verdin, might be unable to adapt to the foreign vegetation structure.

Future studies aim to address the mechanisms and behavioral cues responsible for the distinct bird assemblages within different human-dominated landscapes. If particular landscape designs and vegetation structures support a higher proportion of native bird communities, then development plans could incorporate these designs in future projects.

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