Background

- Cities represent a patchwork of landscape design and social attributes, which can potentially impact biodiversity and human interactions with wildlife.
- Phoenix residential neighborhoods that mimic the desert support a richer native bird community and residents report greater levels of satisfaction with their backyard birds (Lerman and Warren 2011).
- The question remains whether these relationships are stable over time.

Research Questions

1. How have neighborhood satisfaction, residential landscape, and bird diversity changed over time?
2. Has the relationship between residents’ self-reported satisfaction of bird variety and native species richness persisted?
3. What factors best account for variation in Phoenix bird communities?

Methods

- We used data from PASS and field measurements of the bird community to connect two data collection periods: PASS 2 (2006) and PASS 3 (2011).
- Bird Surveys: One point-count per neighborhood (n=39), visited 12 times per PASS survey.

Results

Research Question 1
- The percentage of respondents that were satisfied with bird variety in their neighborhood decreased by 13% between the two time periods (Generalized Linear Model: r=0.45, t_{p}=2.59, P<0.009).
- Bird richness declined by almost 3 species per neighborhood (t-test: t_{n}=7.1, P<0.0001).
- The majority of desert specialists declined in occupancy, generalist and non-native species did not change. Non-native species had the highest percent of species that increased in occupancy (Figure 2).

Research Question 2
- The correlation between neighborhood satisfaction and native species richness was consistent between PASS 2 and PASS 3, but had a weaker correlation(r=0.11, F_{p}=6.14, P<0.02; Figure 3).

Research Question 3:
- Yard type continued to be an important factor in accounting for variation in bird communities (Figure 4).
- Desert specialists were positively associated with xeric landscaping, non-native species were positively associated with neighborhoods containing mesic yards.
- The guild- yard type pattern was consistent between the PASS 2 and PASS 3 survey periods

Research Question 4
- The percentage of respondents that were satisfied with bird variety in their neighborhood decreased by 13% between the two time periods (Generalized Linear Model: r=0.45, t_{p}=2.59, P<0.009).
- Bird richness declined by almost 3 species per neighborhood (t-test: t_{n}=7.1, P<0.0001).
- The majority of desert specialists declined in occupancy, generalist and non-native species did not change. Non-native species had the highest percent of species that increased in occupancy (Figure 2).

Landscape Type

Neighborhood residents self-reported yard type in the PASS surveys was comparable to ecologically measured groundcover (Table 1).

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<th>Model</th>
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Conclusion

- Native species richness, occupancy, and residents’ satisfaction with bird variety all decreased.
- Desert specialists were negatively associated with Mesic yards.
- Patterns were consistent over time.
- By understanding what factors are important for biodiversity we can manage cities in a way that is beneficial for native biota and human well-being.

Acknowledgements

This material is based upon work supported by the National Science Foundation under grant number BCS-1026865, Central Arizona-Phoenix Long-Term Ecological Research (CAP LTER).

References