Quantifying the synergies between human and biodiversity utility in urban greenspaces

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BACKGROUND

- Rapid urbanization is a process characterized by a significant shift of a population from rural to urban areas.
- By 2050, the global urban population is projected to increase from 55% to 68%.
- Urban greenspaces play a crucial role in urban environments due to their role in providing essential habitats to various forms of wildlife, and the enhancement of ecosystem services (e.g., air and water purification, climate regulation, carbon sequestration).

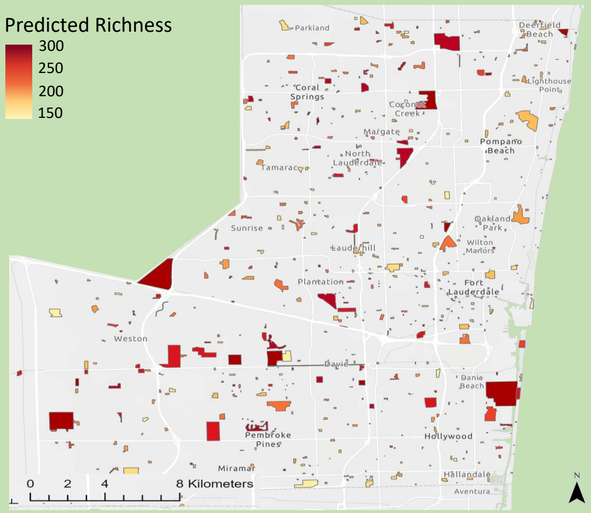


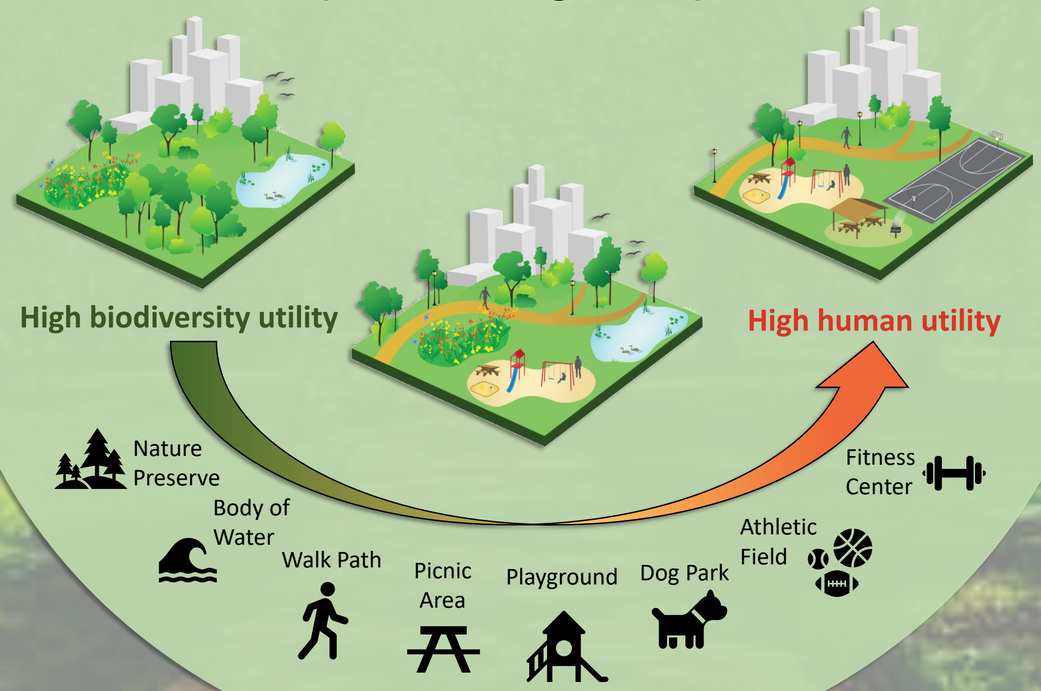
Figure 1. Broward County, Florida, and the 647 greenspaces colored by standardized species richness.

METHODS

- We mapped 647 urban greenspaces throughout Broward County (Figure 1).
- For **human utility**, we defined a list of eight physical characteristics and determined the presence or absence of each variable.
- For **biodiversity utility**, we predicted species richness for a set number of observations for all greenspaces using iNaturalist data.

Key Question:

Are there synergies or tradeoffs between biodiversity and human utility in urban greenspaces?



Key finding: We found no evidence of tradeoffs in biodiversity and human utility, meaning large greenspaces can accommodate diverse values.

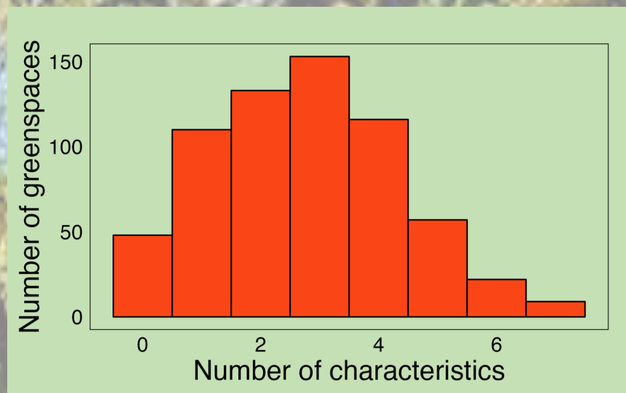


Figure 2. Frequency of the eight physical characteristics

RESULTS

- Human utility was normally distributed across the eight physical characteristics (Figure 2).
- Statistical analysis revealed significant positive correlations between kid's playgrounds, bodies of water, nature preserves, and jog/walk paths with biodiversity utility.
- No evidence of a relationship between biodiversity and human utility, indicating the absence of tradeoffs (Figure 3).

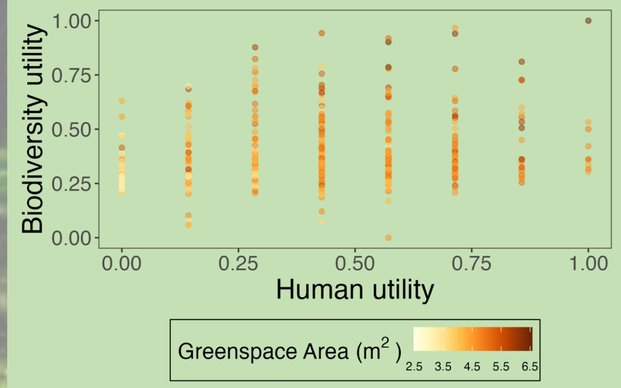


Figure 3. Comparison of human utility and biodiversity utility value by log-transformed greenspace area

CONCLUSIONS

- Both human utility and biodiversity utility correlate with greenspace size, emphasizing the significance of larger greenspaces in accommodating diverse values and use.
- Future work should look to scale-up these results to other parts of the country and leverage big data to quantify both biodiversity and human utility.