THE IMPACT OF PETS ON URBAN POLLINATOR BIODIVERSITY

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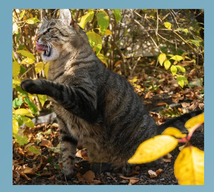


Dog, bee, and cat in a Vermont garden

Background and Motivation:

- As pollinators decline globally, increasing numbers of urban gardeners are creating important insect habitat by growing flowering plants.[1, 2]
- The impact of pets on pollinator gardens has yet to be determined
- People who own pets tend to have a higher opinion of wildlife[3]
- Covid-19 has increased pet ownership[4]
- Many municipalities struggle to balance human (and their potentially off-leash pets) use and wildlife needs in open spaces[5]
- As the most populous animal class, insects stand as a proxy for measuring overall biodiversity.

Hypothesis:

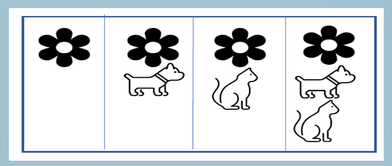
Pets will decrease biodiversity

Prediction:

We predict that dogs will decrease the biodiversity of urban yards by 10%, cats by 15% and both by 20%

Study Design:

- Only yards with flowering plants in ≥50% of the area (as inventoried by a researcher) will be included[6, 7]
- Of those, 10 study sites will be chosen at random from each pet-category

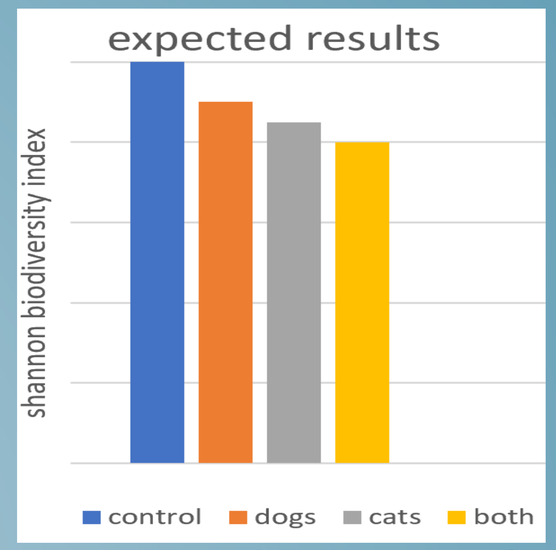


control; dog(s)/; cat(s); both

Blue vane insect trap

- Participants will be given blue vane traps to hang in 50' transects for use monthly from May-October.
- On the last day of each month, participants will replace a used vane traps with new ones, and submit the used ones to the Vermont Atlas of Life where the occurrence and abundance of its contents will be inventoried.

Expected Results:



- We expect to see a decrease in urban yard biodiversity when pets are present
- We anticipate that dogs will decrease diversity by 10%, cats by 15% and both by 20%

Intended Analysis:

- At the end of the 6 month collection period, the biodiversity of each category will be calculated using the Shannon Index and compared to the control
- We assume that the higher the Shannon Diversity Index, the more diverse the quadrat

Management implications:

- We believe measuring the impact of pets on pollinators will give an idea of the impact of pets on wildlife overall and help inform land management decisions.
- Areas for continued study could include replicating this in other urban areas, and extrapolating to wildlife settings

Literature cited:
1) Tommasi, D. et al, (2004). Bee diversity and abundance in an urban setting. *Canadian Entomologist,* 136(6), 851-869.; 2)Van Helden, B.E. et al, (2020). An underrated habitat: Residential gardens support similar mammal assemblages to urban remnant vegetation. *Biological Conservation,* 250 [peer reviewed but not yet copy-edited. doi: 10.1002/fee.1480. 3) Bjerke, T. et al, (2003) Attitudes and activities related to urban wildlife: Pet owners and non-owners. *Anthrozoos* 16(3), 252-262. 4) Szydlowski, M. & Gragg, C.(2020) An Overview of the Current and Potential Effects of COVID-19 on U.S. Animal Shelters. *AIJR Preprints*, 157, version 1.; 5) Booth, A. (2017) Dog eat dog world: public consultation and planning on contested landscapes, a case study of dog parks and municipal government. *Community Development Journal* 52(2), 337-353. 6) Sikora, A, et al (2016) Flowering plants preferred by bumblebees (bombuslatr.) in the Botanical Garden of Medicinal Plants in Wroclaw. *Journal of Apicultural Science* 60(2) 59-67.; 7) Tallamy, D. (2017) Creating living landscapes: Why we need to increase plant/insect linkages in designed landscapes. *HortTechnology* 27(4), 446-452.