Exploring the Synergies Between Biodiversity and Human Use of Urban Greenspaces

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Ecosystem Services of Urban Greenspaces

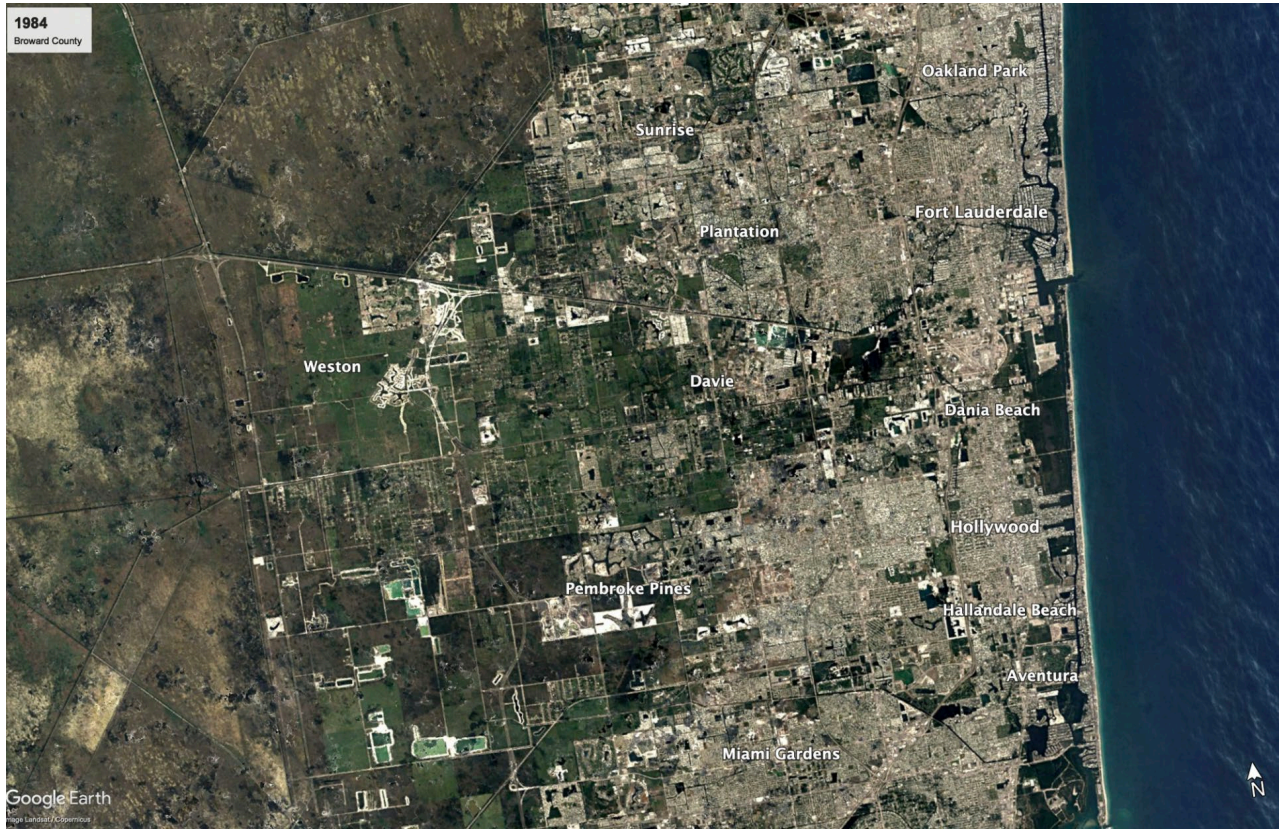
- Urban population is projected to increase from 55% to 68% by 2050
- Provide essential habitats and vital ecosystem services
- Greenspace: Accessible to the community and designated/managed as parks or recreational space

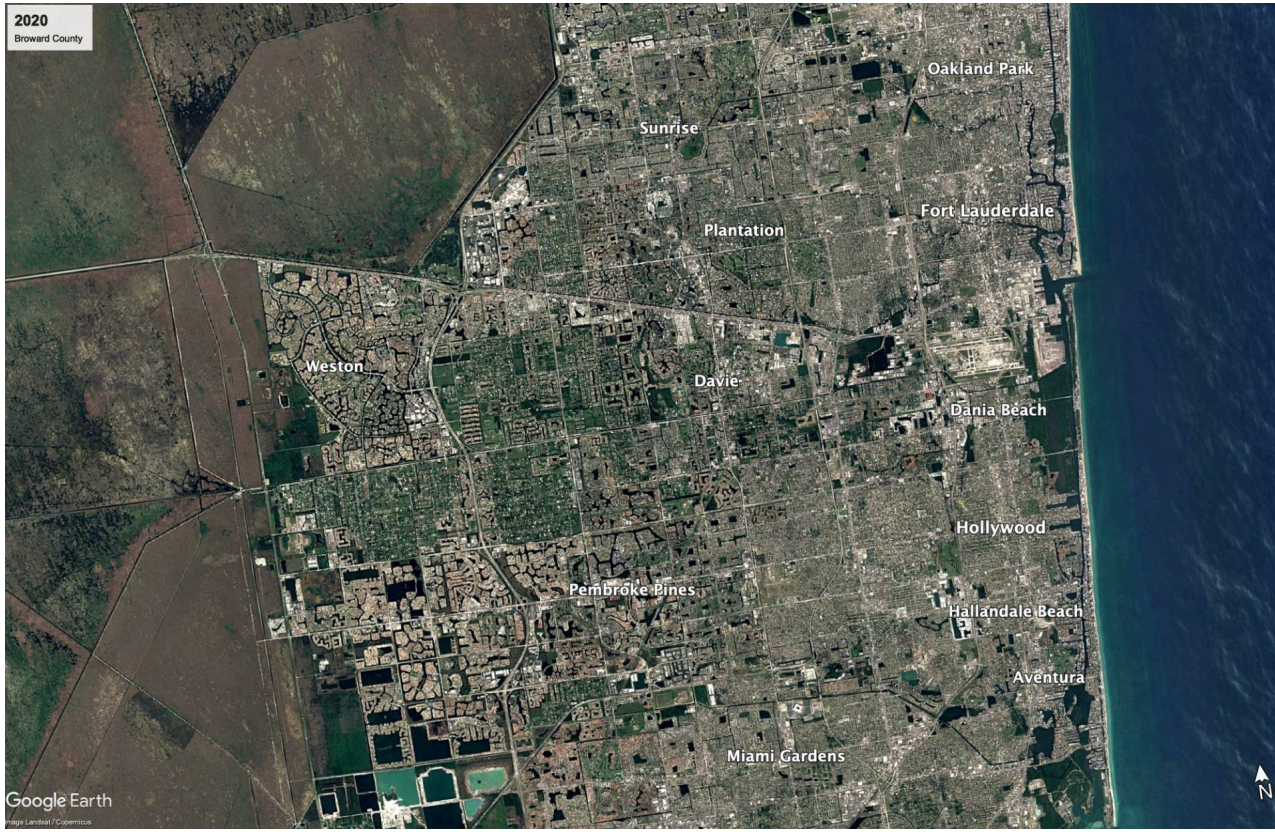
Greenspaces for People

Greenspace planning strategies tend to focus on maximizing the human experience

Greenspaces for Biodiversity

- Habitats for wildlife
- Provide a wildlife corridor





Broward County, Florida

- 2/3 of the county is Everglades
- Unique sub-tropical climate
- Second most populous county in Florida

Research Objective

To quantify the synergies and tradeoffs between human utility and biodiversity benefits in urban greenspaces.

Utility on a sliding scale

High biodiversity utility

High human utility

Nature Preserve

Body of Water

Walk Path

Picnic Area

Playground

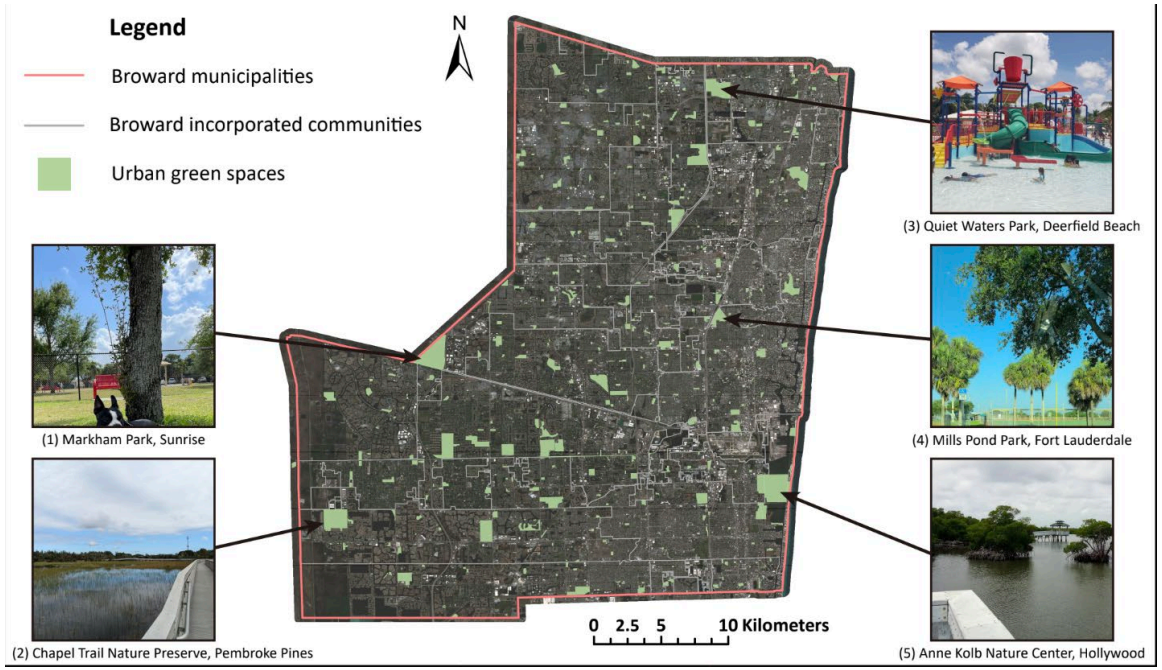
Dog Park

Athletic Field

Fitness Center

Defining Human Utility

- Assessed 639 parks across Broward County
- Human utility index – sum of physical attributes



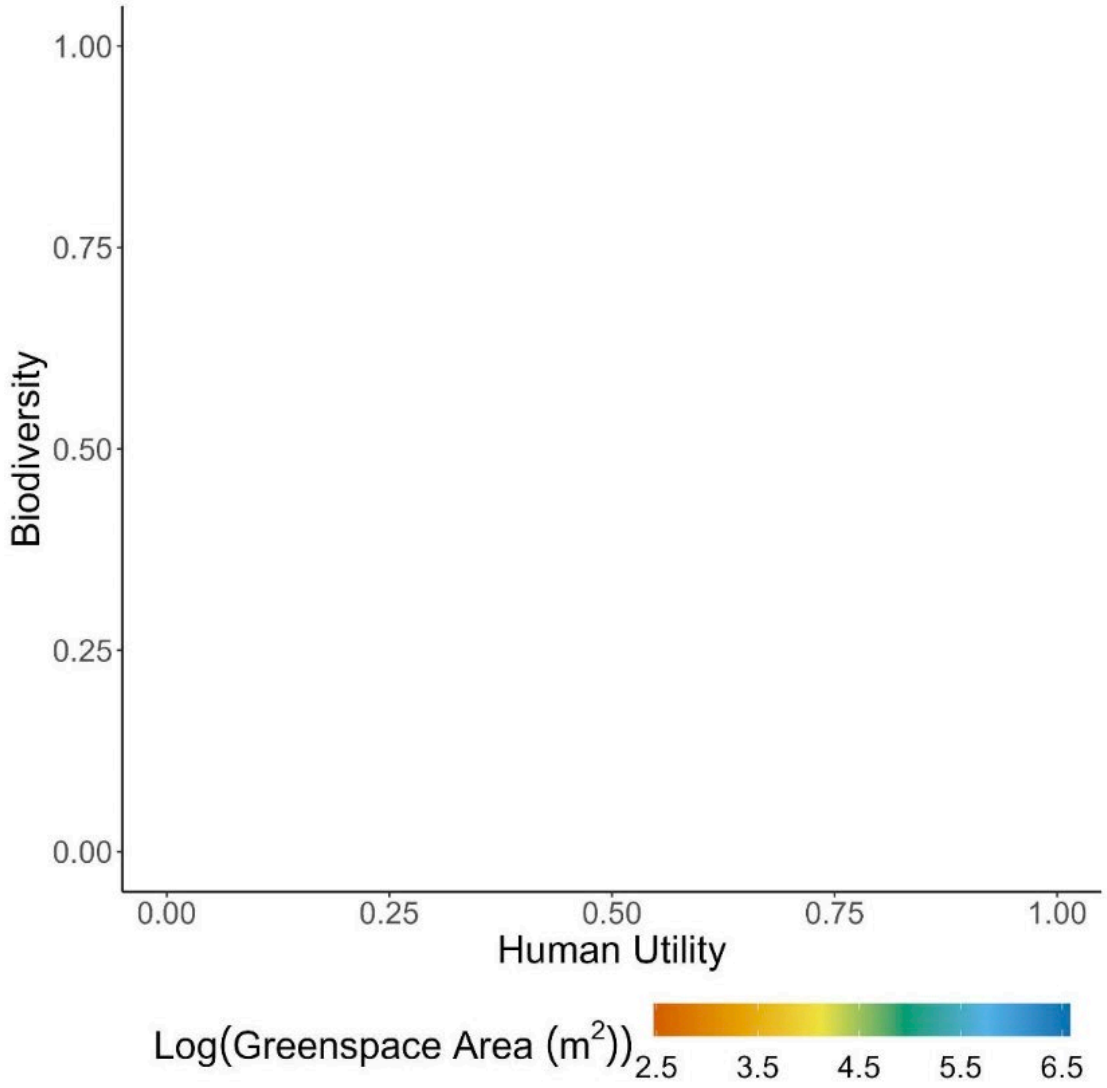
Athletic facilities	Bodies of water
Walking path	Playgrounds
Athletic field	Picnic Area
Nature Preserve	Dog Park

Quantifying biodiversity

- Measured biodiversity by looking at species richness
- iNaturalist – a citizen science platform
- Devised random forest model to predict species richness

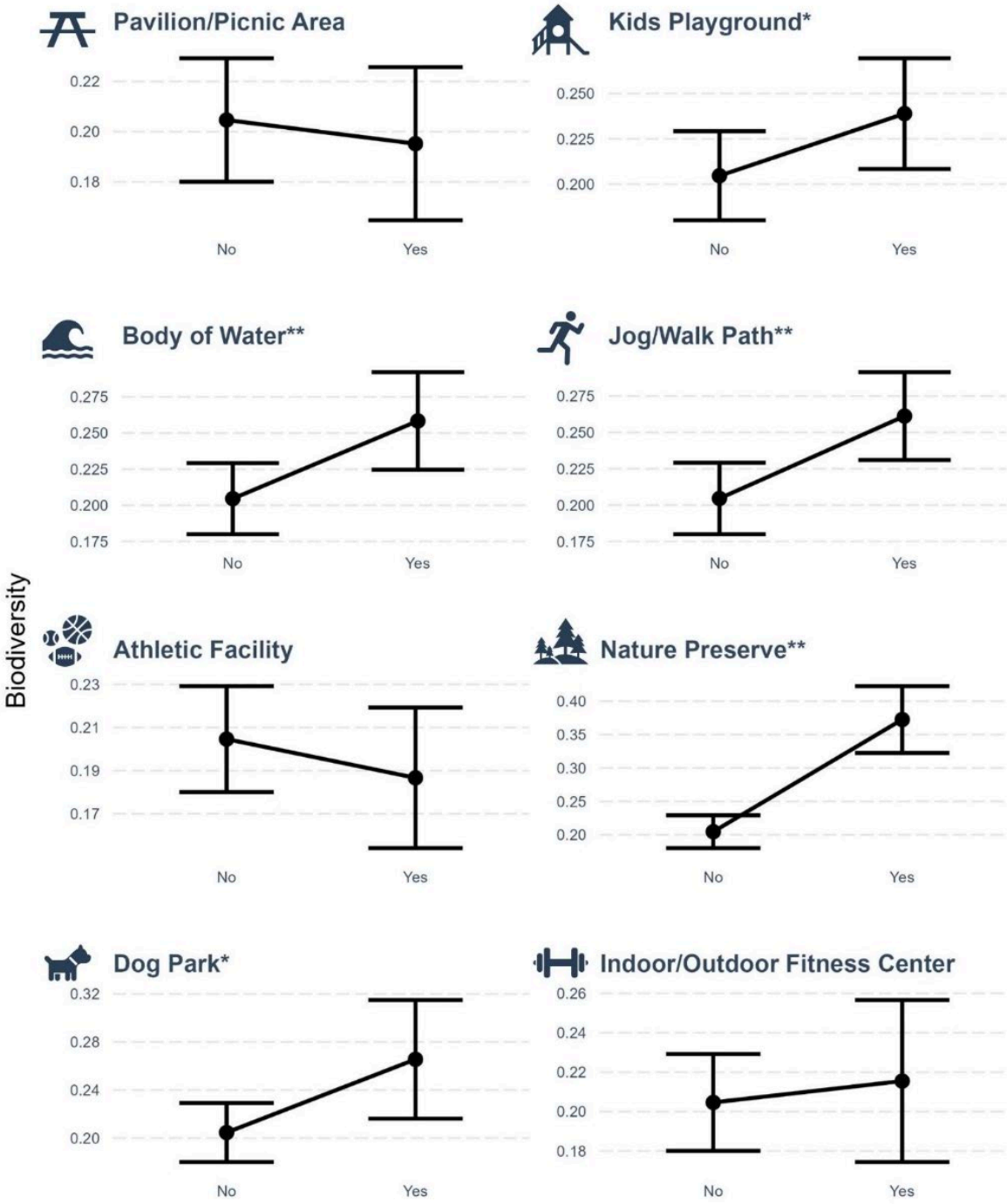
Findings

- No significant correlation between biodiversity and human utility
- Challenges the division between prioritizing one over the other

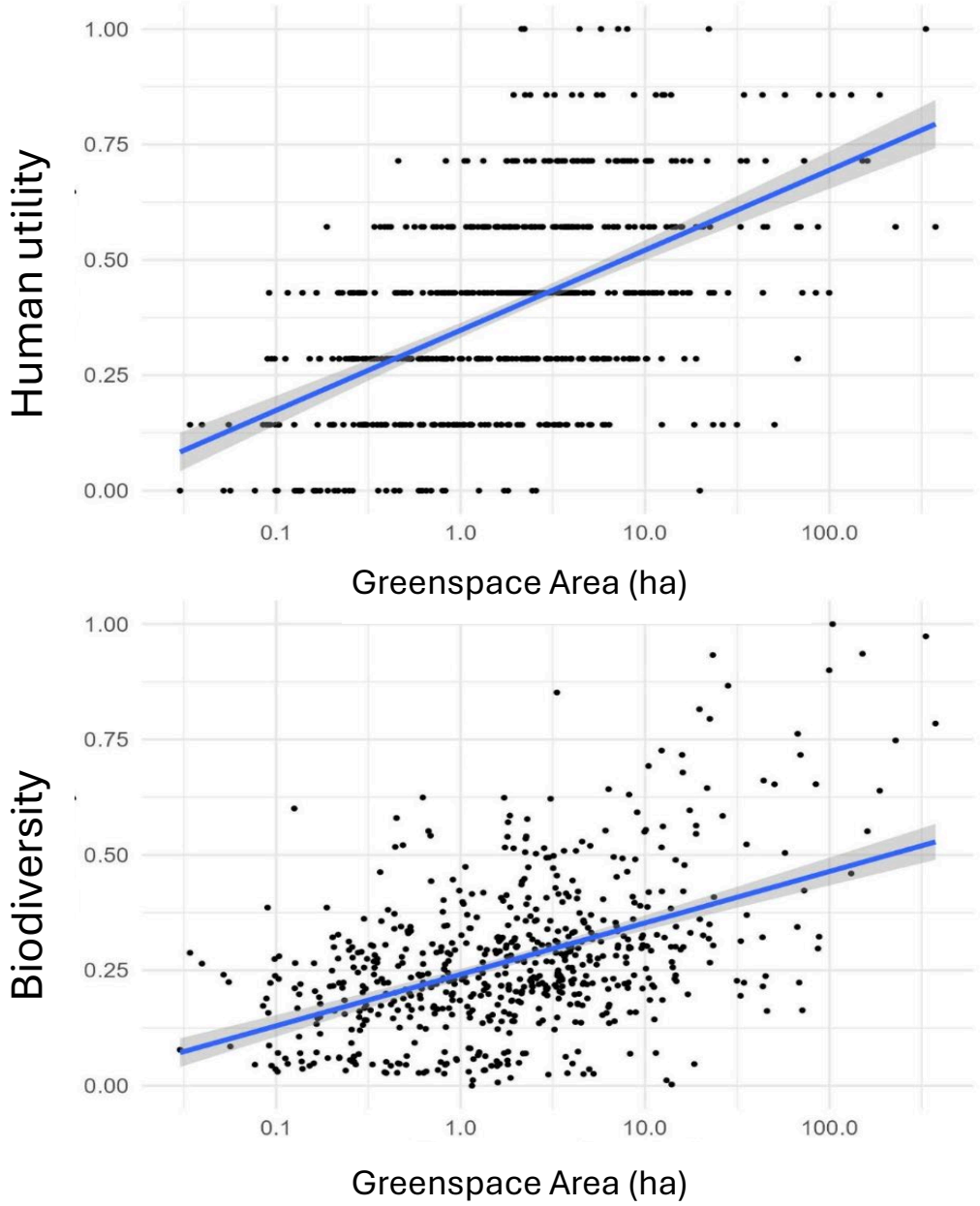


Human Utility and Biodiversity

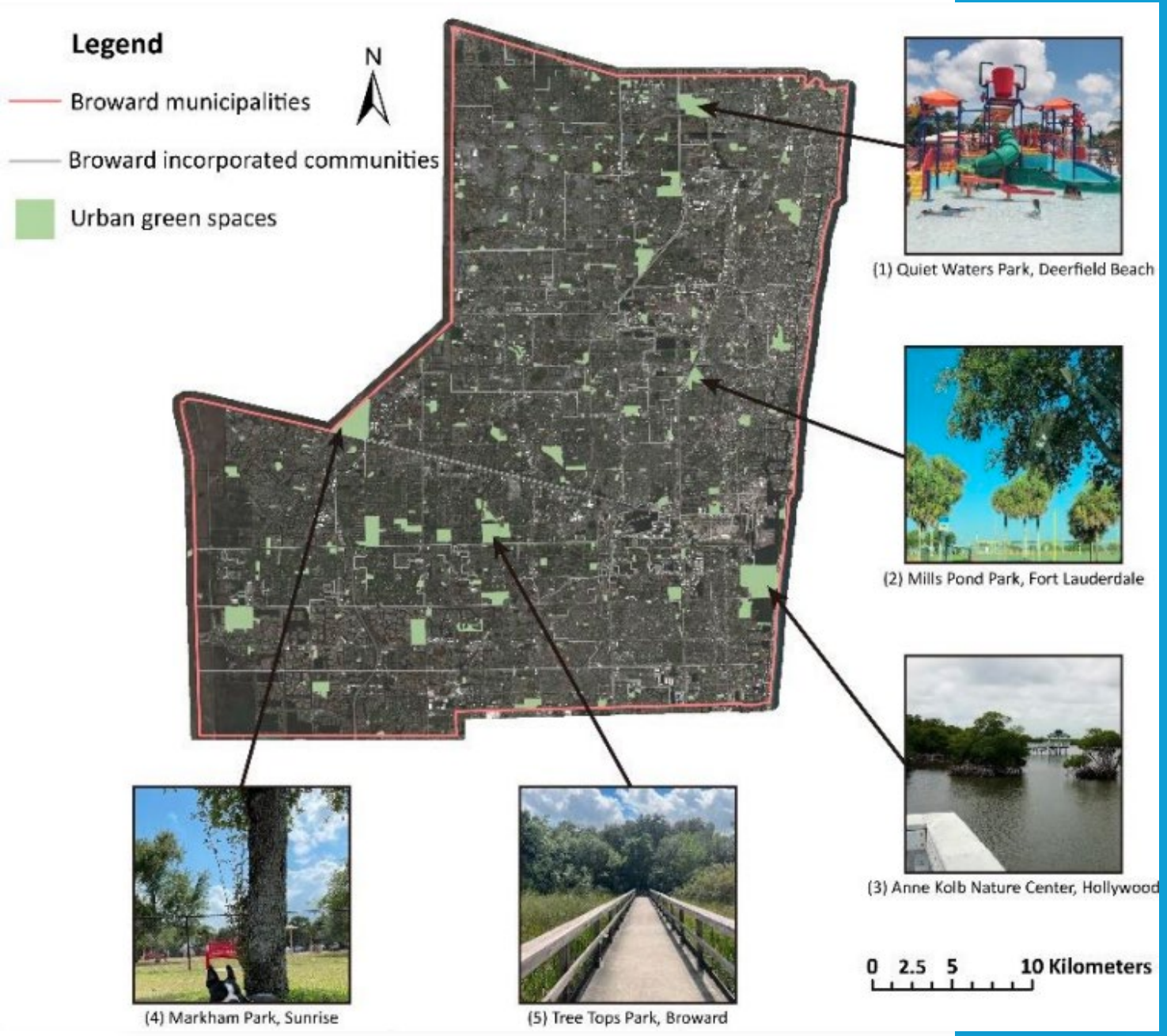
- Bodies of water, kid's playground, nature preserves showed evidence of a **positive** relationship
- Picnic areas, athletic facilities showed evidence of a **negative** relationship



Larger greenspaces can accommodate diverse values



Case Studies



Markham Park: Sunrise, FL

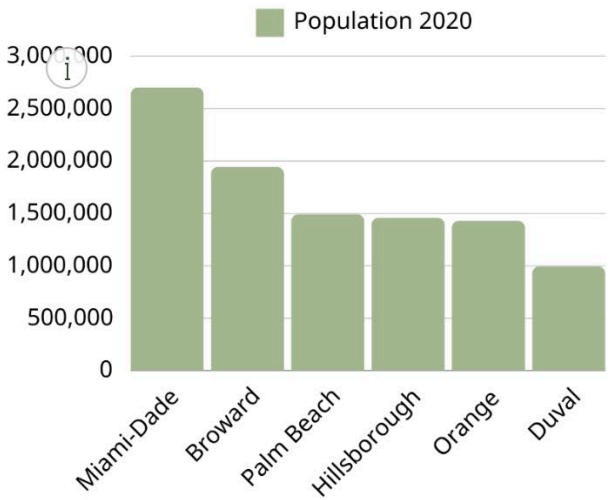
- Over 333 hectares
- Contains wooded trails, butterfly gardens, lakes
- Nearly all human utility variables, and high biodiversity

Welleby Park: Sunrise, FL

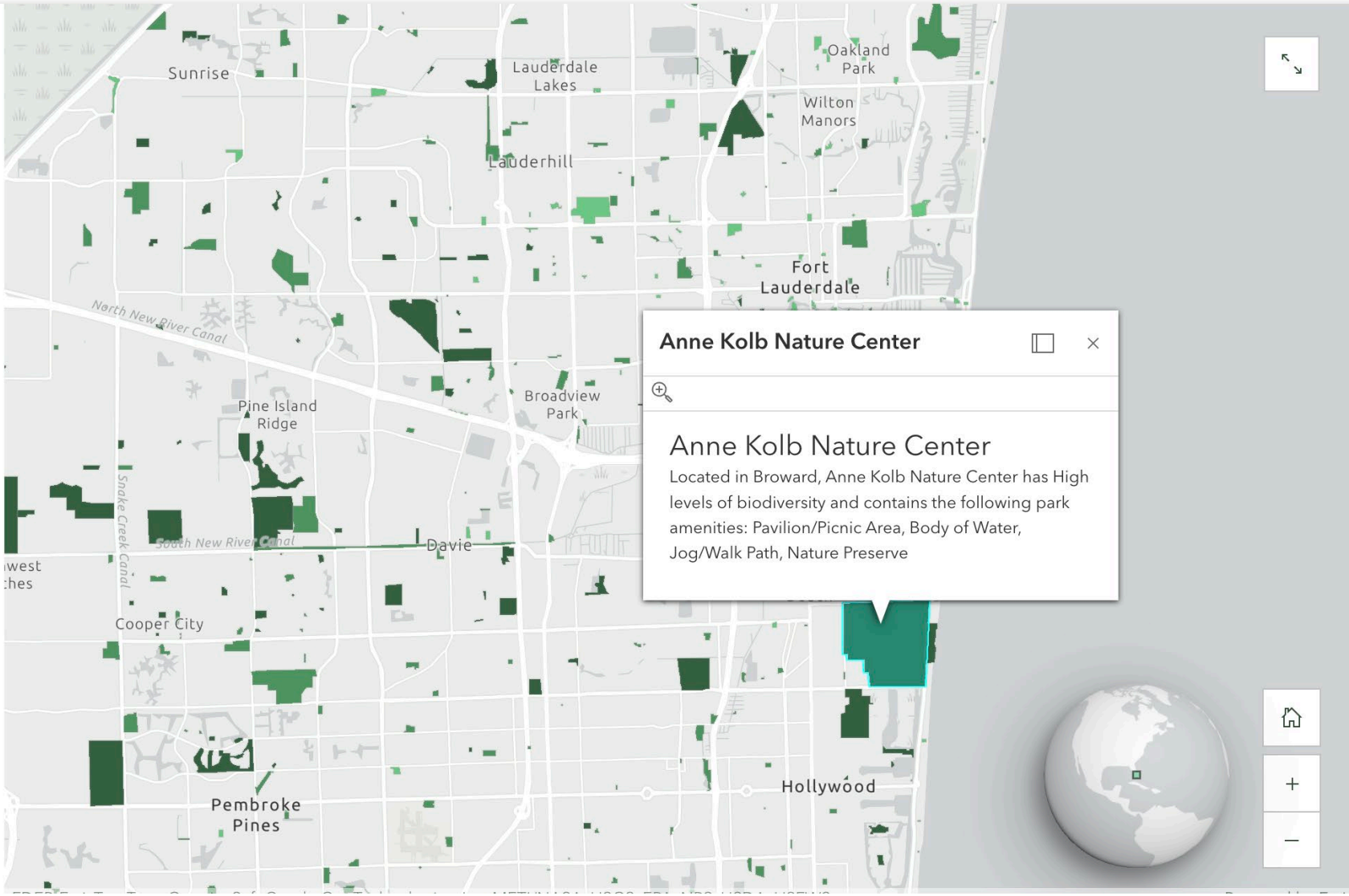
- Nearly 3.2 hectares
- Busy community park
- Contains paved walking trails, kid sized town, splash pad
- Large fields of grass with few trees

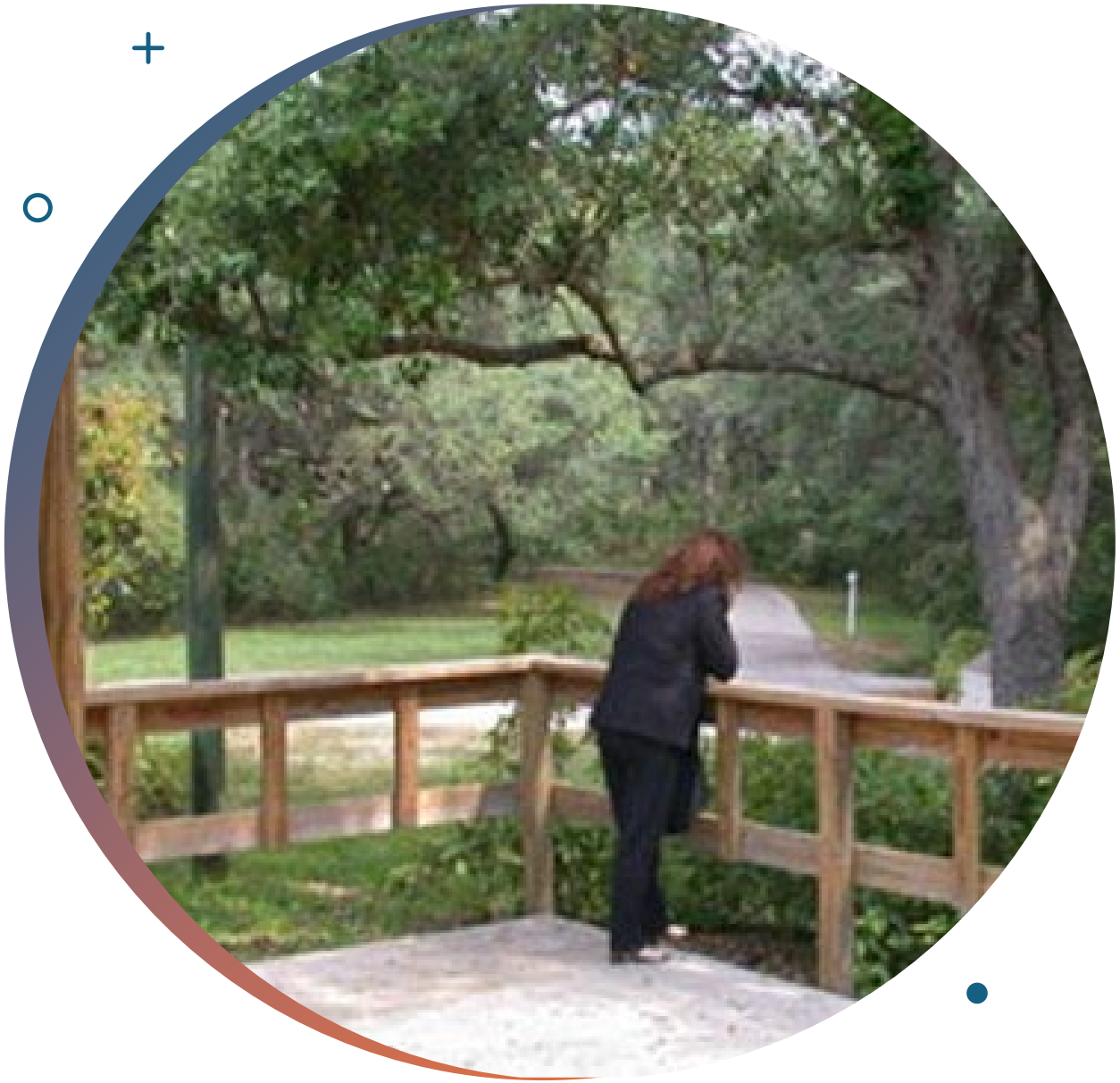
Broward County

Nestled between the Atlantic Ocean and the Everglades, Broward County boasts hundreds of urban green spaces. Each city contains roughly 20 parks, ranging in size and function.



Counties in Florida





When Park Design Aligns

GREENSPACES CAN SUPPORT BOTH BIODIVERSITY AND HUMAN AMENITIES WITHOUT CLEAR TRADE-OFFS

URBAN GREENSPACES CAN BE OPTIMIZED TO SERVE DUAL PURPOSES EFFECTIVELY

Balancing Social and Ecological Wellbeing

1. Thoughtful management and design of greenspaces
2. Signage and educational programs
3. Become stewards of your environment – use iNaturalist!

Thank You!

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