Potential trade offs of regulating and cultural ecosystems services in urban areas of the lower Rio Grande Valley
Outline

1. Definitions
   1. Urbanization
   2. Ecosystem Services

2. Trade offs of ES in urban areas, particularly in the RGV

3. My study
Urbanization

- the concentration of human populations into discrete areas, leading to transformation of land for residential, commercial, industrial & transportation purposes.
- Urban environments present a unique set of challenges to the maintenance or restoration of ecosystem services, where there are often tradeoffs between certain regulating ecosystem services that typically operate at a relatively large scale.
Ecosystem Services

1. Supporting
2. Provisioning
3. Regulating
4. Cultural
The need for restoration in urban areas

- Restoring urban areas will cover more land than the national parks combined.
- Doug Tallamy
- Restoring the other 95%
Rio Grande Valley Urbanization

- Fastest urbanizing area in the state of Texas.
- Grown nearly 40% in population each decade for the past 20 years.
- Over the last decade 9% of Ag land has been converted to urbanized land.
- Only 5% of the natural areas remain.
Hypothesis

- Hypothesis 1: Percent tree canopy can predict home property values.
- Hypothesis 2: Percent tree canopy can predict student performance in schools.
Methods

1) A map was made using TNRIS quadrants of Hidalgo county, Tx.
2) Elementary school zones were outlined for the cities of Edinburg, McAllen, Mission, PSJA and Sharyland.
3) Percent tree canopy estimated from aerial images using spatial analysis in arc-GIS.
4) School performance scores derived from elementary standardized test scores (grades 3-5) from TX Instruments.
5) Property values were estimated using a modified hedonic pricing method, data from Realtor.com.
6) Linear regression test to explore relationships between percent tree canopy and school performances and property values by school districts.
Arc GIS
Graphs

Average Home Value vs. % Canopy Cover

- $50,000.00
- $100,000.00
- $150,000.00
- $200,000.00
- $250,000.00

0 5 10 15 20 25 30
Graphs

y = 0.5241x + 71.917
R² = 0.0557

School Performance Scores

% Canopy Coverage

p=0.026
Graphs

Test scores vs. % Tree coverage

- Reading
- Mathematics

Linear (Mathematics): $y = 0.5878x + 70.551$
Results

- There is no relationship with the percent canopy coverage and the average home value.
- There is a very strong relationship between the percent canopy coverage and school scores.
- Further research
Connecting data to You

- This data is important to home owners and the public.
- Plant Nativa 2015 – outreaching to the public
Thank you