

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

<u>Urbanization</u>

- 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. Regulating4. Cultural



<u>The need for restoration in</u> <u>urban areas</u>

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

<u>Rio Grande Valley</u> <u>Urbanization</u>



- 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.



<u>Hypothesis</u>



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

<u>Methods</u>

- 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











<u>Results</u>

- 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

<u>Thank you</u>