Biodiversity Study of the Headwaters of the San Antonio River

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The purpose of the study is to conduct an Ecological Baseline Survey of the Headwaters of the San Antonio River. The survey will be compared to expected vegetation in the area based on the Web Soil Survey and the EPA's Ecoregions and used to provide a comparative baseline for future restoration efforts.
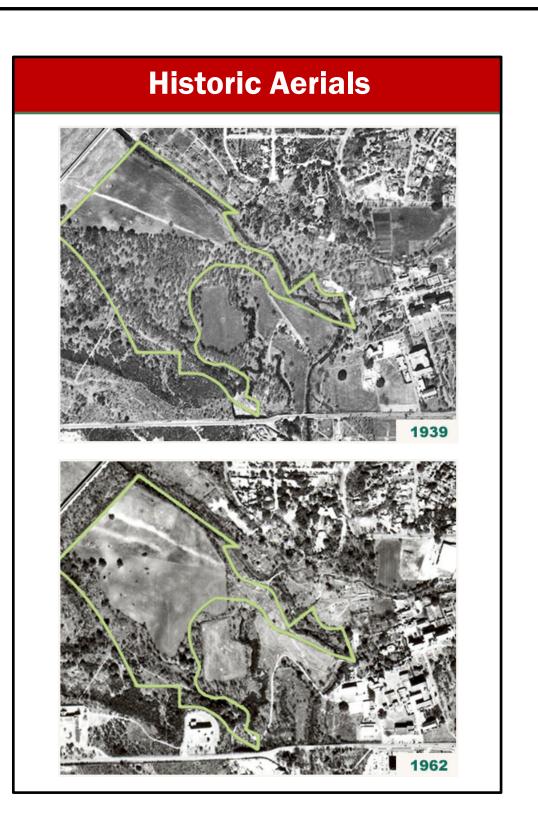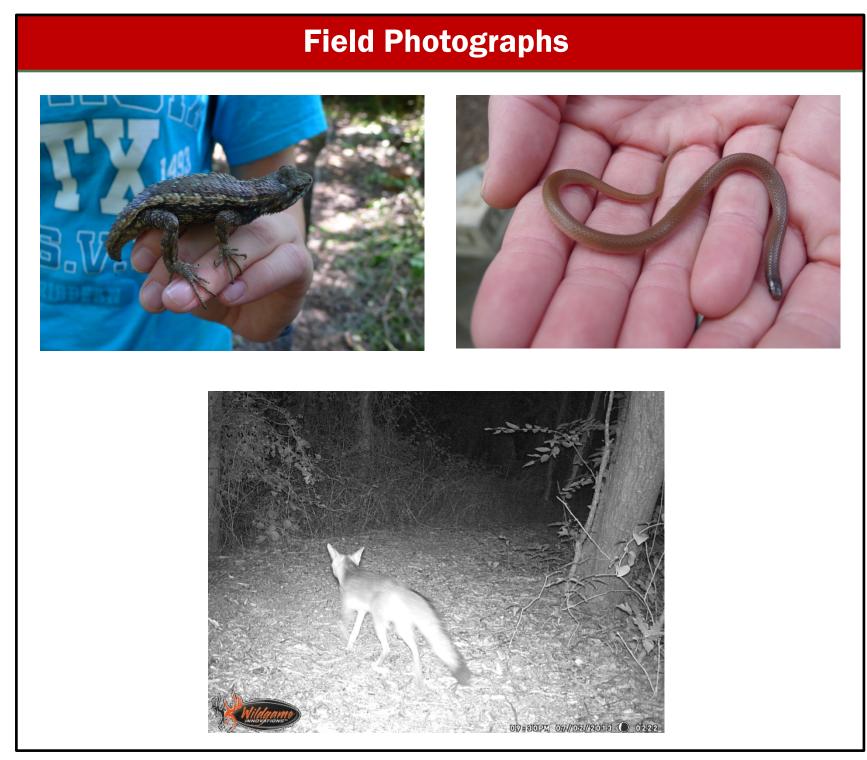
RATIONALE AND SIGNIFICANCE:

The Ecological Baseline Survey will provide information to inform and to improve the existing restoration efforts. It will also document how the ecosystem has been disturbed. The study will contribute missing and additional information about the riparian habitats of the San Antonio River.

Historic Aerials

Field Photographs

METHODS

The study area was divided into seven different areas and a random point was selected in each. One additional random point was used for vegetation analysis. The following were methods used for data collection:
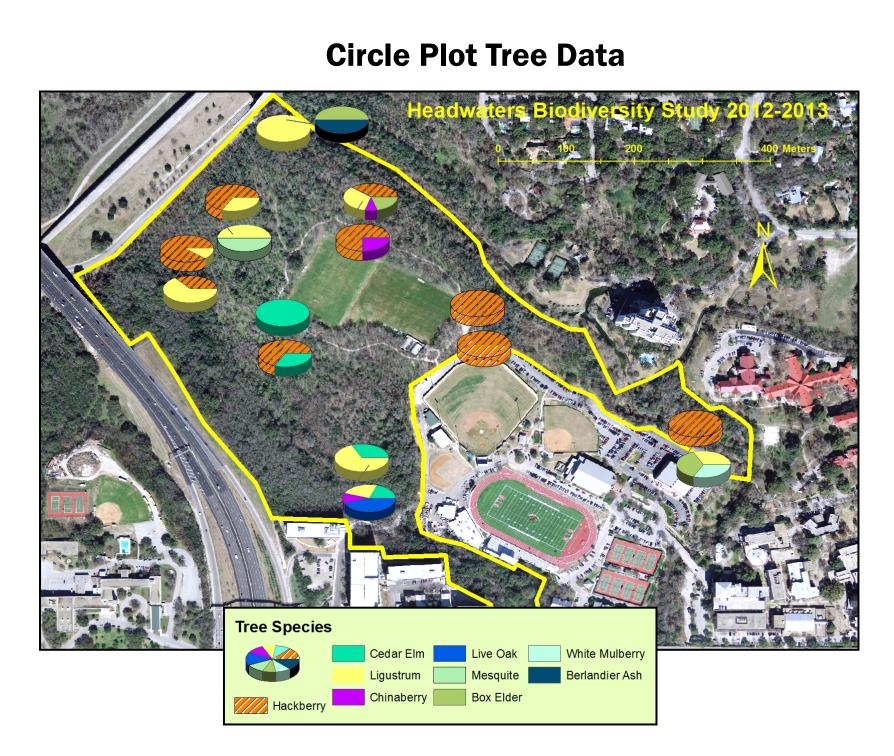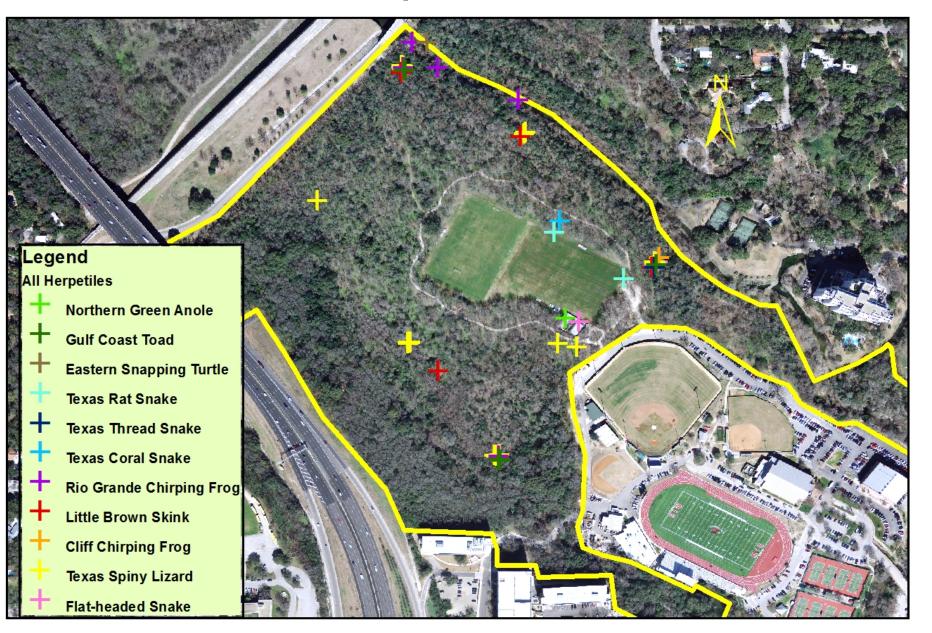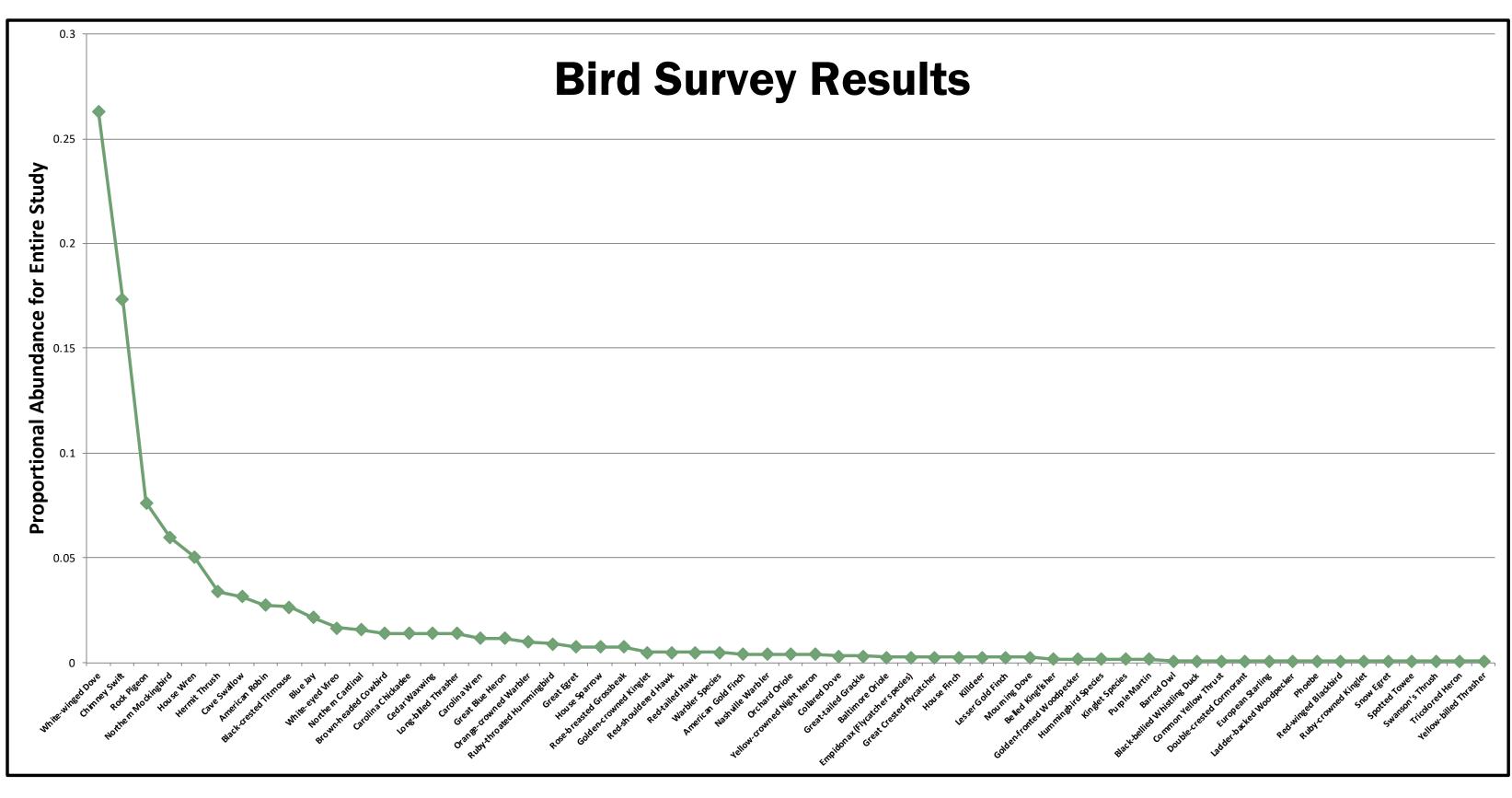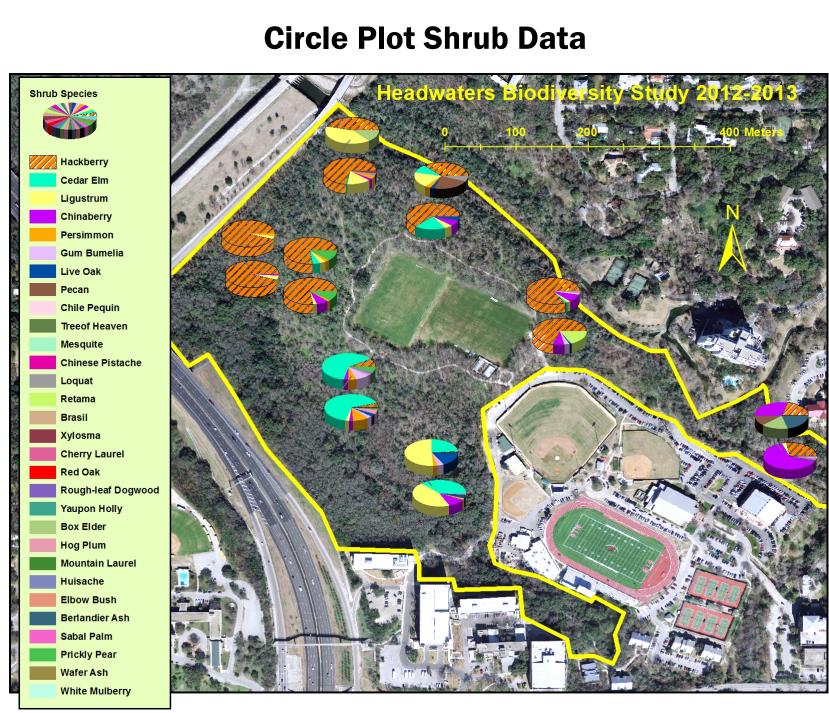
- Line transects (vegetation)
- Sherman traps (small mammals)
- Circle plots (vegetation)
- Camera traps (large mammals)
- Pitfall traps (herpetofauna)
- Tracking plates (large mammals)
- Point counts (birds)
- Incidental observances (all)

The expected vegetation findings were collected from the online Web Soil Survey and EPA's Ecoregions. Aerial photographs were examined from historical archives. Expected faunal species were collected from other surveys and papers.

Circle Plot Tree Data

Circle Plot Shrub Data

Herpetile Data

Headwaters Biodiversity Study 2012-2013

Mammal Species

Scientific Name	Common Name
Peromyscus pectoralis	White-ankled mouse
Mus musculus	House mouse
Urocyon cinereoargenteus	Grey fox
Procyon lotor	Raccoon
Dasypus nomencinctus	Nine-banded armadillo
Didelphis viginiana	Virginia opossum
Sus scrofa	Feral pig
Sciuris niger	Fox squirrel

Bird Survey Results

RESULTS

- Vegetation: The most abundant tree and shrub species was *Ligustrum lucidum*, which is invasive. The most abundant herbaceous species was *Macfadyena unguis-cati*, also invasive. A total of 50 vascular plant species were found along line transects. Canopy cover was greater than 50% for most of the year. According to the soil type provided by the Web Soil Survey, this area should be classified as a tallgrass savannah with only 20% canopy cover, but it more closely resembles a dense woodland community.
- Herpetofauna: Ten herpetile species were recorded throughout the study. *Sceloperous olivaceous* was the most abundant and had a pitfall capture rate of 9.9.
- Mammals: Two small and six medium mammals were trapped or observed. All small mammals were trapped along riparian habitat. Four *Mus musculus* individuals were captured, being the most abundant small mammal.
- Birds: The most common bird species was *Zenaida asiatica* (white-winged dove) with a proportional abundance of 0.26. A total of 94 bird species were recorded throughout the study.

CONCLUSION

The abundance of invasive species in this region was high. *L. lucidum* trees had a percentage of 15.8 in the line transects, which was more than ten percent greater than the next most abundant species. *M. unguis-cati* is also a concern because it was the most abundant herbaceous plant species and is also invasive. If allowed to continue growing naturally, the native species may be outcompeted by these non-natives.

Another concern is the type of community that the present state of the headwaters represents. Many references, including the online databases from Web Soil Survey and EPA's ecoregions, suggest that the expected vegetation findings are an abundance of herbaceous species and limited woody species. The fact that it now resembles a dense woodland community means that there has been little to no management since it started its transformation from a savannah. Historical aerial photographs suggests that this area could have been an oak savannah, or a savannah with oak mottes. This area falls within the EPA's ecoregion "Northern Blackland Prairie," which is described as a community of mostly grasses with a woody riparian habitat.

Current restoration efforts are being executed by removing invasive species. Future efforts could focus on reintroduction of native species and encouragement of open grassy spaces with limited canopy cover.

ACKNOWLEDGEMENTS