INTRODUCTION

- Urbanization has resulted in changes in ecological functions and trophic interactions on many biological levels, contributing to losses of biodiversity and altered assemblages of species within communities. Changes in community structure within urban ecosystems often result in the removal or replacement of top predators, modifying top-down control and altering predator-prey interactions. Raptors are regularly used as indicators of ecosystem health.

- The Great Trinity Forest is a large urban forest surrounded by the city limits of Dallas, TX (Fig. 1) containing a variety of disturbance factors characteristically associated with a highly urbanized area: poor habitat, invasive species, and increased noise, light and human disturbance.

- Baseline monitoring of raptor activity and community composition, with associated prey relationships along the urban-to-rural gradient in the Great Trinity Forest will assist in determining the current health of this forest ecosystem.

OBJECTIVE

- To quantify predator-prey dynamics in the Great Trinity Forest by assessing raptor predation on prey mimics.

STUDY AREA

- Study area within the Great Trinity Forest in Dallas, TX. Three study sites with differing levels of urbanization were assessed for raptor activity/use and rate of predation: high (pink squares), medium (purple triangles) and low (blue circles) proportion of urbanization (Fig. 1).

METHODS

- To quantify urbanization, supervised, object-based landcover classification (ArcGIS Pro, version 2.2.0) was performed on 50-cm pixel resolution, multi-band remote sensing imagery to estimate the percent of impervious surface within the forest. Three main study sites were identified containing high, medium and low percentages of urbanization (Fig. 1).

- May-August 2019: Weekly conspecific broadcast raptor surveys conducted and 732 urethane foam prey models deployed at 18 stations along the urban-to-rural gradient.

- Of the 732 prey models deployed, 61 showed signs of being depredated whereas 23 were missing and therefore had an unknown fate. 163 raptors representing 8 species were observed within the study area during the 10-week study period (Fig. 5).

- No relationship between raptor activity, raptor depredations and degree of urbanization (Fig. 6).

- No significant relationship between raptor activity and predation on snake models (Fig. 7).

- Results suggest either increasing levels of urbanization have no effect on raptor-prey dynamics within the Great Trinity Forest or there is low predatory response from raptors in regard to prey mimics.

RESULTS AND DISCUSSION

- Raptor: beak (left) and talon marks (right), Mesocarnivore: full bite (left) and teeth marks (right), Raptor: beak (top) and talon marks (bottom), Rodent: growe marks (both) and teeth marks (top).

- Depredated prey models by predator. Raptor: beak (left) and talon marks (right), Mesocarnivore: full bite (left) and teeth marks (right), Raptor: beak (top) and talon marks (bottom), Rodent: growe marks (both) and teeth marks (top).

- Species richness and activity within each raptor survey station along the urban-to-rural gradient in the Great Trinity Forest, Dallas, TX. "HVI" indicates the containing the greatest level of urbanization while "IVI" indicates the station containing the lowest level of urbanization.

REFERENCES & ACKNOWLEDGMENTS