Goats in the Garden: Sustainable Grazing for Ecological Restoration and Land Management

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FORT WORTH BOTANIC GARDEN

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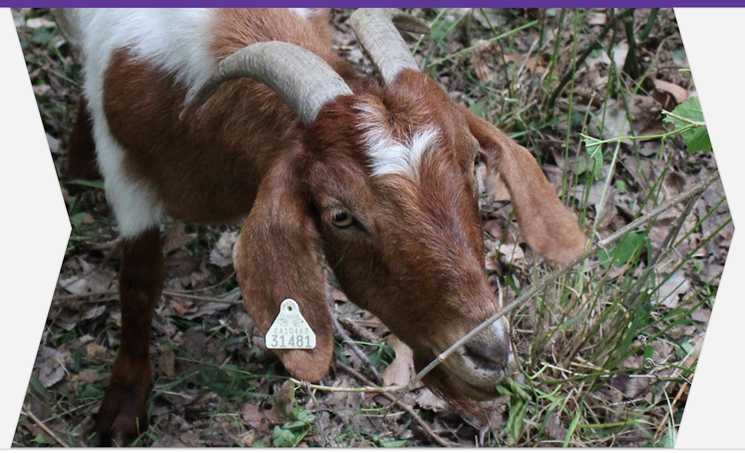


Introduction

Invasive plant species exert a detrimental influence on ecosystems by outcompeting native flora, diminishing biodiversity, and disrupting the delicate ecological balance. Regrettably, public gardens are not exempt from the repercussions of invasive species. In an endeavor to eliminate or mitigate the presence of invasive species in the Native Texas Boardwalk (NTB) area of the Fort Worth Botanic Garden, goats were integrated into the facility management plan.

Objective

This research study, conducted in collaboration with the Fort Worth Botanic Garden, evaluated the effectiveness of utilizing goats as a sustainable grazing strategy to control invasive plant species within the NTB portion of the garden.

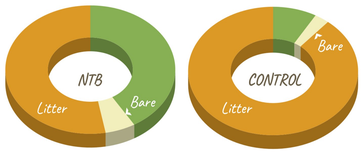
Methodology

. All data were collected in the Spring of 2024
. Total acreage = 2.91 acres
. Species richness and vegetative cover were measured with data collected from transect lines and photographic images:
- Six transect lines (40-50m) were established: four within the grazing area & two controls (see Map 1)
- 14 photo points were captured weekly to measure the growth of the plant species pre, post, and during the experiment

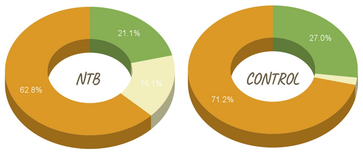
Map 1: Experiment area with Transects

Results

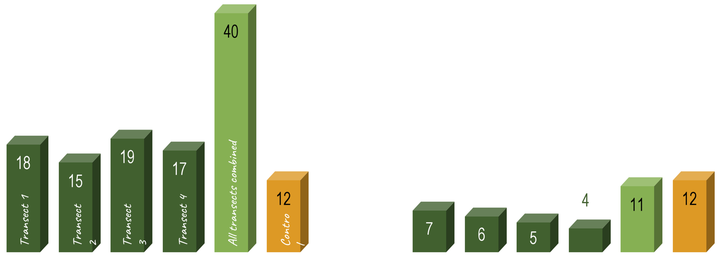
Vegetative Cover



Before Goats



After Goats



Species Richness

QR 1: Goats in Action

QR 2: More Details

Discussion

. The utilization of goats as a management tool was successful. The goats ate all but one of the target species, *Euonymus Fortunei* (Wintercreeper).
. The vegetation analyses indicated an initial decline in plant species richness. However, based on prior studies, plant succession and resilience are anticipated to rebound in the grazed areas over time (Booth & Skelton, 2009; Rathfon et al., 2021).

. Findings indicated environmental and operational benefits, including lower labor costs, reduced chemical use, decreased noise pollution, and the mimicking of historical ecological processes that enhance soil health and biodiversity.

. This case study highlights the benefits of integrating controlled livestock grazing into public garden maintenance protocols to reduce invasive species.

References

Booth, A. L., & Skelton, N. W. (2009). The use of domestic goats and vinegar as municipal weed control alternatives. *Environmental Practice, 11(*1), 3-16. DOI:10.1017/S1466046609090012

Rathfon, R. A., Greenler, S. M., & Jenkins, M. A. (2021). Effects of prescribed grazing by goats on non-native invasive shrubs and native plant species in a mixed-hardwood forest. *Restoration Ecology, 29(*4). https://doi.org/10.1111/rec.13361