

Invasive Species Data Collection: **An Ecological Approach to a** **Complex Problem**



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Invasive Species

"[...] nonnative (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health."

– National Invasive Species Council



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Uppinghouse

Past City of Austin Efforts

~\$970,000/year spent on invasive species management.

Projects are on departmental level with no system for coordination in place

Timeline

2010

April, 2010

- q City Council Resolution to develop Invasive Species Management Plan

August, 2012

- q Interdepartmental Working Group develops ISMP and Field Manual
- q Bloomberg Philanthropies Cities of Service Grant Submittal

Spring, 2013

- q City staff and 150 volunteers trained

Summer, 2013

- q Data collection effort

Spring, 2014

- q Data Analysis & Report Generation

2014



COA ISMP Scope

- q Identifies target species.
- q Compiles management strategies (IPM).
- q Sets department-level responsibility.

City of Austin Top 24 Invasive Plant Species

Data collected for those species in red | *Not listed as one of COA's Top 24

- | | | |
|------------------------|-------------------------|------------------------|
| • Bastard Cabbage | • Chinese Tallow | • Japanese Honeysuckle |
| • Bermudagrass | • Common Water Hyacinth | • Johnsongrass |
| • Broad Leaf Privets | • Elephant Ear | • King Ranch Bluestem |
| • Catclaw Vine | • Giant Cane | • Kudzu |
| • Chinaberry | • Golden Bamboo | • Malta Star Thistle |
| • Chinese Parasol Tree | • Heavenly Bamboo | • Paper Mulberry |
| • Chinese Pistache | • Hydrilla | • Salt Cedar |
| • Chinese Privet* | • Japanese Hollyfern | • Scarlet Firethorn |
| | | • Tree of Heaven |

COA ISMP 5 Year Goals

- q Development of standard procedures.
- q Management actions on 25% of total acreage.
- q Collection of baseline data.
- q Education / Outreach.



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Education / Outreach

- q Cities of Service Grant
- q University of Texas Lady Bird Johnson Wildflower Center
- q Trained Over 150 Citizen Scientists

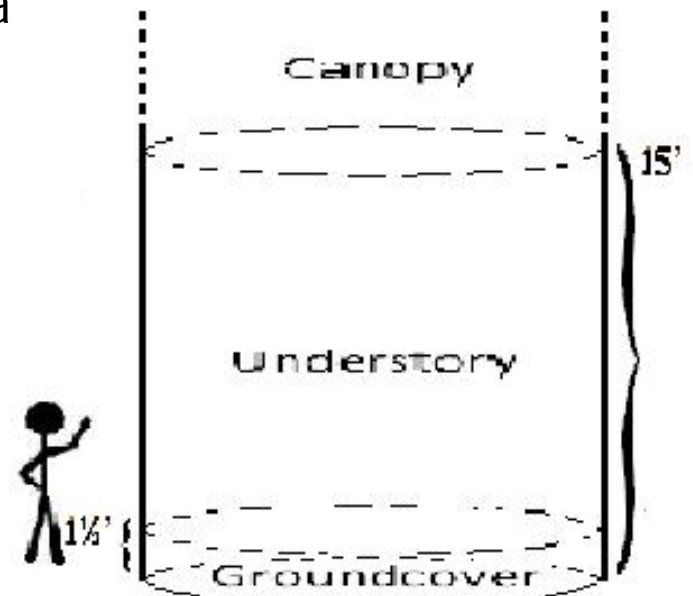


Hypotheses

- q Invasive species abundances are not equal.
- q Invasive species presence/abundance is associated with site, horizontal or vertical distance to water, or disturbance/development.
- q Invasive species age distribution is correlated with site, distance to water, or disturbance/development.
- q Native species diversity is different in areas with high invasive species presence/abundance.

Study Design

- q Plots were a cylinder with a 5 meter radius
 - Split into quadrants
 - Data collected at Canopy, Understory and Groundcover
- q Randomly distributed
- q Density of 1.5 plots per unmanaged acre
 - 3% land area sampled per unmanaged a



Study Design

q Plot Level

- Habitat Type (Open/Edge/Wooded)
- Soil Type

q Strata Level

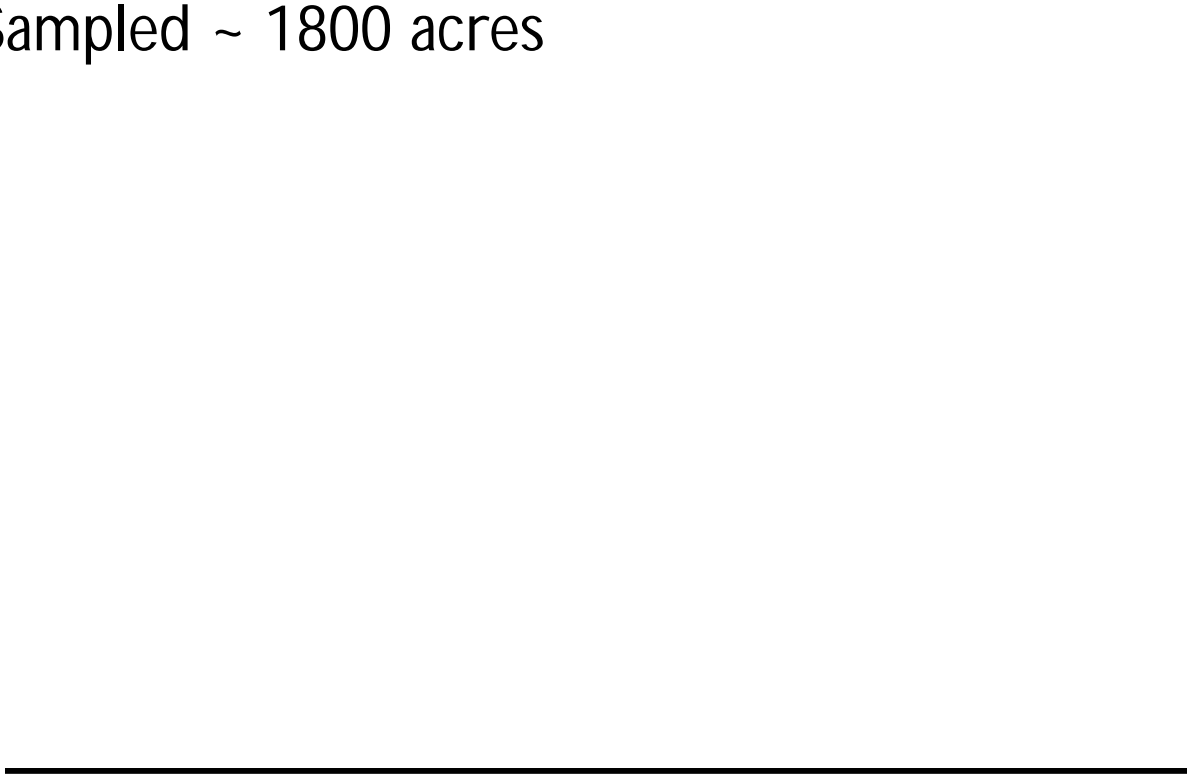
- Percent Cover of each invasive species
- Percent Open/Bare
- Native species tally

	Groundcover (<1.5 ft.)	Understory (<1.5 ft. - 15 ft.)	Canopy (>15 ft.)
Invasive Species Percent Cover			
Percent Open/Bare			
Native Species Count			

Study Design

q ~50,000 Acres owned by City of Austin

- ~20,000 were included in the study
- Sampled ~ 1800 acres



Property Prioritization

q Endangered Species Habitat

Black-capped Vireo, Golden-cheeked Warbler, Barton Springs Salamander, etc.

q Critical Environmental Features

Springs, Wetlands, Rock Outcrops

q Creek Density

Creek Linear Feet/Acre

q Parks Unmanaged Areas

PARD managed database of un-mown areas

q Wildfire Risk

TxWRAP data

q Aesthetics/Use

Trails, Scenic Roadways, Capitol View Corridors



Properties Selected

q Post-prioritization

- $\mathcal{C} = \{C_1, \dots, C_n\}$

Efforts

- q 5 days a week
- q 4 hours a day
- q 2.5 months

- q 1124 Volunteer Hours
- q 1000 Staff Hours



- q 39 City of Austin Owned Parcels
- q > 1800 Acres Sampled
- q > 2200 Data Points Collected

Number of Invasive Species per Site

Response

q Target Invasives.

- Pervasiveness
- Locality
- Globalality

q Snapshot in time.

q Management recommendations.



Team

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