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Project: Examining the effects of urbanization on mammalian occupancy in the Texas Hill Country.

### **BCP Permit Report, 2013**

As stated in my project proposal, the purpose of my research is to use presence/absence data collected by motion-sensor game cameras to determine the effects of urbanization on mammalian occupancy. This study uses a total of nine different parks and greenspaces including two tracts/macrosites managed by the Balcones Canyonlands Preserve. These include the Upper Bull Creek Macrosite (UBCM) and the South Lake Austin Marcosite (SLAM). Before actually doing any field work, I obtained the necessary GIS shape files from the BCP that included the macrosite polygons and all associated refuge roads. Based on the size of each study area, I decided that it would be appropriate to select five camera locations in the UBCM and seven camera locations in the SLAM. Using GIS software, I buffered roads within the macrosites by 400 meters (to make camera deployment logistically feasible) and generated the appropriate number of random points within the buffered area. Maps of these random points, along with their coordinates, were provided to BCP staff for approval before sampling began (See Figures 1 and 2 and Table 1).

#### **Camera Deployment**

I deployed game cameras in the two selected BCP study areas for two different seasons during 2013. Using a handheld Garmin GPS device, I attempted to get as close as possible to each randomly selected point to set up my camera stations. Some difficulties (mostly dense brush and steep bluffs) prevented me from being able to access all randomly selected locations exactly, so the nearest suitable location was chosen for camera placement. The actual coordinates for all camera trap stations were saved in my GPS.

#### **Methods**

My first sampling season took place early in the year. Sampling at the SLAM ran from February 27<sup>th</sup> through March 6<sup>th</sup> and from February 24<sup>th</sup> through March 3<sup>rd</sup> at the UBCM. The second sampling season was during August. The cameras in Upper Bull Creek ran seven nights from August 5<sup>th</sup> through August 14<sup>th</sup>. Camera deployment at the SLAM proved to be a bit more complicated this season due to some minor miscommunications between myself and BCP staff (trouble accessing gates). Camera stations 4, 5, and 6 were set up August 4<sup>th</sup> and taken down August 14<sup>th</sup>. Camera stations 1 and 7 were set up August 5<sup>th</sup> and taken down August 14<sup>th</sup>. Camera stations 2 and 3 were set up August 14<sup>th</sup> and taken down August 21<sup>st</sup>.

## **Preliminary Results**

Species detected between both seasons include white-tailed deer, raccoon, coyote, cottontail rabbit, ringtail, fox squirrel and gray fox. Detection histories by species and study sites are provided in Table 2.

Besides the raw detection histories, no results are available since this project is still ongoing. Once field work is completed, detection histories, as well as covariate information, will be entered into the program PRESENCE (Proteus Research and Consulting, NZ) for analysis. I originally planned to conduct another season of sampling this winter but as of now I do not foresee that being necessary. I will inform Ms. Lisa O'Donnell of these plan changes upon submission of this report. Once analysis is complete and officially documented, I will submit all results to the BCP as required by my research permit.

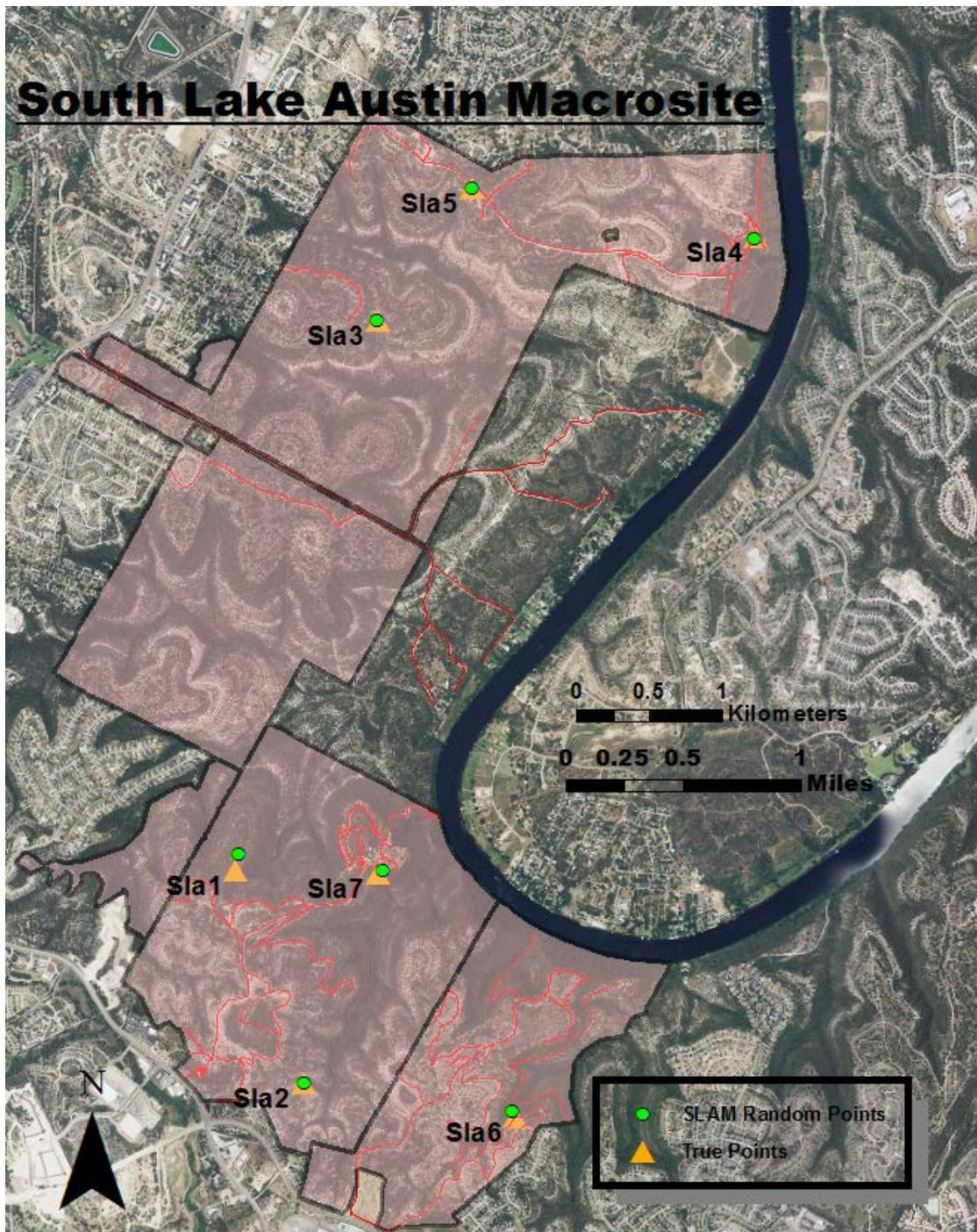


Figure 1: Map of randomly selected points and actual points at SLAM.

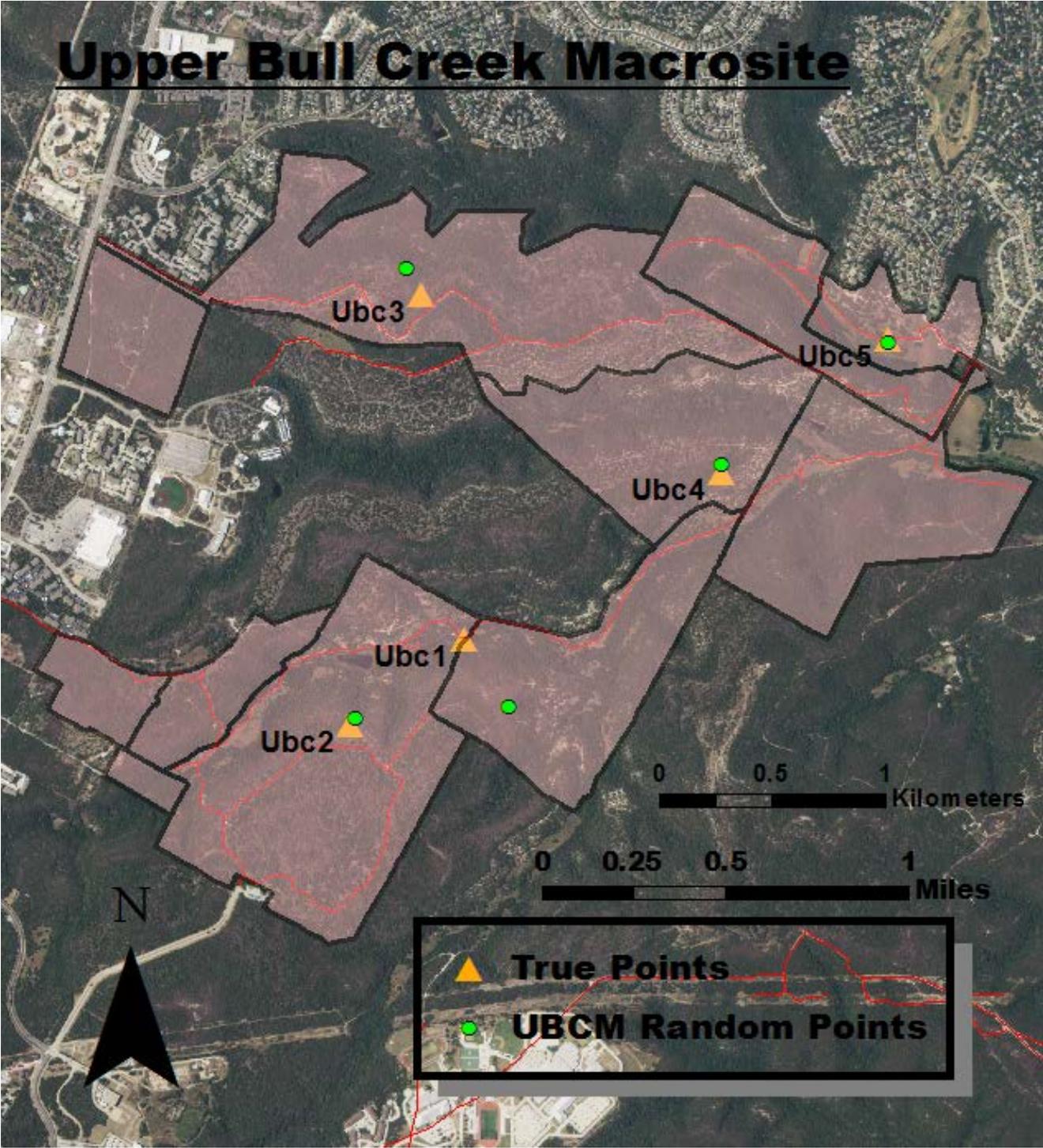


Figure 2: Map of randomly selected points and actual points at UBCM.

### SLAM

Camera Station	Random Coordinates	Actual Coordinates
1	-97.947589, 30.330783	-97.947838 30.329939
2	-97.943591, 30.318622	-97.943600 30.318506
3	-97.939081, 30.359125	-97.938920 30.359050
4	-97.915853, 30.363470	-97.915784 30.363317
5	-97.933279, 30.366144	-97.933268 30.365983
6	-97.930783, 30.317181	-97.930443 30.316600
7	-97.43879, 30.329995	-97.939008 30.329711

### Upper Bull Creek

Camera Station	Random Coordinates	Actual Coordinates
1	-97.836791, 30.410710	-97.828511 30.412939
2	-97.832889, 30.410317	-97.833136 30.409990
3	-97.830847, 30.425697	-97.830361 30.424731
4	-97.818427, 30.419020	-97.818497 30.418627
5	-97.811800, 30.423197	-97.811781 30.423170

Table 1: Coordinates of randomly generated points and coordinates of actual camera stations at the South Lake Austin and Upper Bull Creek Macrosites.

Species	Macrosite	Camera Station	Season 1							Season 2										
			1	2	3	4	5	6	7	1	2	3	4	5	6	7				
Gray Fox	SLAM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
		2	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	-	0	
		3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	-	0	
		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		7	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0
	UBCM	1	-	-	-	-	-	-	-	-	-	1	0	0	0	0	1	0	0	
		2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4		0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0		
5		0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0		
Raccoon	SLAM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	
		4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		6	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
		7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UBCM	1	-	-	-	-	-	-	-	-	-	1	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Ringtail	SLAM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	-	0	
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	
		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UBCM	1	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
WT Deer	SLAM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UBCM	1	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Coyote	SLAM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UBCM	1	-	-	-	-	-	-	-	-	-	1	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Fox Squirrel	SLAM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UBCM	1	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Cottontail	SLAM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UBCM	1	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	
		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Table 2: Presence/Absence data of all species seen in both sampling seasons at both macrosites. '1'=at least one individual of that species was present during 24hr period, '0'=no detection, '-'=camera station non-operational.

