Figure S1: Correlation plot of training variables. The strength of relationship is color-coded: blue represents negative correlations and red indicates positive correlations between variables. Theoretical values of Pearson correlation coefficient value ranges from -1 (perfect negative association) to +1 (perfect positive association), with 0 indicating no association between two variables.

Table S1.1 Surveys conducted in counties located North of The Balcones Escarpment. Cloud cover (CC) descriptions: 0 = clear, 1 = a few clouds, 2 = slightly cloudy, 3 = cloudy, some clear gaps, 4 = overcast. Suitable habitat was determined to be areas that are flat, without pure sands or dense woody encroachment, and with some level of disturbance. Favorable weather was determined to be cloud conditions below level 2 and with air temperatures at least 27.78 degrees Celsius (Axtell 1954, Neuharth 2018).

Date	County	Survey Minutes	STEL Observed	Highest Daily Temperature (c)	CC	Road Type	Surroundings	Suitable Habitat?	Favorable Weather?
3/26/2021	Dimmitt	180	0	33.33	1	Caliche	Wooded Rangeland	No	Yes
3/26/2021	Duval	45	0	33.33	1	Caliche	Wooded Rangeland	No	Yes
4/6/2021	Duval	74	0	30.6	2	Caliche / Dirt	Wooded Rangeland	No	No
3/2/2020	Duval	161	0	30.0	0	Caliche	Grassy Rangeland	Yes	Yes
3/3/2020	Jim Hogg	39	0	23.9	0	Caliche	Grazed Rangeland	Yes	Yes
3/30/2021	Jim Hogg	118	0	33.9	0	Caliche	Ag / Grassy Rangeland	Yes	Yes
3/27/2021	Jim Hogg	26	0	35.6	1	Asphalt	Wooded Rangeland	No	Yes
3/18/2020	Kenedy / Kleberg	111	0	30.6	0	Rangeland	Rangeland	Yes	Yes
3/27/2021	Kenedy / Kleberg	77	0	35.6	1	Asphalt	Ag	Yes	Yes
3/27/2021	Kenedy / Kleberg	90	0	33.33	1	Caliche / Dirt	Ag	Yes	Yes
4/5/2021	Nueces	55	0	27.8	4	Caliche / Dirt	Wooded Rangeland	No	No

Table S1.1 Continued.

4/13/2021	Nueces	39	0	28.33	4	Caliche	Wooded Rangeland	No	No
4/14/2021	Webb	85	0	33.33	2	Gravel	Wooded Rangeland	No	No
4/16/2021	Webb	42	0	30.6	2	Caliche	Wooded Rangeland	No	No
5/19/2021	Webb	120	0	32.33	1	Asphalt	Wooded Rangeland	No	Yes
Total		**1262.00**	**0.00**						
Average		**84.13**		**31.5**					
Standard Deviation		**46.33**		**3.15**					

Table S1.2 Surveys conducted in counties located North of The Balcones Escarpment. Cloud cover (CC) descriptions: 0 = clear, 1 = a few clouds, 2 = slightly cloudy, 3 = cloudy, some clear gaps, 4 = overcast. Suitable habitat was determined to be areas that are flat, without pure sands or dense woody encroachment, and with some level of disturbance. Favorable weather was determined to be cloud conditions below level 2 and with air temperatures at least 27.78 degrees Celsius (Axtell 1954, Neuharth 2018).

Date	County	Survey Minutes	STEL Observed	Highest Daily Temperature (c)	CC	Road Type	Surroundings	Suitable Habitat?	Favorable Weather?	Survey Minutes Per STEL
4/26/2021	Concho	104	9	33.34	3	Caliche	Agriculture	Yes	No	11.55
5/5/2021	Concho	109	0	26.11	0	Caliche	Agriculture	Yes	Yes	
5/6/2021	Concho	53	0	29.5	0	Caliche	Agriculture	Yes	Yes	
5/6/2021	Concho	30	0	29.5	0	Caliche	Agriculture	Yes	Yes	
6/25/2020	Crocket	54	0	35.00	0	Asphalt	Grassy Oil Fields	No	Yes	
5/7/2021	Crocket	65	0	31.11	0	Asphalt / Caliche	Grassy Oil Fields	No	Yes	
5/7/2021	Crocket	31	0	31.11	0	Caliche	Grazed Rangeland	Yes	Yes	
5/8/2021	Crocket	45	0	31.11	0	Caliche	Grazed Rangeland	Yes	Yes	
5/9/2021	Crocket	128	0	36.11	0	Caliche	Ag / Grazed Rangeland	Yes	Yes	
5/2/2021	Irion	52	0	34.5	0	Asphalt / Caliche	Agriculture	Yes	Yes	
5/8/2021	Irion	43	0	32.22	0	Asphalt / Caliche	Agriculture	Yes	Yes	
5/8/2021	Irion	20	0	32.22	0	Asphalt / Caliche	Agriculture	Yes	Yes	
5/7/2021	Iron	30	0	30.6	0	Asphalt / Caliche	Agriculture	Yes	Yes	
4/25/2021	Midland	90	0	33.34	0	Asphalt	Grassy Oil Fields	No	Yes	

Table S1.2 Continued.

Date	County									
4/27/2021	Midland	46	0	33.34		1 Asphalt	Grassy Oil Fields	No	Yes	
						Caliche /				
6/24/2020	Runnels	38	0	33.9		0 Dirt	Agriculture	Yes	Yes	
						Caliche /				
6/26/2020	Runnels	63	0	35.00		0 Dirt	Agriculture	Yes	Yes	
6/4/2021	Runnels	46	1	24.5		4 Caliche	Agriculture	Yes	No	46
6/22/2020	Tom Green	70	0	40.6		0 Caliche	Agriculture	Yes	Yes	
6/23/2020	Tom Green	96	2	32.8		0 Caliche	Agriculture	Yes	Yes	48
6/24/2020	Tom Green	83	0	33.9		0 Caliche	Agriculture	Yes	Yes	
4/28/2021	Tom Green	42	0	33.34		2 Caliche	Agriculture	Yes	No	
4/28/2021	Tom Green	29	0	33.34		2 Caliche	Grazed Rangeland	Yes	No	
						Asphalt /				
5/2/2021	Tom Green	92	1	34.5		0 Caliche	Agriculture	Yes	Yes	92
5/6/2021	Tom Green	26	0	29.5		0 Caliche	Agriculture	Yes	Yes	
5/9/2021	Tom Green	60	8	31.7		0 Caliche	Agriculture	Yes	Yes	7.5
6/4/2021	Green	60	1	24.5		4 Caliche	Agriculture	Yes	No	60
						Asphalt /				
5/17/2021	Ward	168	0	31.7		0 Caliche	Grassy Oil Fields	No	Yes	
Total		**1773**	**22**							
Average		**63.32**		**32.07**						
Standard Deviation		**34.7**		**3.4**						

Table S1.3: The Error matrix of eight identified LULC classes based on 1480 samples from stratified random sampling with equal allocation. The values in the parenthesis indicate metric based on sample area-based information.

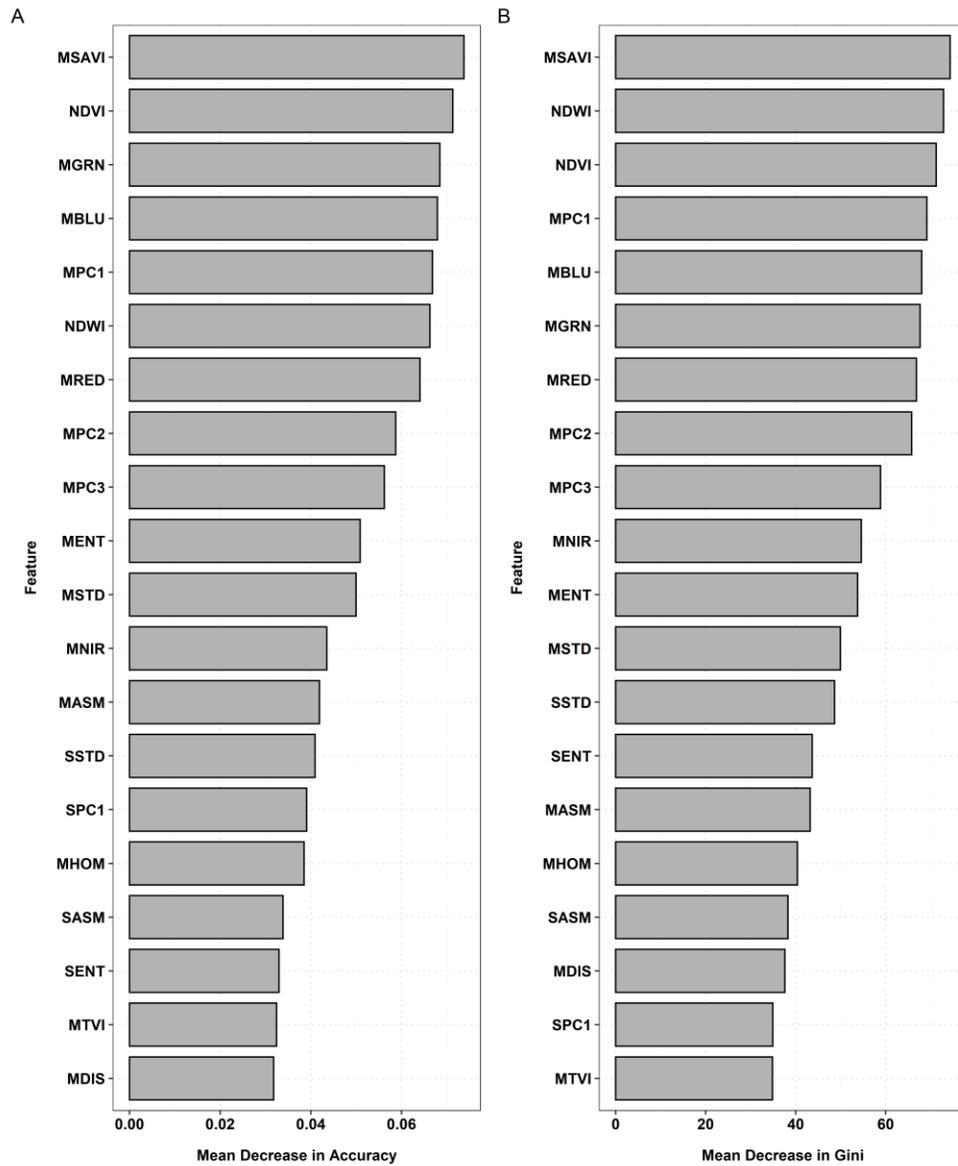| Predicted Class	Reference Class								Commission/Users' error	User Accuracy (Recall)
	Active crops	Fallow land	Grassland	Shrubland	Built-up1	Built-up2	Water	Shadow		
Active crops	165 (17.51%)	1 (0%)	9 (0.15%)	5 (0.04%)	1 (0.01%)	4 (0.01%)	0 (0%)	0 (0%)	10.81% (1.21%)	89.19% (98.79%)
Fallow land	0 (0%)	181 (52.94%)	3 (0.11%)	0 (0%)	0 (0%)	1 (0.04%)	0 (0%)	0 (0%)	2.16% (0.28%)	97.84% (99.72%)
Grassland	5 (0.26%)	1 (0.13%)	178 (8.05%)	1 (0.03%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3.78% (4.94%)	96.22% (95.06%)
Shrubland	0 (0%)	0 (0%)	3 (0.05%)	182 (10%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1.62% (0.53%)	98.38% (99.47%)
Built-up1	10 (0.26%)	2 (0.19%)	1 (0.04%)	0 (0%)	171 (3.99%)	0 (0%)	1 (0.01%)	0 (0%)	7.57% (10.86%)	92.43% (89.14%)
Built-up2	1 (0%)	2 (0.01%)	0 (0%)	1 (0%)	0 (0%)	181 (0.93%)	0 (0%)	0	2.16% (1.52%)	97.84% (98.48%)
Water	0 (0%)	2 (0.03%)	0 (0%)	0 (0%)	0 (0%)	2 (0.02%)	173 (4.45%)	8 (0.05%)	6.49% (2.15%)	93.51% (97.85%)
Shadow	0 (0%)	0 (0%)	0 (0%)	5 (0.01%)	0 (0%)	2 (0.02%)	6 (0.03%)	172 (0.62%)	7.03% (9.45%)	92.97% (90.55%)
Omission/Producer's error	8.84% (2.91%)	4.23% (0.67%)	8.25% (4.12%)	6.19% (0.84%)	0.58% (0.28%)	4.74% (8.38%)	3.89% (0.86%)	4.44% (7.53%)		
Producer's Accuracy (Sensitivity)	91.16% (97.09%)	95.77% (99.33%)	91.75% (95.88%)	93.81% (99.16%)	99.42% (99.72%)	95.26% (91.62%)	96.11% (99.14%)	95.56% (92.47%)		
Overall Accuracy	94.8% (98.5%)									
Kappa	94.1% (97.75%)									

Figure S1.2: Top 20 variable importance when using all variables for all classes, based on the mean decrease in accuracy (A) and mean decrease in Gini (B).
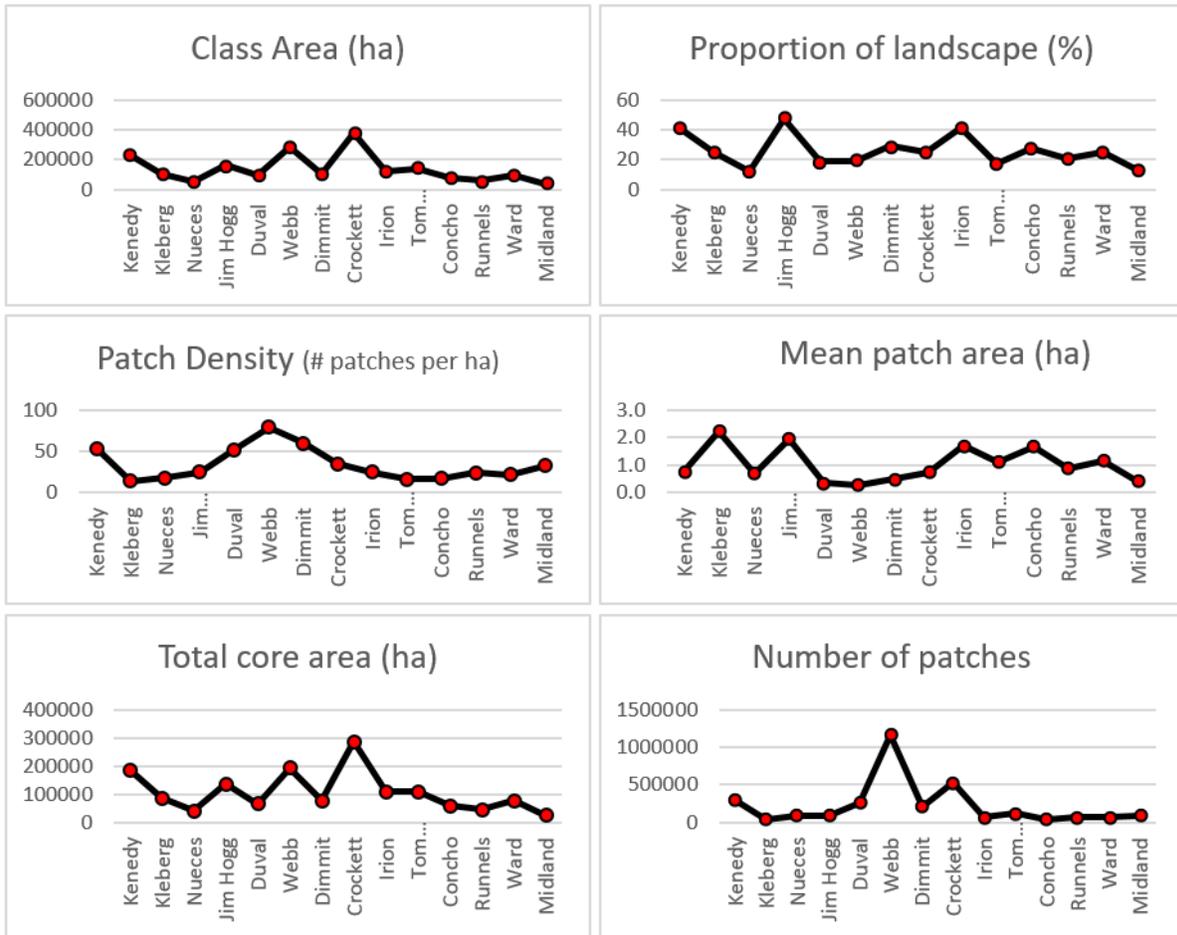
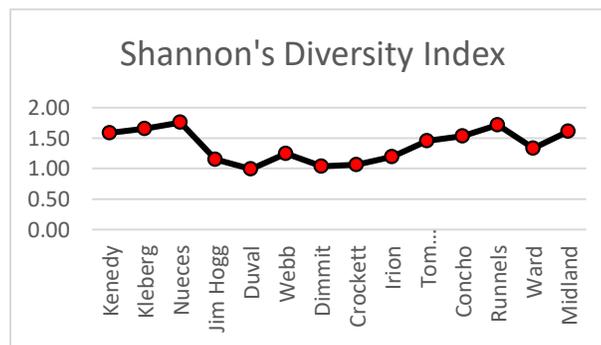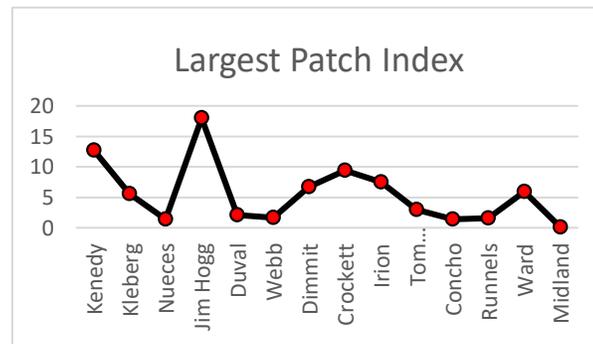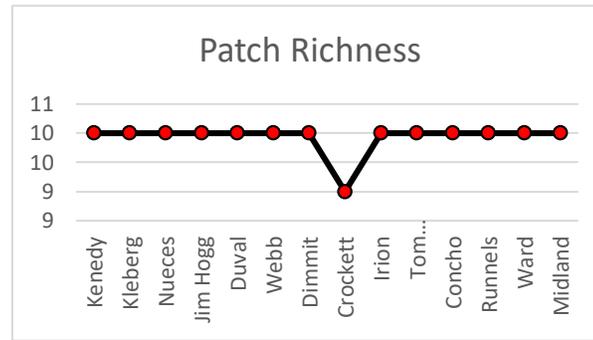Figure S1.3: Class-level fragmentation metrics for the fourteen counties assessed in this study.

Figure S1.4: Class-level (Largest Patch Index, % occupied by largest fragment) and Landscape-level (PR, SHDI) fragmentation metrics for the fourteen counties assessed in this study.