

Chin et al., Ecological Restoration 28-4 Appendices

Appendix 1. Characteristics of channel and process variables for selected bankfull cross sections of three study reaches in Austin, Texas.

Cross Section	State*	Channel Variable			Variable for Flow Strength	
		Cross-sect Area (m ²)	Width (m)	Avg. Depth (d) (m)	Average Velocity (V) (m/s)	Unit Stream Power (ω) (N/m/s)
Waller						
1	N	10.4	8.5	1.22	3.6	0.216
	R	14.7	11.5	1.27	2.2	0.218
	% change	+41.4%	+35.3%	+4.1%	-38.9%	0.9%
2	N	9.5	8.0	1.18	3.6	0.208
	R	11.8	9.7	1.21	2.1	0.196
	% change	+24.2%	+21.3%	+2.54%	-41.7%	-5.77%
3	N	15.0	11.9	1.26	3.9	0.241
	R	15.3	12.0	1.28	2.2	0.218
	% change	+2.0%	+0.8%	+1.6%	-43.6%	-9.5%
4	N	11.5	7.8	1.49	3.9	0.285
	R	14.8	8.8	1.68	2.3	0.299
	% change	+28.7%	+12.8%	+12.8%	-41.0%	4.9%
Lower Tannehill						
A	N	9.0	9.0	1.00	3.3	0.160
	R	7.9	13.5	0.58	1.4	0.074
	% change	-12.2%	+50.0%	-42.0%	-57.6%	-53.75%
B	N	8.2	9.1	0.90	3.1	0.137
	R	14.8	15.2	0.97	2.0	0.170
	% change	+80.5%	+67.0%	+7.8%	-35.5%	24.1%
C	N	14.2	12.1	1.18	3.8	0.218
	R	10.9	12.4	0.88	1.8	0.141

	<i>% change</i>	-23.2%	+2.5%	-25.4%	-52.6%	-35.3%
D	N	25.3	16.2	1.57	4.5	0.349
	R	32.8	22.5	1.46	2.6	0.338
	<i>% change</i>	+29.6%	+38.9%	-7.0%	-42.2%	-3.2%
Upper Tannehill						
AA	N	9.0	8.7	1.03	2.1	0.043
	R	11.3	10.5	1.08	1.7	0.109
	<i>% change</i>	+25.6%	+20.7%	+4.85%	-19.1%	+153.5%
BB	N	9.0	8.2	1.10	2.2	0.047
	R	11.1	8.8	1.26	1.8	0.134
	<i>% change</i>	+23.3%	+7.3%	+14.6%	-18.2%	+185.1%
CC	N	9.2	8.0	1.16	2.2	0.051
	R	15.3	11.7	1.30	1.9	0.147
	<i>% change</i>	+66.3%	+46.3%	+12.1%	-13.6%	+188.24%

* Refers to nonrestored (N) conditions from preproject topographic surveys, or restored (R) characteristics as measured in 2007

Appendix 2. Habitat assessment scores for restored and nonrestored (preproject or reference) study sites in Waller Creek (restored in 1998), Lower Tannehill Creek (restored in 2001), and Upper Tannehill Creek (restored in 2006); sampling location and date indicated by numerical code and year (see Methods section for explanation). Values in parentheses indicate possible ranges of scores; LB and RB indicate left and right bank of stream. See Table 1 for description of metrics.

Metric	Waller		Lower Tannehill				Upper Tannehill		
	Reference	Restored	Preproject	Restored		Reference	Restored		
	1- 2007	2- 2007	1- 1996	1- 2003	1- 2007	2- 2007	1- 2006	2- 2007	3- 2007
Cover (0-20)	11	18	16	14	17	17	10	16	16
Embeddedness (0-20)	13	17	4	16	16	16	13	16	16
Velocity Depth Regime (0-20)	6	7	7	10	11	16	10	7	7
Sediment Deposition (0-20)	3	10	3	18	14	17	16	7	7
Channel Flow (0-20)	5	5	6	16	14	17	13	8	8
Channel Alteration (0-20)	15	16	6	8	16	18	13	18	18
Riffle Frequency (0-20)	8	7	2	11	14	13	10	7	7
Bank Stability									
LB (0-10)	2	9	3	7	9	10	4	9	9
RB (0-10)	2	9	2	8	9	10	3	9	9
Vegetative Protection									
LB (0-10)	2	9	2	7	9	10	3	5	5
RB (0-10)	2	9	2	4	9	10	6	5	5
Riparian Vegetative Width									
LB (0-10)	2	2	2	4	6	4	7	2	2
RB (0-10)	2	2	3	5	6	4	6	2	2
Total Score	73	120	58	128	150	162	114	111	111

Appendix 3. Biological metric results for restored and nonrestored (preproject or reference) study sites in Waller Creek (restored in 1998), Lower Tannehill Creek (restored in 2001), and Upper Tannehill Creek (restored in 2006); sampling location and date indicated by numerical code and year (see Methods section for explanation). Values converted to a benthic index of biological integrity (BIBI) are shown in parenthesis; following the Texas Commission on Environmental Quality (2007), higher scores (from possible values of 5, 3, and 1) indicate better stream health. The total of the BIBI values yield the aquatic life use (ALU) score with categories of exceptional (total BIBI scores > 40), high (31-40); intermediate (21-30), and limited (<21). See Table 2 for descriptions of metrics.

Metric	Waller		Lower Tannehill				Upper Tannehill		
	Reference 1- 2007	Restored 2- 2007	Preproject 1- 1996	Restored		Reference 1- 2006	Restored		
			1- 2003	1- 2007	2- 2007		2- 2007	3- 2007	
Taxa richness	8 (1)	20 (3)	6 (1)	9 (1)	23 (3)	15 (1)	11 (1)	11 (1)	9 (1)
Diptera taxa	2 (1)	4 (3)	1 (1)	4 (3)	2 (1)	3 (1)	1 (1)	1 (1)	1 (1)
Ephemeroptera Taxa	0 (1)	1 (1)	1 (1)	0 (1)	1 (1)	2 (3)	2 (3)	2 (3)	1 (1)
Intolerant Taxa	0 (1)	1 (1)	1 (1)	0 (1)	3 (1)	3 (1)	4 (3)	2 (1)	1 (1)
% EPT taxa	0 (1)	4.35 (1)	9.09 (1)	0 (1)	31.94 (5)	56.34 (5)	14.58 (1)	2.45 (1)	3.30 (1)
% Chironomidae	42.50 (1)	36.96 (1)	18.18 (3)	84.55 (1)	14.74 (3)	22.04 (3)	67.7 (1)	78.16 (1)	90.77 (1)
% Tolerant taxa	0.00 (3)	6.52 (3)	0.00 (3)	0.73 (3)	0.49 (3)	0.00 (3)	6.25 (3)	0.00 (3)	0.88 (3)
% Grazers	0.00 (1)	10.87 (3)	0.00 (1)	2.2 (1)	13.76 (3)	27.86 (5)	7.81 (1)	1.01 (1)	2.53 (1)
% Gatherer	21.25 (5)	29.35 (5)	18.18 (5)	83.82 (1)	16.22 (5)	37.94 (5)	14.06 (3)	39.92 (5)	47.03 (5)
% Filterers	1.25 (1)	0.00 (1)	18.18 (3)	94.11 (3)	18.67 (3)	2.08 (1)	68.22 (3)	0.42 (1)	0.00 (1)
% Dominance (3 Taxa)	72.50 (1)	58.70 (3)	72.72 (1)	94.11 (1)	72.11 (1)	93.56 (1)	82.81 (1)	97.05 (1)	96.04 (1)
ALU Score	17	25	21	17	29	29	21	19	17
ALU Category	Limited	Inter- mediate	Inter- mediate	Limited	Inter- mediate	Inter- mediate	Inter- mediate	Limited	Limited