

Supplementary Material

Effects of thinning buffer width and fluvial geomorphology on down wood in headwater streams

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Table A.1. Alternative models compared during steps 1, 2, and 3 of the modeling process for post-treatment data only.

	Δ AICC	w	Weight ratio
Step 1			
Decay	na	na	na
Zone	389.1	0.00	3.13E+84
Decay Zone	56.6	0.00	1.91E+12
Decay Zone Decay*Zone	0.0	1.00	1.00E+00
Step 2			
Decay Zone Decay*Zone Trt Time Trt*Time Zone*Time	19.1	0.00	2.53E-01
Decay Zone Decay*Zone Trt Time Trt*Time Zone*Trt	25.0	0.00	4.85E+00
Decay Zone Decay*Zone Trt Time Trt*Time Zone*Time Zone*Trt Zone*Time*Trt	51.4	0.00	2.59E+06
Decay Zone Decay*Zone Trt Time Trt*Time Decay*Trt Zone*Trt	13.1	0.00	1.26E-02
Decay Zone Decay*Zone Trt Time Trt*Time Decay*Trt Zone*Trt Decay*Zone*Trt	23.9	0.00	2.74E+00
Decay Zone Decay*Zone Trt Time Trt*Time Decay*Trt Zone*Time	10.5	0.00	3.43E-03
Decay Zone Decay*Zone Trt Time Trt*Time Decay*Time Zone*Trt	20.0	0.00	3.91E-01
Decay Zone Decay*Zone Trt Time Trt*Time Decay*Time Zone*Time	14.0	0.00	1.94E-02
Decay Zone Decay*Zone Trt Time Trt*Time Decay*Time Zone*Time Time*Zone*Decay	17.6	0.00	6.69E+03
Decay Zone Decay*Zone Trt Time Decay*Time	5.7	0.04	1.72E+01
Decay Zone Decay*Zone Trt Time Decay*Trt	2.6	0.19	3.62E+00
Decay Zone Decay*Zone Trt Time Decay*Time Decay*Time*Trt	0.0	0.70	1.00E+00
Decay Zone Decay*Zone Trt Time Zone*Time	14.6	0.00	1.47E+03
Decay Zone Decay*Zone Trt Time Zone*Trt	20.7	0.00	3.05E+04
Decay Zone Decay*Zone Trt Time Zone*Time Zone*Trt Zone*Time*Trt	51.4	0.00	1.45E+11
Decay Zone Decay*Zone Trt Time Decay*Trt Zone*Trt	9.5	0.01	4.73E+00
Decay Zone Decay*Zone Trt Time Decay*Trt Zone*Trt Decay*Zone*Trt	20.1	0.00	9.17E+02
Decay Zone Decay*Zone Trt Time Decay*Trt Zone*Time	6.4	0.03	1.00E+00
Decay Zone Decay*Zone Trt Time Decay*Time Zone*Trt	15.6	0.00	1.27E+03

	$\Delta AICC$	w	Weight ratio
Decay Zone Decay*Zone Trt Time Decay*Time Zone*Time	9.4	0.01	5.83E+01
Decay Zone Decay*Zone Trt Time Decay*Time Zone*Time Time*Zone*Decay	13.0	0.00	3.40E+02
Decay Zone Decay*Zone Time Decay*Time	14.3	0.00	6.69E+02
Decay Zone Decay*Zone Time Zone*Time	23.4	0.00	6.40E+04
Decay Zone Decay*Zone Time Decay*Time Zone*Time	18.2	0.00	4.65E+03
Decay Zone Decay*Zone Time Decay*Time Zone*Time Time*Zone*Decay	21.9	0.00	2.92E+04
Decay Zone Decay*Zone Trt Decay*Trt	7.2	0.02	1.87E+01
Decay Zone Decay*Zone Trt Zone*Trt	25.6	0.00	1.87E+05
Decay Zone Decay*Zone Trt Decay*Trt Zone*Trt	14.0	0.00	5.82E+02
Decay Zone Decay*Zone Trt Decay*Trt Zone*Trt Decay*Zone*Trt	24.5	0.00	1.10E+05
Step 3			
Decay Zone Decay*Zone Trt Time Decay*Time Decay*Time*Trt Gradient	9.4	0.00	1.10E+02
Decay Zone Decay*Zone Trt Time Decay*Time Decay*Time*Trt Gradient W:D	10.1	0.00	1.53E+02
Decay Zone Decay*Zone Trt Time Decay*Time Decay*Time*Trt Gradient W:D Gradient*W:D	11.8	0.00	3.62E+02
Decay Zone Decay*Zone Trt Time Decay*Time Decay*Time*Trt W:D	8.4	0.01	6.63E+01
Decay Zone Decay*Zone Trt Time Decay*Time Decay*Time*Trt Area	0.0	0.36	1.00E+00
Decay Zone Decay*Zone Trt Time Decay*Time Decay*Time*Trt Gradient Area	2.0	0.13	2.73E+00
Decay Zone Decay*Zone Trt Time Decay*Time Decay*Time*Trt Gradient Area Gradient*Area	4.2	0.05	8.01E+00
Decay Zone Decay*Zone Trt Time Decay*Time Decay*Time*Trt W:D Area	1.0	0.22	1.62E+00
Decay Zone Decay*Zone Trt Time Decay*Time Decay*Time*Trt W:D Area W:D*Area	3.1	0.08	4.77E+00
Decay Zone Decay*Zone Trt Time Decay*Time Decay*Time*Trt Gradient W:D Area	3.0	0.08	4.59E+00
Decay Zone Decay*Zone Trt Time Decay*Time Decay*Time*Trt Gradient W:D Area Gradient*W:D	5.1	0.03	1.28E+01
Decay Zone Decay*Zone Trt Time Decay*Time Decay*Time*Trt Gradient W:D Area Gradient*Area	5.3	0.03	1.38E+01
Decay Zone Decay*Zone Trt Time Decay*Time Decay*Time*Trt Gradient W:D Area Gradient*W:D Gradient*Area	7.3	0.01	3.90E+01

Table A.2. Type III tests of fixed effects for final model selected (post-treatment data).

Effect	Num DF	Den DF	F Value	Pr > F
Decay	1	114	1087.41	<.0001
Zone	2	452	234.12	<.0001
Decay*Zone	2	300	37.12	<.0001
Trt	3	36.7	4	0.0146
Time	2	500	5.54	0.0042
Decay*Time	2	512	6.17	0.0022
Decay*Trt*Sample	15	540	2.58	0.001
Area	1	31	10.68	0.0027

Table A.3. Models compared during steps 1, 2, and 3 of the modeling process for pre-treatment data only.

	Δ AICC	w	Weight ratio
Step 1			
Zone	na	na	na
Decay	53.3	0.00	3.83E+11
Decay Zone	27.3	0.00	8.62E+05
Decay Zone Decay*Zone	0.0	1.00	1.00E+00
Step 2			
Decay Zone Decay*Zone BUFFER Decay*BUFFER	6.0	0.04	1.99E+01
Decay Zone Decay*Zone BUFFER Zone*BUFFER	3.7	0.13	6.29E+00
Decay Zone Decay*Zone BUFFER Decay*BUFFER Zone*BUFFER	9.6	0.01	1.23E+02
Decay Zone Decay*Zone BUFFER Decay*BUFFER Zone*BUFFER Decay*Zone*BUFFER	22.0	0.00	6.02E+04
Decay Zone Decay*Zone BUFFER	0.0	0.82	1.00E+00
Step 3			
Decay Zone Decay*Zone Gradient	0.0	0.22	7.69E-01
Decay Zone Decay*Zone Gradient Wdratio	2.0	0.08	2.07E+00
Decay Zone Decay*Zone Gradient Wdratio Gradient*Wdratio	3.5	0.04	4.53E+00
Decay Zone Decay*Zone Wdratio	0.9	0.14	1.20E+00
Decay Zone Decay*Zone Area_ha_	0.5	0.17	1.00E+00
Decay Zone Decay*Zone Gradient Area_ha_	1.2	0.12	1.37E+00
Decay Zone Decay*Zone Gradient Area_ha_ Gradient*Area_ha_	4.7	0.02	8.09E+00
Decay Zone Decay*Zone Wdratio Area_ha_	2.6	0.06	2.79E+00
Decay Zone Decay*Zone Wdratio Area_ha_ Wdratio*Area_ha_	2.5	0.06	2.67E+00
Decay Zone Decay*Zone Gradient Wdratio Area_ha_	3.1	0.05	3.61E+00
Decay Zone Decay*Zone Gradient Wdratio Area_ha_ Gradient*Wdratio	4.6	0.02	7.73E+00
Decay Zone Decay*Zone Gradient Wdratio Area_ha_ Gradient*Area_ha_	6.7	0.01	2.21E+01
Decay Zone Decay*Zone Gradient Wdratio Area_ha_ Gradient*Wdratio Gradient*Area_ha_	8.3	0.00	4.89E+01

Table A.4. Models of fixed effects selected at each step (1–3), and AICc comparisons among steps (pre-treatment only). Because effects related to the experimental treatment structure did not lead to model improvements over step 1, treatment effects were not carried forward from step 2 to step 3.

Step	Process	Model	ΔAICc	w	weight ratio
1	Distribution within streams	Decay Zone Decay*Zone	0.0	0.58	1.00
2	Experimental treatment structure	Decay Zone Decay*Zone Trt	3.5	0.10	5.65
3	Geomorphology	Decay Zone Decay*Zone Gradient	1.2	0.32	1.84