

Supplementary Material

Residual forest structure influences behaviour of Pacific marten (*Martes caurina*) on post-fire landscapes

Logan A. Volkmann^{A,*} and *Karen E. Hodges*^A

^ADepartment of Biology, University of British Columbia Okanagan, Science Building, 1177 Research Road, Kelowna, BC V1V 1V7, Canada.

*Correspondence to: Email: loganvolkmann@gmail.com

1 **Supporting Information**

2 **Table A1. Summary of habitat attributes measured at sites in north-central Washington (2006 burn and adjacent unburned areas)**

3 ‘Burned’ sites were located within intact areas of the burn, ‘foraging’ sites were located along marten snow trails, ‘marking’ sites were located where marten scent-
 4 marking (urine or scat) had occurred, and ‘unburned’ sites were randomly located outside the burn perimeter. Means and confidence intervals are bootstrapped
 5 values. We defined decay classes as (1) dead foliage present, (2) foliage absent but bark intact, (3) bark absent but heartwood intact, or (4) heartwood soft and
 6 crumbling (Resources Information Standards Committee 2007). We recorded height classes as (1) 0-50 cm, (2) 50-100 cm, (3) 100-150 cm, (4), 150-200 cm, or (5)
 7 >200 cm. ‘Overall’ refers to trees and snags together.

Habitat attribute	Burned (N = 147)			Foraging (N = 159)			Marking (N = 20)			Unburned (N = 150)		
	N	Mean	95% CIs	N	Mean	95% CIs	N	Mean	95% CIs	N	Mean	95% CIs
<i>Trees and snags</i>												
Canopy closure (%)	147	26.3	22.9 - 30.6	159	43.1	39.6 - 47	20	43.3	35.4 - 51.5	150	68.2	63.4 - 72.5
Percent live trees	147	10.5	7.0 - 15.0	159	21.4	17.4 - 26	20	32	21.3 - 43.1	150	84.4	79.4 - 88.0
Tree density (n/ha)	147	138.1	80.3 - 246.3	159	286.3	219 - 372.6	20	302.9	191 - 529.4	150	971.9	836.7 - 1140.8
Tree diameter (cm)	33	15.46	13.45 - 17.94	86	17.74	16.81 - 18.77	15	18.01	15.44 - 20.08	140	19.26	18.14 - 20.48
Tree basal area (m ² /ha)	147	3.2	1.8 - 5.4	159	7.6	5.8 - 9.9	20	9.1	5.9 - 14.8	150	26.2	23.6 - 29.0
Largest tree (cm)	33	23.34	19.55 - 27.57	86	26.27	24.51 - 28.03	15	30.39	24.74 - 33.91	140	41.23	38.42 - 44.92
Snag density (n/ha)	147	483.7	418.8 - 560.2	159	746.6	662.4 - 847.3	20	714.7	496.6 - 1065.7	150	111.4	85.9 - 144.7
Snag diameter (cm)	136	20.82	19.70 - 22.07	155	18.92	18.07 - 19.8	20	22.80	20.21 - 26.38	85	18.30	15.88 - 22.24
Snag basal area (m ² /ha)	147	16.9	14.9 - 19.0	159	21.9	19.7 - 24.1	20	28.2	21.2 - 35.4	150	3.9	2.8 - 5.6
Largest snag (cm)	136	36.59	34.21 - 39.49	155	35.01	32.97 - 37.14	20	39.19	34.51 - 44.31	85	26.59	22.83 - 31.99

9 **Table A1.** Continued.

Habitat attribute	Burned (N = 147)			Foraging (N = 159)			Marking (N = 20)			Unburned (N = 150)		
	N	Mean	95% CIs	N	Mean	95% CIs	N	Mean	95% CIs	N	Mean	95% CIs
Overall density (n/ha)	147	621.6	528.2 - 750.2	159	1034.8	917.5 - 1160.1	20	1017.9	776.7 - 1319.4	150	1084.1	934.3 - 1258.2
Overall diameter (cm)	137	20.11	19.13 - 21.29	157	18.89	18.19 - 19.67	20	21.38	19.5 - 23.74	141	19.44	18.38 - 20.75
Overall basal area (m ² /ha)	147	20.0	17.6 - 22.7	159	29.0	26.4 - 31.8	20	37.4	30.6 - 43.4	150	30.1	27.2 - 33.0
Largest overall (cm)	137	36.82	34.48 - 39.58	157	36.04	34.17 - 38.10	20	40.73	36.80 - 45.20	141	43.98	40.88 - 47.88
Snag decay class	136	2.4	2.3 - 2.4	155	2.1	2.1 - 2.2	20	2.1	2.1 - 2.2	85	2.1	2.0 - 2.2
<i>Deadfall</i>												
Deadfall volume (m ³ /ha)	147	153.4	132.8 - 178.4	159	161.5	140.9 - 184.1	20	263.5	177.6 - 375.2	150	109.2	90.1 - 134.8
Deadfall diameter (cm)	140	16.11	15.42 - 16.98	156	14.94	14.27 - 15.89	18	17.83	15.37 - 20.70	128	15.6	14.77 - 16.59
Largest deadfall (cm)	140	25.64	24.12 - 27.34	156	25.03	23.41 - 27.04	18	32.29	27.11 - 38.17	128	25.45	23.33 - 27.94
Deadfall decay class	140	2.9	2.9 - 3.0	156	2.9	2.9 - 3	18	2.9	2.7 - 3.1	128	3.4	3.3 - 3.5
<i>Saplings and shrubs</i>												
Sapling density (n/ha)	147	6142.4	4612.2 - 8661.5	159	12027.1	9834.4 - 15337.2	20	9306.6	4933.8 - 17387.7	150	3354.1	2520.0 - 4647.3
Sapling height class	109	2.5	2.3 - 2.7	135	2.1	1.9 - 2.2	16	1.8	1.5 - 2.3	101	2.8	2.5 - 3.1
Shrub density (n/ha)	147	7313.0	5310.6 - 13478.8	159	9630.3	8087.9 - 12383.7	20	8871.3	5013.4 - 16313.4	150	3527.8	2636.7 - 5262.8
Shrub height class	106	1.9	1.8 - 2.1	135	2.1	2 - 2.2	15	2.4	2.1 - 2.8	80	1.8	1.7 - 2.0
<i>Ground cover</i>												
Grass/forbs (%)	147	47.0	43.1 - 51.3	159	45.2	41.6 - 48.7	20	57.8	49.9 - 65.4	150	47.8	43.9 - 51.7
Moss/lichen (%)	147	9.5	7.5 - 12.1	159	22.5	19.7 - 25.7	20	15.6	10.9 - 21.4	150	7.1	5.7 - 8.9
Bare soil (%)	147	37.6	33.8 - 41.4	159	26.1	23 - 29.5	20	25.2	18.9 - 33.1	150	41.2	37.5 - 44.9
Bare rock (%)	147	5.9	4.6 - 7.4	159	6.2	4.9 - 7.8	20	1.3	0.5 - 3.0	150	4.0	3.0 - 5.3

Table A2. Summary of habitat attributes measured at sites in central British Columbia (2010 burn)

‘Burned’ sites were located within intact areas of the burn, ‘foraging’ sites were located along marten snow trails, ‘marking’ sites were located where marten scent-marking (urine or scat) had occurred, and ‘salvaged’ sites were randomly located within post-fire salvage-logged areas of the 2010 burn. Means and confidence intervals are bootstrapped values. We defined decay classes as (1) dead foliage present, (2) foliage absent but bark intact, (3) bark absent but heartwood intact, or (4) heartwood soft and crumbling (Resources Information Standards Committee 2007). We recorded height classes as (1) 0-50 cm, (2) 50-100 cm, (3) 100-150 cm, (4), 150-200 cm, or (5) >200 cm. ‘Overall’ refers to trees and snags together.

Habitat attribute	Burned (N = 135)			Foraging (N = 148)			Marking (N = 42)			Salvaged (N = 150)		
	N	Mean	95% CIs	N	Mean	95% CIs	N	Mean	95% CIs	N	Mean	95% CIs
<i>Trees and snags</i>												
Canopy closure (%)	135	29.3	25.3 - 33.6	148	33.7	29.6 - 37.8	42	54.8	46.7 - 62.7	150	1.9	1.4 - 2.8
Percent live trees	135	61.3	55.2 - 67.0	148	60.5	55.3 - 65.3	42	64.8	56.5 - 71.5	150	3.4	1.5 - 6.9
Tree density (n/ha)	135	261.7	223.1 - 305.6	148	257.8	221.1 - 300.9	42	448.6	366.8 - 558.6	150	5.1	2.1 - 10
Tree diameter (cm)	110	19.45	18.02 - 21.35	131	19.20	17.70 - 20.94	41	18.42	16.68 - 20.55	8	20.86	15.48 - 29.43
Tree basal area (m ² /ha)	135	7.9	6.7 - 9.3	148	7.7	6.5 - 9.0	42	11.7	9.7 - 14.2	150	0.2	0.1 - 0.6
Largest tree (cm)	110	31.79	29.33 - 34.55	131	29.66	27.25 - 32.24	41	31.62	28.31 - 34.68	8	25.40	18.31 - 36.89
Snag density (n/ha)	135	118.5	97.9 - 145.4	148	131.7	113.1 - 153.8	42	223.9	172.8 - 291.8	150	25.7	19.5 - 34.4
Snag diameter (cm)	102	14.82	13.50 - 16.83	126	13.11	12.28 - 14.45	40	11.83	10.91 - 13.20	61	19.34	16.41 - 23.80
Snag basal area (m ² /ha)	135	2.8	2.1 - 3.8	148	2.1	1.7 - 2.7	42	3.1	2.2 - 4.6	150	1.2	0.8 - 1.9
Largest snag (cm)	102	22.23	19.36 - 26.37	126	17.61	16.26 - 19.41	40	17.39	14.97 - 21.20	61	24.89	20.20 - 31.18
Overall density (n/ha)	135	380.0	332.7 - 436.2	148	388.7	342.8 - 444.6	42	673.2	574.5 - 789.0	150	30.7	23.1 - 41.6
Overall diameter (cm)	127	17.75	16.66 - 19.24	146	16.80	15.77 - 18.02	42	15.50	14.38 - 16.64	63	19.98	16.94 - 24.15
Overall basal area (m ² /ha)	135	10.7	9.2 - 12.5	148	9.8	8.5 - 11.3	42	14.7	12.5 - 17.5	150	1.5	1.0 - 2.2
Largest overall (cm)	127	33.36	30.63 - 36.72	146	29.73	27.56 - 32.13	42	31.71	28.36 - 34.91	63	25.88	21.27 - 31.81
Snag decay class	102	2.1	2.0 - 2.1	123	1.9	1.9 - 2.0	40	2.0	2.0 - 2.1	61	2.4	2.3 - 2.5

18 **Table A2. Continued.**

Habitat attribute	Burned (N = 135)			Foraging (N = 148)			Marking (N = 42)			Salvaged (N = 150)		
	N	Mean	95% CIs	N	Mean	95% CIs	N	Mean	95% CIs	N	Mean	95% CIs
<i>Deadfall</i>												
Deadfall volume (m ³ /ha)	135	52.4	42.3 - 64.3	148	60.1	49.0 - 73.7	42	46.0	30.4 - 71.1	150	146.2	128.3 - 167.2
Deadfall diameter (cm)	115	12.86	12.11 - 13.98	130	12.25	11.70 - 13.07	36	12.58	11.24 - 15.08	148	14.44	13.84 - 15.11
Largest deadfall (cm)	115	17.84	16.27 - 20.07	130	17.39	15.96 - 19.26	36	17.50	14.67 - 21.53	148	27.34	25.32 - 29.51
Deadfall decay class	114	2.4	2.4 - 2.5	130	2.3	2.2 - 2.4	36	2.4	2.2 - 2.6	148	2.7	2.6 - 2.7
<i>Saplings and shrubs</i>												
Sapling density (n/ha)	135	7042.2	5770.8 - 8965.7	148	9936.7	8145.9 - 12775.4	42	16373.8	10185.6 - 27477.3	150	7535.3	6413.9 - 9066.5
Sapling height class	113	1.9	1.7 - 2.1	133	1.8	1.7 - 2.0	38	2.0	1.7 - 2.5	141	1.8	1.7 - 1.9
Shrub density (n/ha)	135	19396.9	16292.8 - 23350.7	148	15389.4	13214.5 - 17847.1	42	16772.6	12697.4 - 22453.0	150	16360.5	13835.9 - 19894.4
Shrub height class	129	1.3	1.2 - 1.4	139	1.3	1.2 - 1.4	38	1.3	1.2 - 1.5	145	1.5	1.4 - 1.6
<i>Ground cover</i>												
Grass/forbs (%)	135	63.0	59.3 - 66.5	148	65.8	63.0 - 68.5	42	65.2	59.7 - 70.0	150	52.6	50.1 - 55.0
Moss/lichen (%)	135	10.1	8.6 - 11.9	148	14.5	12.8 - 16.3	42	14.3	11.1 - 18.7	150	13.6	12.1 - 15.3
Bare soil (%)	135	20.1	17.4 - 23.1	148	14.8	12.8 - 17.4	42	18.0	14.1 - 22.3	150	22.3	19.9 - 24.9
Bare rock (%)	135	6.8	5.4 - 8.4	148	4.9	3.8 - 6.4	42	2.5	1.3 - 4.2	150	11.5	9.8 - 13.6

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Table A3. Summary of habitat attributes measured at sites in central British Columbia (2017 burn and adjacent unburned areas)

‘Burned’ sites were located within intact areas of the burn, ‘foraging’ sites were located along marten snow trails, ‘marking’ sites were located where marten scent-marking (urine or scat) had occurred, and ‘unburned’ sites were randomly located outside the 2010 and 2017 burn perimeters. Means and confidence intervals are bootstrapped values. I defined decay classes as (1) dead foliage present, (2) foliage absent but bark intact, (3) bark absent but heartwood intact, or (4) heartwood soft and crumbling (Resources Information Standards Committee 2007). I recorded height classes as (1) 0-50 cm, (2) 50-100 cm, (3) 100-150 cm, (4), 150-200 cm, or (5) >200 cm. ‘Overall’ refers to trees and snags together.

Habitat attribute	Burned (N = 162)			Foraging (N = 197)			Marking (N = 8)			Unburned (N = 153)		
	N	Mean	95% CIs	N	Mean	95% CIs	N	Mean	95% CIs	N	Mean	95% CIs
<i>Trees and snags</i>												
Canopy closure (%)	162	39.3	35.5 - 43.5	197	52.1	48.4 - 55.9	8	71.8	56.6 - 80.0	153	69.6	65.4 - 73.4
Percent live trees	162	27.7	22.6 - 33.0	197	50.6	46.1 - 55	8	46.3	23.5 - 62.8	153	92.7	89.4 - 94.7
Tree density (n/ha)	162	164.3	127.9 - 206.3	197	370.0	325.7 - 425.6	8	313.3	155.2 - 457.6	153	868.4	793.5 - 947.4
Tree diameter (cm)	87	20.61	18.45 - 23.70	160	17.74	16.73 - 18.95	7	21.77	16.97 - 26.09	150	15.92	15.27 - 16.62
Tree basal area (m ² /ha)	162	5.6	4.3 - 7.2	197	10.1	8.8 - 11.7	8	13.5	7.1 - 25.1	153	21.5	19.7 - 23.5
Largest tree (cm)	87	30.98	27.95 - 34.20	160	31.82	29.57 - 34.51	7	40.99	29.94 - 49.96	150	36.90	34.66 - 39.30
Snag density (n/ha)	162	463.0	402.2 - 529.7	197	300.3	266.4 - 337.9	8	338.8	230.8 - 465.5	153	54.1	41.8 - 73.4
Snag diameter (cm)	141	14.17	13.54 - 14.99	178	12.35	11.71 - 14.08	8	15.18	12.10 - 19.44	82	15.22	13.57 - 18.26
Snag basal area (m ² /ha)	162	10.3	8.6 - 12.2	197	5.0	4.1 - 6.3	8	11.0	4.4 - 20.5	153	1.5	0.9 - 2.4
Largest snag (cm)	141	30.33	27.53 - 33.43	178	21.21	19.24 - 23.83	8	26.43	18.99 - 38.05	82	19.70	16.86 - 24.38
Overall density (n/ha)	162	627.5	563.1 - 701.0	197	670.4	613.4 - 734.9	8	653.1	576.9 - 763.9	153	922.8	841.3 - 1009.0
Overall diameter (cm)	148	15.75	15.00 - 16.67	187	15.50	14.76 - 16.44	8	18.82	15.72 - 21.3	150	15.91	15.29 - 16.59
Overall basal area (m ² /ha)	162	15.8	13.8 - 18.1	197	15.2	13.6 - 16.8	8	24.5	17.9 - 32.5	153	22.9	20.9 - 25.0
Largest overall (cm)	148	36.14	33.64 - 38.97	187	34.10	31.79 - 36.92	8	43.58	32.74 - 50.74	150	38.52	36.14 - 41.25
Snag decay class	141	1.5	1.5 - 1.6	178	1.4	1.4 - 1.5	8	1.5	1.2 - 1.8	82	1.9	1.8 - 2.1

27 **Table A3.** Continued.

Habitat attribute	Burned (N = 162)			Foraging (N = 197)			Marking (N = 8)			Unburned (N = 153)		
	N	Mean	95% CIs	N	Mean	95% CIs	N	Mean	95% CIs	N	Mean	95% CIs
<i>Deadfall</i>												
Deadfall volume (m ³ /ha)	162	41.7	32.4 - 54.1	197	40.2	32.1 - 54.2	8	38.2	15.5 - 67.1	153	80.1	62.9 - 103.6
Deadfall diameter (cm)	122	15.55	14.06 - 17.79	152	13.23	12.48 - 14.23	6	13.72	12.11 - 15.07	126	17.13	15.76 - 18.93
Largest deadfall (cm)	122	19.77	17.53 - 22.55	152	18.24	16.60 - 20.34	6	17.85	14.00 - 21.33	126	24.5	21.95 - 27.53
Deadfall decay class	121	2.9	2.8 - 3.0	152	2.6	2.5 - 2.7	6	2.6	2.2 - 2.8	126	3.0	2.8 - 3.1
<i>Saplings and shrubs</i>												
Sapling density (n/ha)	162	1870.2	1365.6 - 2575.2	197	4726.4	3550.7 - 6641.5	8	11597.3	4078.3 - 32427.8	153	3841.6	3047.9 - 5487.2
Sapling height class	58	1.6	1.4 - 2.0	112	1.9	1.7 - 2.2	7	2.4	1.5 - 3.9	120	3.2	3.0 - 3.5
Shrub density (n/ha)	162	3760.7	2716.4 - 5523.9	197	5316.4	4059.7 - 7153.8	8	11623.4	3581.0 - 24398.9	153	15584.8	13268.1 - 18749.0
Shrub height class	86	1.1	1.0 - 1.2	120	1.1	1.0 - 1.1	8	1.1	1.0 - 1.3	133	1.2	1.1 - 1.3
<i>Ground cover</i>												
Grass/forbs (%)	162	38.7	34.9 - 42.7	197	52.7	49.3 - 56.3	8	59.5	34.0 - 69.8	153	50.3	46.5 - 53.9
Moss/lichen (%)	162	3.0	2.3 - 3.9	197	6.7	5.7 - 8.0	8	6.7	2.3 - 12.3	153	27.7	24.3 - 31.2
Bare soil (%)	162	54.2	50.1 - 58.2	197	38.6	35.4 - 41.9	8	30.3	20.0 - 54.0	153	21.1	18.7 - 23.9
Bare rock (%)	162	4.1	3.3 - 5.1	197	1.9	1.5 - 2.5	8	3.5	1.5 - 7.7	153	1.0	0.6 - 1.7

29 **Table A4. Model coefficients for marten foraging sites**

30 Data are from multivariate logistic regressions using a subset of weakly-correlated habitat attributes
 31 (pairwise $r^2 < 0.25$). Bold entries with >0.50 overall importance are discussed in the main text. Variables
 32 with >0.1 overall importance are shown (see Table 2 for a full list). Burn severity classes are (1)
 33 ‘unchanged’ if no overstory tree mortality was evident, (2) ‘low’ for $<10\%$ mortality, (3) ‘moderate’ for
 34 $10\text{--}70\%$ mortality, or (4) ‘high’ for $>70\%$ mortality (Key and Benson 2006). Decay classes are (1) dead
 35 foliage present, (2) foliage absent but bark intact, (3) bark absent but heartwood intact, or (4) heartwood
 36 soft and crumbling (Resources Information Standards Committee 2007). ‘Overall’ refers to trees and
 37 snags together.

Explanatory variable	Estimate	95% Confidence interval	Unconditional variance	N models	Importance
<i>2006 burn</i>					
(Intercept)	-0.936	0.919	0.218	69	1.00
Moss/lichen cover (%)	0.052	0.020	$1.02 \cdot 10^{-4}$	32	1.00
Burn severity: ‘unchanged’	0.757	0.901	0.210	21	1.00
Burn severity: ‘low’	-0.664	0.841	0.182	21	1.00
Burn severity: ‘moderate’	-1.169	0.845	0.184	21	1.00
Overall density (n/ha)	$4.29 \cdot 10^{-4}$	0.001	$9.70 \cdot 10^{-8}$	32	0.76
Snag basal area (m²/ha)	0.011	0.026	$1.73 \cdot 10^{-4}$	32	0.56
Sapling density (n/ha)	$1.96 \cdot 10^{-6}$	$9.79 \cdot 10^{-6}$	$2.47 \cdot 10^{-11}$	32	0.27
Snag decay class: ‘1’	0.147	0.564	0.082	21	0.13
Snag decay class: ‘2’	0.127	0.493	0.063	21	0.13
Snag decay class: ‘3’	-0.208	0.834	0.180	21	0.13
<i>2010 burn</i>					
(Intercept)	-0.390	0.515	0.068	9	1.00
Moss/lichen cover (%)	0.041	0.026	$1.73 \cdot 10^{-4}$	4	0.99
Sapling density (n/ha)	$1.13 \cdot 10^{-5}$	$2.61 \cdot 10^{-5}$	$1.75 \cdot 10^{-10}$	4	0.59
Shrub density (n/ha)	$-6.54 \cdot 10^{-6}$	$1.54 \cdot 10^{-5}$	$6.10 \cdot 10^{-11}$	4	0.57

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39 **Table A4.** Continued.

Explanatory variable	Estimate	95% confidence interval	Unconditional variance	N models	Importance
<i>2017 burn</i>					
(Intercept)	-0.263	0.587	0.089	100	1.00
Canopy closure (%)	0.023	0.010	$2.37 \cdot 10^{-5}$	64	1.00
Snag density (n/ha)	-0.002	0.001	$3.49 \cdot 10^{-7}$	56	0.92
Bare rock cover (%)	-0.077	0.073	0.001	60	0.92
Sapling density (n/ha)	$4.44 \cdot 10^{-5}$	$5.33 \cdot 10^{-5}$	$7.34 \cdot 10^{-10}$	53	0.87
Sapling height: <50 cm	0.109	0.522	0.070	19	0.65
Sapling height: 50–100 cm	-0.042	0.750	0.146	19	0.65
Sapling height: 100–150 cm	0.782	2.030	1.066	19	0.65
Sapling height: 150–200 cm	10.998	$1.05 \cdot 10^3$	$2.83 \cdot 10^5$	19	0.65
Sapling height: >200 cm	0.003	0.744	0.143	19	0.65
Snag basal area (m ² /ha)	-0.008	0.027	$1.91 \cdot 10^{-4}$	58	0.25
Deadfall decay class: '1'	0.203	0.756	0.148	20	0.21
Deadfall decay class: '2'	0.109	0.384	0.038	20	0.21
Deadfall decay class: '3'	-0.043	0.211	0.011	20	0.21
Deadfall decay class: '4'	-0.177	0.709	0.130	20	0.21

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41 **Table A5. Model coefficients for marten scent-marking sites**

42 Data are from multivariate logistic regressions using a subset of weakly-correlated habitat attributes
 43 (pairwise $r^2 < 0.25$). Bold entries with >0.50 overall importance are discussed in the main text. Variables
 44 with >0.01 overall importance are shown (see Table 2 for a full list). Burn severity classes are (1)
 45 ‘unchanged’ if no overstory tree mortality was evident, (2) ‘low’ for $<10\%$ mortality, (3) ‘moderate’ for
 46 $10\text{--}70\%$ mortality, or (4) ‘high’ for $>70\%$ mortality (Key and Benson 2006). ‘Overall’ refers to trees and
 47 snags together.

Explanatory variable	Estimate	95% confidence interval	Unconditional variance	N models	Importance
<i>2006 burn</i>					
(Intercept)	-4.165	2.309	1.366	32	1.00
Overall basal area (m²/ha)	0.052	0.059	0.001	15	0.78
Burn severity: ‘unchanged’	0.909	1.957	0.982	15	0.64
Burn severity: ‘low’	0.262	1.305	0.437	15	0.64
Burn severity: ‘moderate’	-0.304	1.461	0.547	15	0.64
Deadfall volume (m³/ha)	0.002	0.004	$3.33 \cdot 10^{-6}$	15	0.57
Bare soil cover (%)	-0.002	0.008	$1.85 \cdot 10^{-5}$	15	0.21
Largest tree: 7.5–15.0 cm	0.152	0.763	0.149	1	0.21
Largest tree: 15.0–22.5 cm	0.363	1.321	0.447	1	0.21
Largest tree: 22.5–30.0 cm	0.447	1.475	0.557	1	0.21
Largest tree: 30.0–37.5 cm	0.820	2.602	1.736	1	0.21
Largest tree: 37.5–45.0 cm	0.316	1.189	0.362	1	0.21
Largest tree: 45.0–52.5 cm	-2.591	$6.03 \cdot 10^2$	$9.32 \cdot 10^4$	1	0.21
Overall density (n/ha)	$3.69 \cdot 10^{-6}$	$2.25 \cdot 10^{-4}$	$1.30 \cdot 10^{-8}$	15	0.20
<i>2010 burn</i>					
(Intercept)	-2.623	0.985	0.249	38	1.00
Canopy closure (%)	0.030	0.017	$7.11 \cdot 10^{-5}$	17	0.99
Bare rock cover (%)	-0.067	0.090	0.002	17	0.83
Snag density (n/ha)	0.002	0.003	$2.40 \cdot 10^{-6}$	17	0.75
Sapling density (n/ha)	$1.07 \cdot 10^{-5}$	$2.64 \cdot 10^{-5}$	$1.79 \cdot 10^{-10}$	17	0.56
Tree density (n/ha)	$1.02 \cdot 10^{-4}$	0.001	$1.12 \cdot 10^{-7}$	17	0.29

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49 **Table A5.** Continued.

Explanatory variable	Estimate	Confidence interval (\pm , $\alpha = 0.05$)	Unconditional variance	N models	Importance
<i>2017 burn</i>					
(Intercept)	-14.080	$2.64 \cdot 10^3$	$1.79 \cdot 10^6$	36	1.00
Canopy closure (%)	0.054	0.039	$3.86 \cdot 10^{-4}$	16	0.99
Sapling density (n/ha)	$9.10 \cdot 10^{-5}$	$1.71 \cdot 10^{-4}$	$7.46 \cdot 10^{-9}$	16	0.75
Bare soil cover (%)	-0.019	0.047	0.001	16	0.53
Shrub height: <50 cm	8.586	$2.64 \cdot 10^3$	$1.79 \cdot 10^6$	15	0.46
Shrub height: 50–100 cm	0.510	$1.80 \cdot 10^4$	$8.27 \cdot 10^7$	15	0.46
Shrub height: 100–150 cm	0.852	$2.56 \cdot 10^4$	$1.67 \cdot 10^8$	15	0.46
Shrub density (n/ha)	$1.47 \cdot 10^{-5}$	$5.04 \cdot 10^{-5}$	$6.51 \cdot 10^{-10}$	16	0.37

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Table A6. Habitat features at unburned sites versus sites selected by marten in adjacent burns

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Data are from north-central Washington (2006 burn). Bold entries indicate significant differences in habitat

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quality, based on Welch's t-tests. 'Marking' is scent-marking (urine or scat). 'Overall' refers to trees and snags

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together.

Habitat attribute	Unburned sites (N = 150)		Foraging sites (N = 159)					Marking sites (N = 20)				
	N	Mean	N	Mean	t	df	P-value	N	Mean	t	df	P-value
<i>Trees and snags</i>												
Canopy closure (%)	150	68.2	159	43.1	-8.35	292.5	<0.001	20	43.3	-5.13	31.6	<0.001
Percent live trees	150	84.4	159	21.4	-20.35	306.9	<0.001	20	32	-8.53	24.8	<0.001
Tree density (n/ha)	150	971.9	159	286.3	-7.81	217.9	<0.001	20	302.9	-5.97	66.5	<0.001
Tree diameter (cm)	140	19.26	86	17.74	-1.96	222.3	0.051	15	18.01	-0.9	21.1	0.381
Tree basal area (m ² /ha)	150	26.2	159	7.6	-10.71	276.1	<0.001	20	9.1	-6.54	36.6	<0.001
Largest tree (cm)	140	41.23	86	26.27	-7.98	204.2	<0.001	15	30.39	-3.82	31.1	0.001
Snag density (n/ha)	150	111.4	159	746.6	13.03	190.5	<0.001	20	714.7	4.29	19.4	<0.001
Snag diameter (cm)	85	18.3	155	18.92	0.4	97.8	0.693	20	22.80	2.05	59.1	0.045
Snag basal area (m ² /ha)	150	3.9	159	21.9	13.87	263.4	<0.001	20	28.2	6.45	20.3	<0.001
Largest snag (cm)	85	26.59	155	35.01	3.33	121.1	0.001	20	39.19	3.67	54	0.001
Overall density (n/ha)	150	1084.1	159	1034.8	-0.49	282.4	0.625	20	1017.9	-0.4	33.6	0.689
Overall diameter (cm)	141	19.44	157	18.89	-0.8	241.5	0.427	20	21.38	1.55	31.6	0.131
Overall basal area (m ² /ha)	150	30.1	159	29.0	-0.52	303	0.601	20	37.4	1.98	27.3	0.057
Largest overall (cm)	141	43.98	157	36.04	-3.87	221.7	<0.001	20	40.73	-1.15	49.3	0.255
Snag decay class	85	2.1	155	2.1	-0.3	126	0.768	20	2.1	-0.49	82.9	0.626
<i>Deadfall</i>												
Deadfall volume (m ³ /ha)	150	109.2	159	161.5	3.31	305.3	0.001	20	263.5	2.97	21	0.007
Deadfall diameter (cm)	128	15.6	156	14.94	-1.07	263.1	0.284	18	17.83	1.52	21.1	0.143
Largest deadfall (cm)	128	25.45	156	25.03	-0.28	254.7	0.783	18	32.29	2.18	22.9	0.04
Deadfall decay class	128	3.4	156	2.9	-8.69	240	<0.001	18	2.9	-4.45	23.4	<0.001
<i>Saplings and shrubs</i>												
Sapling density (n/ha)	150	3354.1	159	12027.1	6.01	206.8	<0.001	20	9306.6	1.93	20.2	0.067
Sapling height class	101	2.8	135	2.1	-4.63	168.2	<0.001	16	1.8	-3.95	30	<0.001
Shrub density (n/ha)	150	3527.8	159	9630.3	5.18	258.1	<0.001	20	8871.3	1.92	21	0.069
Shrub height class	80	1.8	135	2.1	2.37	169.9	0.019	15	2.4	2.6	20.7	0.017
<i>Ground cover</i>												
Grass/forbs (%)	150	47.8	159	45.2	-1.01	301.5	0.315	20	57.8	2.19	29.2	0.036
Moss/lichen (%)	150	7.1	159	22.5	8.99	240	<0.001	20	15.6	3.03	22.5	0.006
Bare soil (%)	150	41.2	159	26.1	-6	298.5	<0.001	20	25.2	-3.87	30.3	0.001
Bare rock (%)	150	4	159	6.2	2.36	297.8	0.019	20	1.3	-3.19	68.9	0.002

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Table A7. Habitat features at unburned sites versus sites selected by marten in adjacent burns

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Data are from central British Columbia (2010 burn). Bold entries indicate significant differences in habitat

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quality, based on Welch's t-tests. 'Marking' is scent-marking (urine or scat). 'Overall' refers to trees and snags

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together.

Habitat attribute	Unburned sites (N = 153)		Foraging sites (N = 148)					Marking sites (N = 42)				
	N	Mean	N	Mean	t	df	P-value	N	Mean	t	df	P-value
<i>Trees and snags</i>												
Canopy closure (%)	153	69.6	148	33.7	-12.26	298.8	<0.001	42	54.8	-3.22	63.1	0.002
Percent live trees	153	92.7	148	60.5	-11.37	215.5	<0.001	42	64.8	-7	50.4	<0.001
Tree density (n/ha)	153	868.4	148	257.8	-13.66	226	<0.001	42	448.6	-6.63	100.6	<0.001
Tree diameter (cm)	150	15.92	131	19.20	3.66	174	<0.001	41	18.42	2.38	49.9	0.021
Tree basal area (m ² /ha)	153	21.5	148	7.7	-11.64	255.6	<0.001	42	11.7	-6.5	112.6	<0.001
Largest tree (cm)	150	36.90	131	29.66	-4.17	274.3	<0.001	41	31.62	-2.61	87.1	0.011
Snag density (n/ha)	153	54.1	148	131.7	5.94	275.5	<0.001	42	223.9	5.42	46.6	<0.001
Snag diameter (cm)	82	15.22	126	13.11	-1.71	119.9	0.09	40	11.83	-2.73	113.5	0.007
Snag basal area (m ² /ha)	153	1.5	148	2.1	1.49	278.4	0.137	42	3.1	2.36	71.5	0.021
Largest snag (cm)	82	19.70	126	17.61	-1.04	111.7	0.303	40	17.39	-0.96	116.1	0.341
Overall density (n/ha)	153	922.8	148	388.7	-10.69	246.9	<0.001	42	673.2	-3.55	95.1	0.001
Overall diameter (cm)	150	15.91	146	16.80	1.34	236.5	0.181	42	15.50	-0.62	70.3	0.535
Overall basal area (m ² /ha)	153	22.9	148	9.8	-10.38	263.5	<0.001	42	14.7	-4.95	103.4	<0.001
Largest overall (cm)	150	38.52	146	29.73	-4.95	289.8	<0.001	42	31.71	-3.17	98.8	0.002
Snag decay class	82	1.9	123	1.9	-0.07	143.4	0.947	40	2.0	1	112.1	0.321
<i>Deadfall</i>												
Deadfall volume (m ³ /ha)	153	80.1	148	60.1	-1.64	250.4	0.102	42	46.0	-2.39	136.5	0.018
Deadfall diameter (cm)	126	17.13	130	12.25	-5.64	169.2	<0.001	36	12.58	-3.82	95.9	<0.001
Largest deadfall (cm)	126	24.5	130	17.39	-4.31	199.8	<0.001	36	17.50	-3.1	86.9	0.003
Deadfall decay class	126	3.0	130	2.3	-8.13	197.4	<0.001	36	2.4	-4.68	69.5	<0.001
<i>Saplings and shrubs</i>												
Sapling density (n/ha)	153	3841.6	148	9936.7	4.82	211.7	<0.001	42	16373.8	3.01	42.4	0.004
Sapling height class	120	3.2	133	1.8	-9.08	198.5	<0.001	38	2.0	-5.02	72.3	<0.001
Shrub density (n/ha)	153	15584.8	148	15389.4	-0.12	293	0.908	42	16772.6	0.42	68.5	0.673
Shrub height class	133	1.2	139	1.3	2.38	262.5	0.018	38	1.3	1.38	54.3	0.172
<i>Ground cover</i>												
Grass/forbs (%)	153	50.3	148	65.8	6.6	280.9	<0.001	42	65.2	4.63	87.6	<0.001
Moss/lichen (%)	153	27.7	148	14.5	-6.67	220.9	<0.001	42	14.3	-5.04	114.4	<0.001
Bare soil (%)	153	21.1	148	14.8	-3.57	295.5	<0.001	42	18.0	-1.24	75.4	0.219
Bare rock (%)	153	1.0	148	4.9	5.47	188.9	<0.001	42	2.5	1.99	52	0.052

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Table A8. Habitat features at unburned sites versus sites selected by marten in adjacent burns

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Data are from central British Columbia (2017 burn). Bold entries indicate significant differences in habitat

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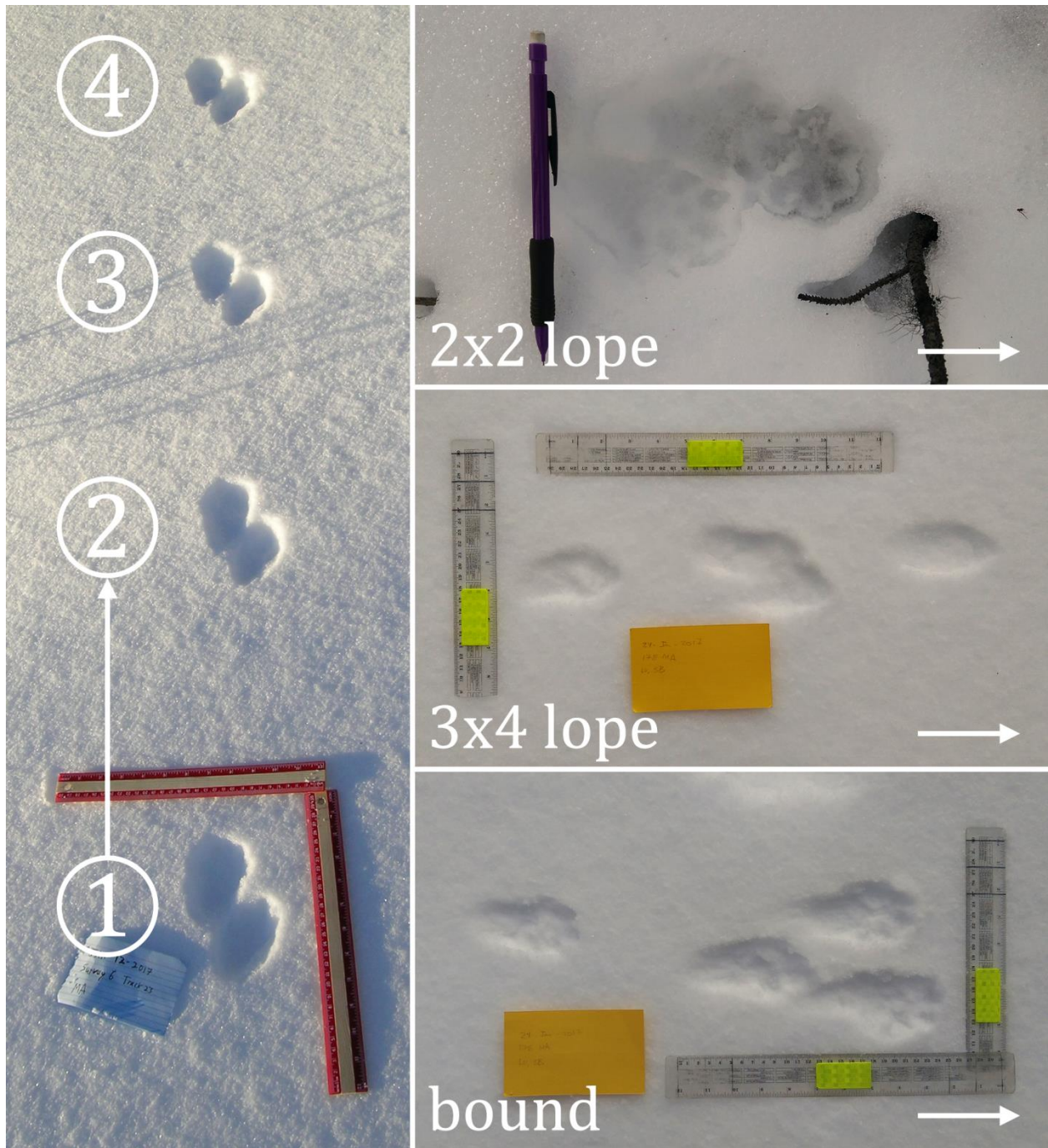
quality, based on Welch's t-tests. 'Marking' is scent-marking (urine or scat). 'Overall' refers to trees and snags

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together.

Habitat attribute	Unburned sites (N = 153)		Foraging sites (N = 197)				Marking sites (N = 8)					
	N	Mean	N	Mean	t	df	P-value	N	Mean	t	df	P-value
<i>Trees and snags</i>												
Canopy closure (%)	153	69.6	197	52.1	-6.19	335.2	<0.001	8	71.8	0.35	8.8	0.738
Percent live trees	153	92.7	197	50.6	-16.18	298.3	<0.001	8	46.3	-4.18	7.2	0.004
Tree density (n/ha)	153	868.4	197	370.0	-10.56	266.3	<0.001	8	313.3	-6	10.5	<0.001
Tree diameter (cm)	150	15.92	160	17.74	2.75	259.5	0.006	7	21.77	2.37	6.2	0.054
Tree basal area (m ² /ha)	153	21.5	197	10.1	-9.14	292.1	<0.001	8	13.5	-1.69	7.7	0.13
Largest tree (cm)	150	36.90	160	31.82	-2.94	307.8	0.004	7	40.99	0.73	6.6	0.488
Snag density (n/ha)	153	54.1	197	300.3	12.31	262.7	<0.001	8	338.8	4.41	7.2	0.003
Snag diameter (cm)	82	15.22	178	12.35	-2.37	115.3	0.019	8	15.18	-0.02	11.5	0.988
Snag basal area (m ² /ha)	153	1.5	197	5.0	5.63	322.1	<0.001	8	11.0	2.15	7.1	0.068
Largest snag (cm)	82	19.70	178	21.21	0.7	148.6	0.486	8	26.43	1.27	9	0.237
Overall density (n/ha)	153	922.8	197	670.4	-4.76	291.6	<0.001	8	653.1	-4.08	20.3	0.001
Overall diameter (cm)	150	15.91	187	15.50	-0.78	330.1	0.434	8	18.82	1.84	7.7	0.105
Overall basal area (m ² /ha)	153	22.9	197	15.2	-5.81	305.7	<0.001	8	24.5	0.37	8	0.722
Largest overall (cm)	150	38.52	187	34.10	-2.37	328.9	0.019	8	43.58	1.04	8.2	0.33
Snag decay class	82	1.9	178	1.4	-8.33	129.7	<0.001	8	1.5	-2.93	8.9	0.017
<i>Deadfall</i>												
Deadfall volume (m ³ /ha)	153	80.1	197	40.2	-3.41	231.3	0.001	8	38.2	-2.41	16.5	0.028
Deadfall diameter (cm)	126	17.13	152	13.23	-4.3	198.2	<0.001	6	13.72	-2.93	17.1	0.009
Largest deadfall (cm)	126	24.5	152	18.24	-3.63	225.6	<0.001	6	17.85	-2.63	10.7	0.024
Deadfall decay class	126	3.0	152	2.6	-4.21	212.3	<0.001	6	2.6	-2	6.7	0.087
<i>Saplings and shrubs</i>												
Sapling density (n/ha)	153	3841.6	197	4726.4	0.97	337.7	0.333	8	11597.3	1.23	7.1	0.258
Sapling height class	120	3.2	112	1.9	-7.08	229.9	<0.001	7	2.4	-1.25	6.6	0.253
Shrub density (n/ha)	153	15584.8	197	5316.4	-6.48	241.5	<0.001	8	11623.4	-0.72	8	0.494
Shrub height class	133	1.2	120	1.1	-2.14	205.6	0.034	8	1.1	-1.18	12.2	0.26
<i>Ground cover</i>												
Grass/forbs (%)	153	50.3	197	52.7	0.97	337.8	0.332	8	59.5	1.1	7.7	0.304
Moss/lichen (%)	153	27.7	197	6.7	-11.26	182.3	<0.001	8	6.7	-6.55	14.4	<0.001
Bare soil (%)	153	21.1	197	38.6	8.25	344.5	<0.001	8	30.3	1.13	7.4	0.295
Bare rock (%)	153	1.0	197	1.9	2.65	334.4	0.008	8	3.5	1.66	7.4	0.139

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68 **Fig. A1.** Marten gait patterns seen in this study. Images are from north-central Washington (2006 burn)
 69 and central British Columbia (2010 burn), January-February 2017. Each panel on the right shows a
 70 discrete group of footprints used to determine the ‘track count’ for each 5 m segment of a marten’s trail
 71 (Elbroch 2003). Arrows indicate the direction of movement. Photo credit: Jeff Brown (left panel), Logan
 72 Volkmann (all others).

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