

TABLE A1. Mean frequency (Freq, % of subplots) and cover (Cov, %) of plant species observed in the three experimental treatments (control, unburned, and broadcast burned) in 2004 (pre-treatment), 2007 (1-2 yr), and 2009 (3-4 yr).

Species	Control						Unburned						Broadcast burned					
	2004 (pre)		2007		2009		2004 (pre)		2007		2009		2004 (pre)		2007		2009	
	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov
Forest grasses																		
<i>Bromus vulgaris</i>	56.3	3.5	64.6	2.4	70.8	2.2	68.2	3.6	72.9	1.6	61.5	1.2	66.7	2.5	16.7	0.1	14.6	0.3
<i>Festuca occidentalis</i>					1.0	t							0.5	t	0.5	t		
<i>Melica subulata</i>	38.5	0.6	44.8	0.2	47.9	0.3	35.9	0.6	56.3	0.3	53.6	0.2	49.0	0.9	28.1	0.1	18.2	0.1
<i>Trisetum canescens</i>	3.1	t	13.5	0.1	15.6	0.1	2.6	t	4.2	t	7.8	t	7.3	0.1	1.0	t	1.0	t
<i>Trisetum cernuum</i>					1.0	t												
Total forest grasses		4.1		2.7		2.6		4.2		1.9		1.4		3.5		0.2		0.4
Forest herbs																		
<i>Actaea rubra</i>	2.1	t	3.1	t	3.1	t	4.2	0.1	0.5	t			4.2	t			1.0	t
<i>Achlys triphylla</i>	20.8	1.0	30.2	1.6	34.4	2.5	38.0	2.0	27.6	0.1	22.9	0.2	56.3	3.9	31.3	0.1	23.4	0.2
<i>Adenocaulon bicolor</i>	34.4	0.7	43.8	0.9	45.8	0.7	60.9	1.4	32.8	0.1	21.4	0.1	43.2	0.9	10.9	t	3.6	t
<i>Anemone</i> spp.†	82.3	1.3	84.4	1.9	85.4	2.1	82.3	1.4	78.1	0.4	83.3	0.8	91.1	1.6	76.0	0.2	78.1	0.6
<i>Arenaria macrophylla</i>	76.0	0.9	84.4	1.2	85.4	0.9	82.8	1.1	85.4	0.8	90.1	1.8	78.6	0.8	67.2	0.3	73.4	0.8
<i>Asarum caudatum</i>	27.1	1.1	37.5	1.5	53.1	2.0	58.3	2.4	50.0	1.0	58.9	2.1	55.2	2.1	17.2	0.1	17.2	0.6
<i>Athyrium filix-femina</i>					1.0	t							1.6	t				
<i>Campanula scouleri</i>	42.7	1.3	53.1	0.9	58.3	1.2	56.3	1.6	55.2	0.4	53.1	0.6	38.5	1.1	33.9	0.2	31.3	0.3
<i>Chimaphila menziesii</i>	5.2	t	7.3	t	7.3	t	2.6	t					0.5	t				
<i>Chimaphila umbellata</i>	2.1	t	4.2	t	4.2	t	0.5	t					4.7	t				
<i>Circaea alpina</i>	26.0	0.7	31.3	0.9	38.5	1.1	42.2	1.3	24.0	0.1	18.2	0.1	46.4	2.1	11.5	t	6.8	t
<i>Clintonia uniflora</i>	5.2	0.1	8.3	0.2	6.3	0.2	8.3	0.1	2.1	t	2.1	t	9.9	0.2	2.6	t	0.5	t
<i>Corallorhiza maculata</i>	2.1	t	1.0	t			4.2	t					1.6	t				
<i>Corallorhiza mertensiana</i>			1.0	t	1.0	t												
<i>Corallorhiza</i> sp.	1.0	t	2.1	t			1.0	t					0.5	t				
<i>Corallorhiza striata</i>			1.0	t	1.0	t												
<i>Cornus canadensis</i>	2.1	0.1	2.1	0.1	2.1	0.2	2.1	t	1.0	t	1.0	t	1.0	t				
<i>Disporum</i> spp.‡					1.0	t	0.5	t			0.5	t	2.6	t	1.0	t	2.1	t
<i>Dryopteris austriaca</i>	1.0	t					1.6	t					1.0	t				
<i>Galium oreganum</i>	56.3	3.1	65.6	2.3	66.7	2.8	70.3	4.5	66.7	1.2	67.7	2.5	65.6	4.0	59.4	1.1	60.9	2.4

TABLE A1. Continued.

Species	Control						Unburned						Broadcast burned					
	2004 (pre)		2007		2009		2004 (pre)		2007		2009		2004 (pre)		2007		2009	
	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov
Forest herbs (cont.)																		
<i>Galium triflorum</i> §	58.3	0.9	71.9	1.1	69.8	0.9	64.1	1.0	46.9	0.3	30.2	0.2	69.3	0.8	9.9	t	7.3	0.1
<i>Goodyera oblongifolia</i>	11.5	0.1	14.6	0.1	12.5	t	7.3	t	1.0	t			6.8	t	0.5	t		
<i>Hieracium albiflorum</i>	66.7	0.6	70.8	0.7	71.9	0.7	69.8	1.0	58.3	0.5	43.2	0.3	47.4	0.5	13.0	t	8.3	t
<i>Lactuca muralis</i> *	28.1	0.2	37.5	1.0	44.8	0.9	54.7	1.5	39.6	0.2	8.3	t	62.0	3.0	30.2	0.1	6.8	t
<i>Liliaceae</i> (unknown)			1.0	t	4.2	t												
<i>Linnaea borealis</i>	5.2	0.3	5.2	0.3	6.3	0.4	3.1	0.1	0.5	t	0.5	t	3.1	0.1				
<i>Listera caurina</i>			1.0	t	1.0	t												
<i>Listera cordata</i>					1.0	t												
<i>Listera</i> spp.	8.3	t	14.6	t	15.6	0.1	25.0	0.1					13.5	t				
<i>Osmorhiza chilensis</i>	67.7	0.7	79.2	1.1	80.2	1.2	91.1	1.3	74.5	0.3	38.0	0.1	85.9	1.1	24.5	0.1	9.4	t
<i>Polystichum munitum</i>	3.1	t	7.3	0.1	9.4	0.1	6.3	0.1	1.0	t	1.6	t	7.3	0.1	1.6	t	0.5	t
<i>Pyrola picta</i>	1.0	t	1.0	t	2.1	t	0.5	t					1.6	t				
<i>Pyrola secunda</i>	2.1	t	3.1	t	3.1	t	2.6	t	1.0	t			4.2	t	1.6	t		
<i>Rubus lasiococcus</i>	11.5	0.3	14.6	0.5	14.6	0.9	31.8	0.7	26.6	0.2	22.9	0.5	22.4	0.4	9.9	t	8.3	0.1
<i>Rubus ursinus</i>	39.6	1.2	45.8	1.4	45.8	1.4	38.0	1.1	38.0	0.9	39.1	1.2	30.2	0.8	27.6	0.3	29.7	1.1
<i>Smilacina stellata</i>	44.8	3.5	51.0	5.7	56.3	7.7	63.5	6.2	68.2	1.3	75.0	4.8	69.8	10.4	55.2	0.6	59.4	1.9
<i>Tiarella trifoliata</i>	13.5	0.2	18.8	0.4	27.1	0.7	38.0	0.8	13.0	t	4.7	t	41.7	0.8	7.3	t	3.6	t
<i>Trientalis latifolia</i>	27.1	0.3	31.3	0.4	34.4	0.6	31.3	0.3	27.1	0.1	30.2	0.1	25.5	0.3	12.0	t	8.9	t
<i>Trillium ovatum</i>	1.0	t	1.0	t	3.1	t	0.5	t	0.5	t	2.1	t	6.8	t			2.6	t
<i>Viola glabella</i>	74.0	1.0	85.4	1.3	85.4	1.7	89.6	1.4	91.7	0.6	89.1	0.6	88.5	1.2	44.3	0.1	32.8	0.1
<i>Viola orbiculata</i>			3.1	t	1.0	t	5.2	t	7.3	t	2.1	t	0.5	t	1.0	t	0.5	t
<i>Xerophyllum tenax</i>			1.0	t	1.0	t												
Total forest herbs	19.6		25.6		31.0		31.5		8.5		16.0		36.2		3.2		8.2	
Forest shrubs																		
<i>Acer circinatum</i>							2.1	0.1	1.0	t	1.0	t	8.3	2.8	3.1	0.2	3.1	0.4
<i>Amelanchier alnifolia</i>	10.4	0.1	9.4	0.1	9.4	0.1	9.4	0.1	6.8	0.1	7.8	0.1	4.2	t	1.6	t	1.6	t
<i>Berberis aquifolium</i>							0.5	t	0.5	t			0.5	t				
<i>Berberis nervosa</i>	4.2	0.1	5.2	0.1	3.1	0.1	3.1	t	3.1	t	2.1	t	3.1	t				

TABLE A1. Continued.

Species	Control						Unburned						Broadcast burned					
	2004 (pre)		2007		2009		2004 (pre)		2007		2009		2004 (pre)		2007		2009	
	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov
Forest shrubs (cont.)																		
<i>Berberis</i> sp.									0.5	t			0.5	t				
<i>Rosa gymnocarpa</i>	4.2	t	3.1	t	4.2	t	3.6	t	4.2	t	4.2	0.1	3.6	t				
<i>Symphoricarpos mollis</i>	25.0	2.2	35.4	2.3	38.5	3.2	38.5	6.2	35.9	3.1	40.1	5.9	32.8	2.2	7.3	0.2	7.3	0.5
<i>Vaccinium membranaceum</i>	6.3	t	6.3	t	6.3	0.1	3.6	0.1	1.6	t	2.1	t	1.6	t				
<i>Vaccinium parvifolium</i>															0.5	t		
Total forest shrubs		2.4		2.5		3.5		6.5		3.2		6.1		5.0		0.4		0.9
Meadow grasses																		
<i>Agropyron repens</i> *			7.3	t	11.5	0.1	1.0	t	2.1	t	1.6	t			2.6	t	2.6	t
<i>Agrostis scabra</i>			15.6	0.1	21.9	0.1			16.7	0.1	17.2	0.2	0.5	t	3.6	t	6.3	0.1
<i>Bromus carinatus</i>	43.8	3.1	47.9	1.4	54.2	1.3	32.8	2.0	46.4	1.1	68.2	3.0	19.3	0.8	16.7	0.2	29.2	0.6
<i>Danthonia intermedia</i>	12.5	0.1	15.6	0.1	20.8	0.1	1.0	t	3.6	t	7.3	t	7.8	0.1	1.6	t	5.7	t
<i>Elymus glaucus</i>	76.0	10.2	75.0	6.4	74.0	5.6	50.5	5.0	63.5	3.0	79.7	4.3	44.3	3.6	33.9	0.7	39.6	1.6
<i>Festuca idahoensis</i> £	57.3	5.1	59.4	1.9	59.4	1.7	21.9	1.0	24.0	0.3	35.9	0.7	30.2	2.3	9.9	0.1	16.1	0.5
<i>Poa pratensis</i> *	13.5	0.1	5.2	t	4.2	t	7.3	0.1	3.1	0.1			1.6	t			0.5	t
<i>Stipa occidentalis</i>	6.3	0.1	13.5	0.1	15.6	0.1	1.0	t	10.4	t	15.1	0.1	3.1	t	5.2	t	15.1	0.1
Total meadow grasses		18.7		10.0		9.0		8.1		4.6		8.3		6.8		1.0		2.9
Meadow sedges																		
<i>Carex pensylvanica</i> €	92.7	13.2	95.8	6.3	93.8	5.4	75.0	8.6	90.1	6.1	94.3	12.0	77.1	9.5	96.4	2.1	97.9	15.2
Total meadow sedges		13.2		6.3		5.4		8.6		6.1		12.0		9.5		2.1		15.2
Meadow herbs																		
<i>Achillea millefolium</i>	71.9	3.1	82.3	3.7	78.1	2.4	59.4	1.1	65.1	2.0	64.1	1.7	49.5	1.8	32.3	0.8	32.8	0.8
<i>Agoseris</i> spp.Ψ	21.9	0.1	31.3	0.1	36.5	0.1	9.9	0.1	15.6	0.1	14.6	0.1	19.3	0.2	10.4	t	7.8	t
<i>Anaphalis margaritacea</i>	7.3	0.1	11.5	0.2	13.5	0.2	10.9	0.1	7.3	t	10.4	0.1	8.3	0.2	4.2	t	5.2	t
<i>Antennaria microphylla</i>									1.0	t	1.0	t						
<i>Arabis</i> sp.									1.0	t								
<i>Aster ledophyllus</i>	20.8	0.2	20.8	0.3	21.9	0.3	3.1	t	6.3	t	0.5	t	14.6	0.3	10.4	0.1	9.9	0.2
<i>Aster occidentalis</i>	14.6	0.2	24.0	0.3	22.9	0.3	18.2	0.4	19.8	0.4	23.4	0.6	2.6	t	3.6	t	3.1	0.1
<i>Aster radulinus</i>	18.8	0.6	20.8	0.6	21.9	0.4	6.8	0.1	12.0	0.2	9.4	0.2	13.5	0.6	21.9	0.5	19.8	0.7

TABLE A1. Continued.

Species	Control						Unburned						Broadcast burned					
	2004 (pre)		2007		2009		2004 (pre)		2007		2009		2004 (pre)		2007		2009	
	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov
Meadow herbs (cont.)																		
<i>Calochortus subalpinus</i>	5.2	t	4.2	t	15.6	t	2.1	t	4.7	t	22.9	t	4.7	t	10.4	t	25.5	0.1
<i>Cerastium arvense</i>			4.2	t	2.1	t			2.1	t							0.5	t
<i>Cerastium</i> sp.	1.0	t							0.5	t								
<i>Cerastium vulgatum</i> *			1.0	t	1.0	t	0.5	t						0.5	t		0.5	t
<i>Cirsium callilepis</i>	63.5	2.3	63.5	2.2	66.7	1.7	46.4	1.0	59.9	0.7	78.6	1.1	34.4	0.8	38.5	0.6	72.9	1.5
<i>Claytonia lanceolata</i>							0.5	t									0.5	t
<i>Comandra umbellata</i>	10.4	0.1	11.5	0.1	13.5	0.1	3.6	t	4.7	t	3.1	0.1	10.9	0.1	7.8	t	8.3	t
<i>Delphinium menziesii</i>							1.0	t			0.5	t						
<i>Erigeron aliceae</i>	58.3	1.8	59.4	1.7	59.4	2.1	44.8	0.9	51.0	0.7	53.6	1.3	45.3	1.3	22.9	0.2	21.9	0.4
<i>Erysimum asperimum</i>											0.5	t						
<i>Fragaria</i> spp.Φ	86.5	6.1	90.6	7.1	90.6	7.2	87.5	4.5	92.7	6.2	94.8	13.3	85.4	4.0	47.4	0.6	61.5	2.5
<i>Hackelia micrantha</i>			1.0	t	3.1	t												
<i>Hieracium gracile</i>	30.2	0.6	33.3	0.4	28.1	0.5	6.8	0.1	7.3	t	5.7	0.1	25.0	0.8	15.1	0.1	15.1	0.2
<i>Iris chrysophylla</i>	57.3	1.1	63.5	0.9	71.9	0.8	41.7	0.9	54.2	0.4	53.6	0.9	53.1	2.0	37.0	0.2	41.1	0.3
<i>Lathyrus nevadensis</i>	44.8	3.0	49.0	2.5	47.9	3.0	52.1	2.0	52.1	1.0	53.6	1.7	40.6	1.9	47.9	1.2	53.6	1.9
<i>Lomatium triternatum</i>			1.0	t	1.0	t	0.5	t	0.5	t								
<i>Lupinus latifolius</i>	40.6	1.8	38.5	0.6	37.5	1.3	20.3	0.2	14.1	0.1	17.2	0.1	27.1	0.8	28.6	0.4	30.2	0.6
<i>Microsteris gracilis</i>	3.1	t	1.0	t	4.2	t	0.5	t	1.6	t	7.3	t	1.0	t			10.9	0.1
<i>Orthocarpus imbricatus</i>	3.1	t	2.1	t	2.1	t	3.1	t			2.6	t	4.7	0.1	3.1	t	2.6	t
<i>Penstemon cardwellii</i>														2.1	t		1.0	t
<i>Penstemon procerus</i>	4.2	0.1	3.1	0.1	4.2	0.1			0.5	t	1.0	t	2.6	t	0.5	t	1.0	t
<i>Phlox diffusa</i>	25.0	1.6	25.0	1.2	24.0	1.0	5.7	0.1	7.8	0.1	6.8	0.1	17.7	0.9	11.5	0.1	11.5	0.5
<i>Pteridium aquilinum</i>	7.3	0.4	8.3	0.5	7.3	0.6	1.6	0.1	1.6	0.1	2.1	0.1	3.1	0.1	2.6	t	2.6	0.2
<i>Senecio triangularis</i>									1.0	t	1.0	t						
<i>Stellaria</i> sp.					2.1	t	1.0	t					1.0	t				
<i>Veronica americana</i>			3.1	t					2.1	t	1.0	t						
<i>Veronica</i> sp.					1.0	t							0.5	t				
<i>Vicia americana</i>	41.7	1.1	47.9	0.8	47.9	0.9	37.0	0.8	50.5	0.7	55.2	1.1	27.6	0.6	57.8	1.5	67.7	4.6
<i>Viola nuttallii</i>	26.0	0.1	29.2	0.1	39.6	0.1	26.6	0.1	25.5	0.1	26.0	0.1	16.7	t	9.9	t	17.2	t

TABLE A1. Continued.

Species	Control						Unburned						Broadcast burned						
	2004 (pre)		2007		2009		2004 (pre)		2007		2009		2004 (pre)		2007		2009		
	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	Freq	Cov	
Meadow herbs (cont.)																			
Total meadow herbs		24.4		23.4		23.1		12.5		12.8		22.7		16.5		6.3		14.7	
Meadow shrubs																			
<i>Haplopappus greenei</i>	1.0	0.2	1.0	0.1	1.0	0.1	1.0	t					0.5	t				0.5	t
<i>Vaccinium caespitosum</i>							0.5	t	1.0	t	1.0	t			0.5	t			
Total meadow shrubs		0.2		0.1		0.1		t		t		t		t		t		T	
Understory trees (<1.4 m tall)																			
<i>Abies amabilis</i>			3.1	0.1	1.0	0.1			0.5	t									
<i>Abies grandis</i>	38.5	0.7	71.9	2.6	68.8	5.2	40.6	0.7	14.1	0.1	7.8	0.1	31.3	0.5	10.4	t	9.4	t	
<i>Abies procera</i>	5.2	0.4	7.3	0.3	11.5	0.6	4.7	0.1	0.5	t					9.9	t	1.6	t	
<i>Abies</i> sp.			46.9	0.1	28.1	t			5.7	t	3.1	t			34.4	t	1.6	t	
<i>Castanopsis chrysophylla</i>	1.0	t	1.0	t	3.1	t	0.5	t					2.1	t					
<i>Libocedrus decurrens</i>													0.5	t					
<i>Pinus contorta</i>	1.0	t	2.1	t	7.3	0.4	1.0	t			0.5	t	1.6	t	0.5	t			
<i>Pinus monticola</i>							0.5	t											
<i>Prunus emarginata</i>			5.2	0.1	1.0	0.2	1.0	t			1.6	t	0.5	t	0.5	t	4.7	t	
<i>Pseudotsuga menziesii</i>	6.3	t	21.9	0.2	21.9	0.3	2.1	t	2.6	t	0.5	t	0.5	t	3.1	t	2.1	t	
<i>Rhamnus purshiana</i>			2.1	t	3.1	t	2.6	0.1	2.1	0.2	5.7	0.2	2.1	t					
<i>Taxus brevifolia</i>	1.0	t	1.0	t	1.0	t							1.0	t					
<i>Tsuga heterophylla</i>	1.0	t	9.4	t	7.3	t	1.0	t					1.0	t			0.5	t	
<i>Tsuga mertensiana</i>			3.1	0.1	2.1	0.3	0.5	t	0.5	t			0.5	t					
<i>Tsuga</i> sp.			9.4	t	3.1	0.2													
Total understory trees		1.1		3.5		7.3		0.9		0.3		0.3		0.5		t		t	
Ruderal taxa																			
<i>Ceanothus velutinus</i>									1.0	t	1.0	t			50.5	0.1	28.1	0.1	
<i>Cirsium vulgare</i>			1.0	t					2.1	t	1.0	t			3.1	t	1.0	t	
<i>Epilobium angustifolium</i>	3	0.1	2.0	0.1	2.0	0.1							1	0.01	1.0	t	2.0	t	
<i>Epilobium minutum</i>									0.5	t					0.5	t			
<i>Epilobium</i> sp.					1.0	t													

TABLE A1. Continued.

Species	Control			Unburned			Broadcast burned		
	2004 (pre)	2007	2009	2004 (pre)	2007	2009	2004 (pre)	2007	2009
	Freq Cov	Freq Cov	Freq Cov	Freq Cov	Freq Cov	Freq Cov	Freq Cov	Freq Cov	Freq Cov
Unclassified taxa (cont.)									
<i>Sambucus racemosa</i>	2.1 t	1.0 t	2.1 t	5.7 0.5	3.1 0.2	3.6 0.5	2.1 0.1		
<i>Satureja douglasii</i>	2.1 t	2.1 t	3.1 t	1.0 t	3.1 t	2.6 t			
<i>Sorbus sitchensis</i>	4.2 0.1	6.3 t	7.3 0.1	4.7 0.1	3.1 t	3.1 t	1.6 t		
Unknown dicot	2.1 t	1.0 t	1.0 t	2.1 t	1.6 t	2.1 t		2.6 t	3.6 t
Total unclassified taxa	1	0.7	1.5	1.9	0.8	1.4	0.6	0.3	1.1

Notes: Frequency and cover values are means of three replicates per treatment. t = trace cover (<0.1%).

* Non-native species

† *Anemone deltoidea* and *A. oregana*

‡ *Disporum hookeri* or *D. smithii*

§ Includes *Galium aparine* (infrequent)

£ Includes *Festuca viridula* (infrequent)

€ Includes *Carex deweyana*, *C. hoodii*, and *C. pachystachya* (infrequent)

Ψ *Agoseris aurantiaca* and *A. grandiflora*

Φ *Fragaria vesca* and *F. virginiana*



FIG. B1. A broadcast burned plot 1 and 3 years after treatment (top and bottom photos, respectively). The unburned area in the foreground was open meadow prior to tree removal and burning. The large stumps in the background (mid-right) were a small patch of old (>140 yr) *Abies grandis*.



FIG. B2. An unburned (pile burned) plot 2 and 4 years after tree removal (top and bottom photos, respectively). The area without stumps in the foreground was open meadow prior to tree removal.



FIG. B3. Examples of burn-pile scars in years 1 and 3 (top and bottom photos, respectively). For scale, the posts in the bottom photo are 1.4 m apart.



FIG. B4. Abundant gopher disturbance in and adjacent to a burn-pile scar in year 3.