

Supplementary Material

Fire in lichen-rich subarctic tundra changes carbon and nitrogen cycling between ecosystem compartments but has minor effects on stocks

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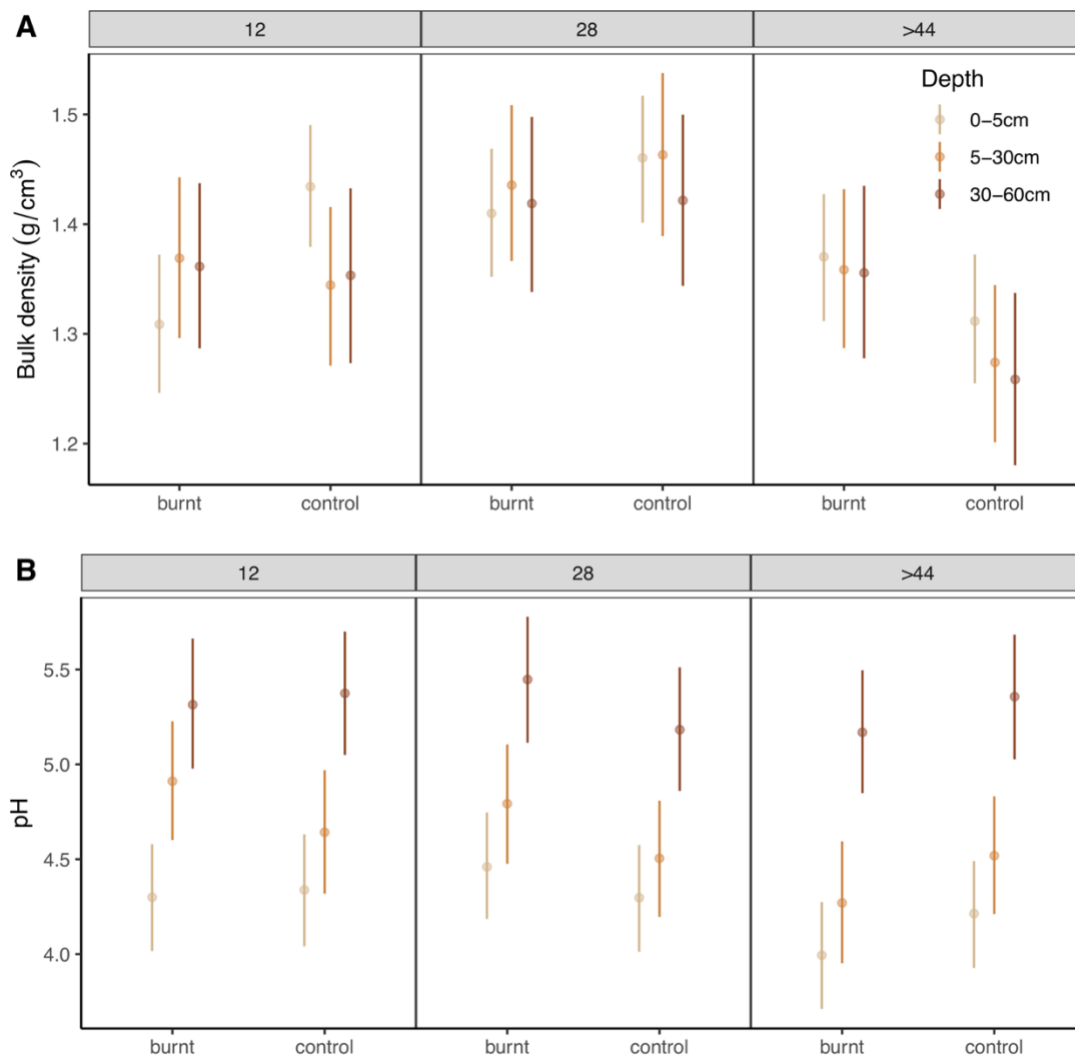


Figure S1: Points are posterior means of bulk density and pH in regard to time after fire and soil depth on burnt and unburnt plots and lines are 95 % Credible Intervals (CrI).

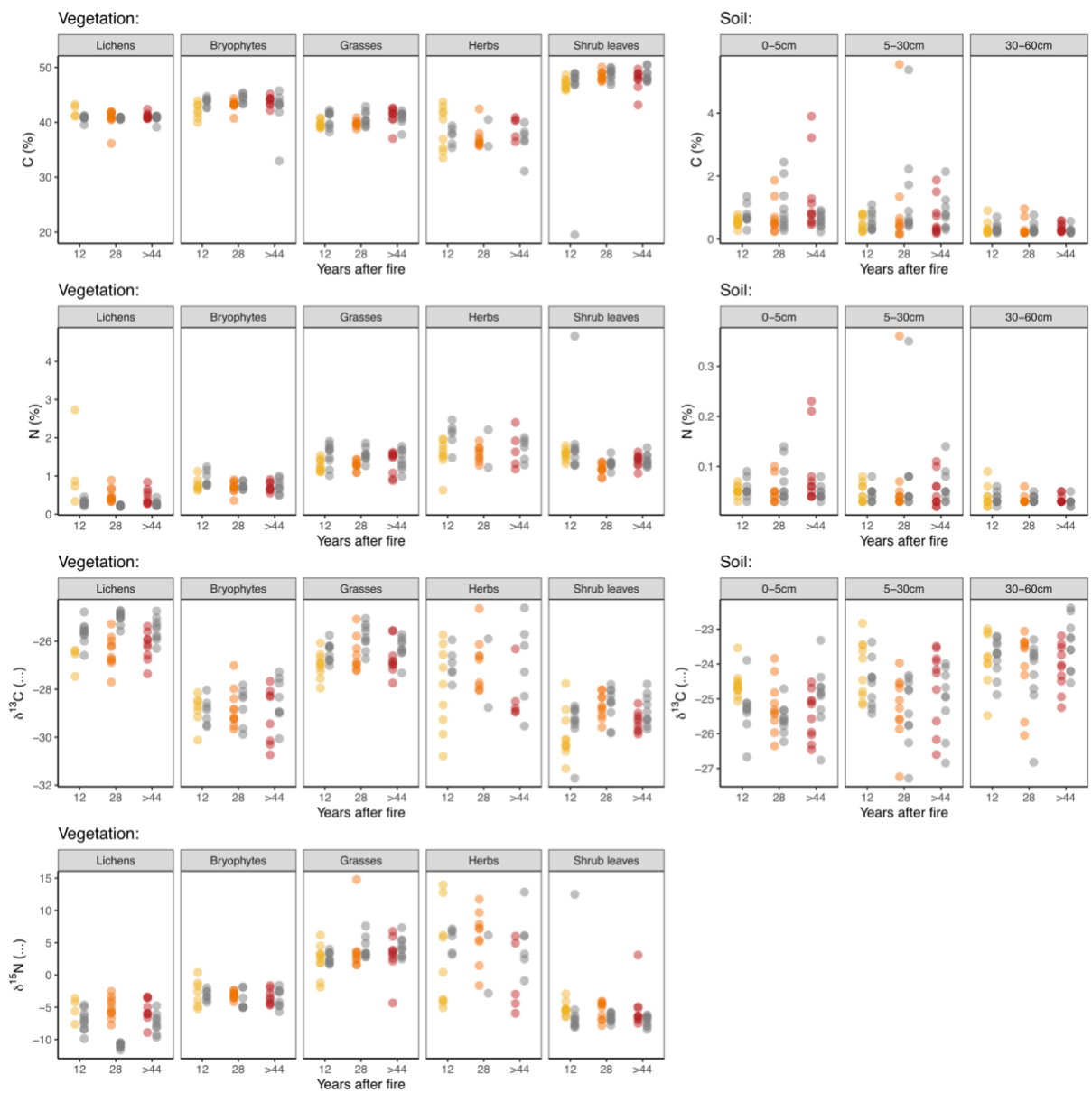


Figure S2: Raw data of C and N concentrations and isotope ratios in regard to time after fire in aboveground biomass and soil on burnt (in colour) and control (in grey) plots.

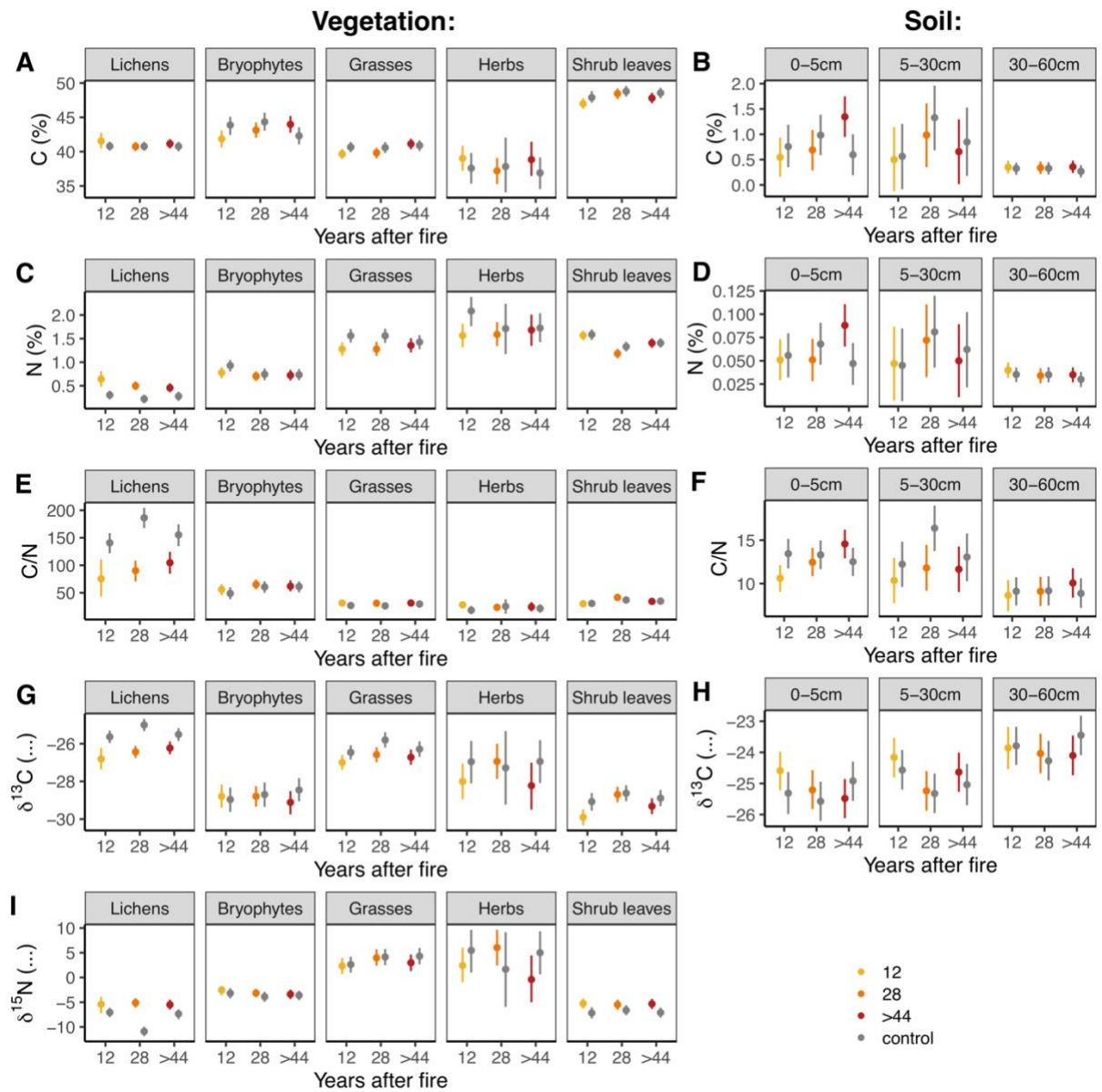


Figure S3: Predicted means and 95 % credible intervals for C and N concentrations and isotope ratios in regard to time after fire in aboveground biomass and soil on burnt and control plots.

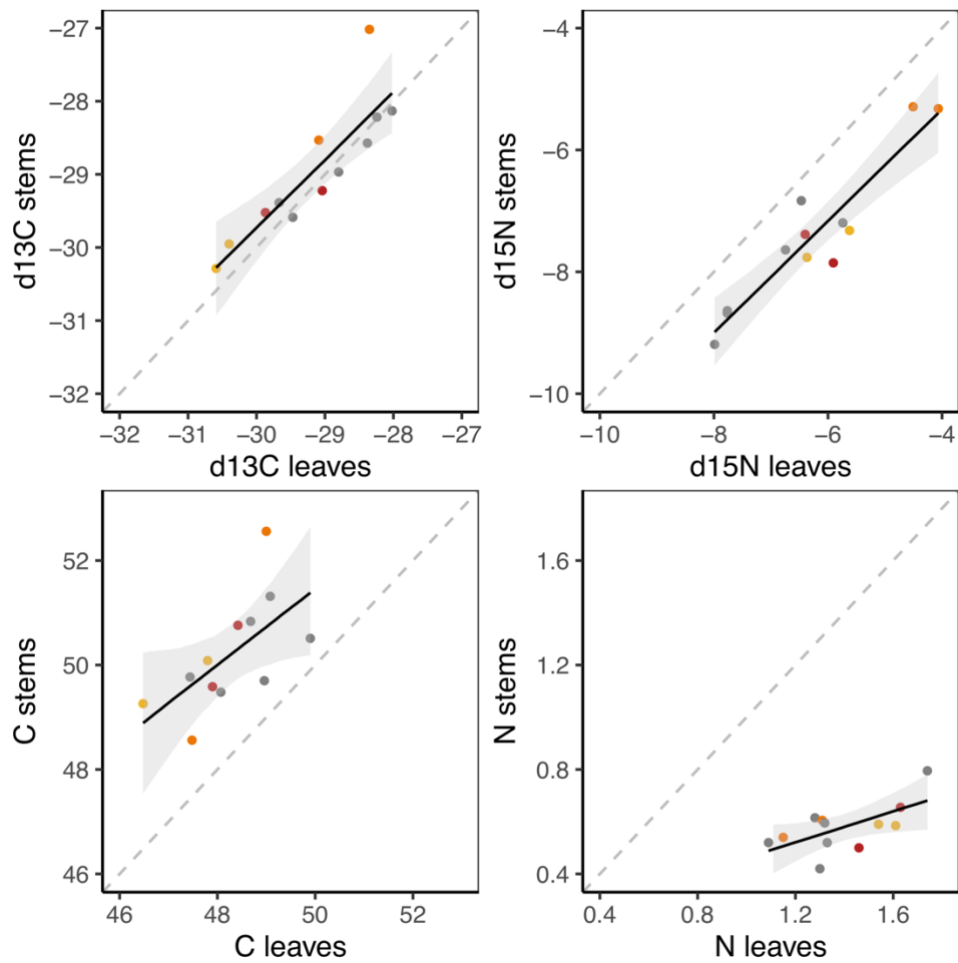


Figure S4: Correlations for C and N concentrations and isotope ratios in shrub leaves and shrub sticks (woody part of shrubs) for aboveground biomass of 12 randomly selected plots. Coloured dots are raw data. Concentrations and isotope ratios in shrub stems and shrub leaves are positively correlated. While shrub sticks generally have a higher C concentration in comparison to shrub leaves, the N concentration in shrub sticks is lower than in leaves. We used the intercept and slope to predict C and N concentrations as well as isotope ratios for shrub stems in all plots.

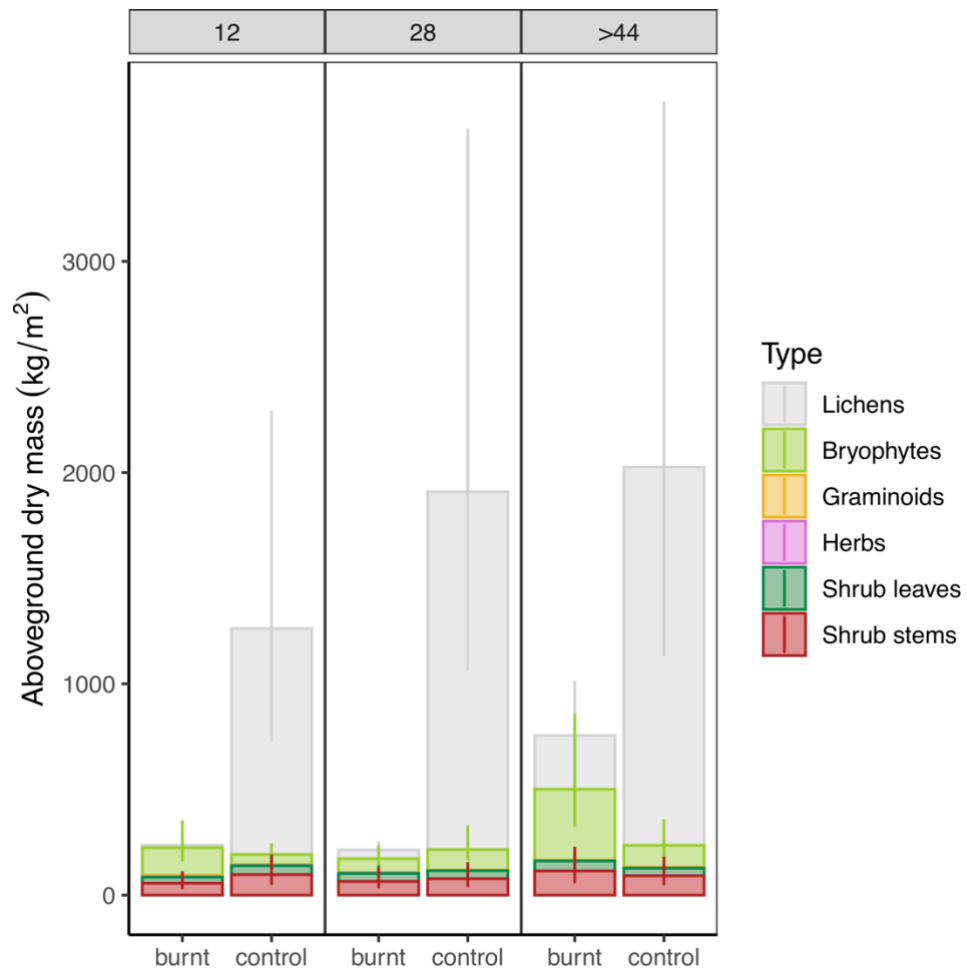


Figure S5: Predicted mean values for C and N stocks in aboveground biomass and soil in regard to time after fire on burnt and control plots. Lines are 95 % credible intervals (CrI).

Table S6: Estimates and 95 % credible intervals (CrI's) for coefficients of the models analysing fire effects on total C and N stocks.

	Coefficients	Est.	Est.Error	l-95%	u-95%
C stocks total	Intercept	3.28	0.17	2.95	3.61
	firecontrol	-0.23	0.23	-0.68	0.22
	years_since_fire12	-0.33	0.24	-0.80	0.13
	years_since_fire28	-0.16	0.24	-0.62	0.30
	firecontrol:years_since_fire12	0.34	0.33	-0.30	0.98
	firecontrol:years_since_fire28	0.59	0.32	-0.03	1.23
	sigma	0.51	0.05	0.42	0.63
N stocks total	Intercept	0.70	0.13	0.45	0.97
	firecontrol	-0.16	0.18	-0.53	0.19
	years_since_fire12	-0.08	0.19	-0.46	0.29
	years_since_fire28	-0.02	0.19	-0.40	0.35
	firecontrol:years_since_fire12	0.12	0.26	-0.39	0.62
	firecontrol:years_since_fire28	0.32	0.26	-0.19	0.84
	sigma	0.40	0.04	0.33	0.50

Table S7: Bayesian R^2 with 95 % credible intervals (CrI's) and structure of the models analysing fire effects on C and N stocks in aboveground biomass and soil.

	Est.	Est.Error	Q2.5	Q97.5	Structure
C stocks total	0.21	0.08	0.07	0.37	$\log(C_stocks_complete) \sim \text{fire} * \text{years_since_fire} + (1 \text{pairs})$
N stocks total	0.81	0.01	0.79	0.83	$\log(C_stocks) \sim \text{fire} * \text{years_since_fire} * \text{type} + (1 \text{pairs/plot})$
C stocks biomass	0.81	0.01	0.79	0.83	$\log(C_stocks) \sim \text{fire} * \text{years_since_fire} * \text{type} + (1 \text{pairs/plot})$
N stocks biomass	0.71	0.02	0.68	0.74	$\log(N_stocks) \sim \text{fire} * \text{years_since_fire} * \text{type} + (1 \text{pairs/plot})$
C stocks soil	0.45	0.06	0.33	0.55	$\log(C_stock) \sim \text{fire} * \text{years_since_fire} * \text{depth} + (1 \text{pairs/plot})$
N stocks soil	0.41	0.06	0.29	0.52	$\log(N_stock) \sim \text{fire} * \text{years_since_fire} * \text{depth} + (1 \text{pairs/plot})$

Table S8: Estimates and 95 % credible intervals (CrI's) for coefficients of the models analysing fire effects on C and N stocks in aboveground biomass and soil.

	Coefficients	Estimate	Est.Error	l-95%	u-95%
C stocks biomass	<i>Intercept</i>	-4.81	0.60	-6.00	-3.64
	<i>firecontrol</i>	3.99	0.69	2.64	5.33
	<i>years_since_fire28</i>	0.72	0.68	-0.63	2.05
	<i>years_since_fire>44</i>	2.57	0.70	1.24	3.98
	<i>typeBryophytes</i>	1.79	0.70	0.44	3.13
	<i>typeGraminoids</i>	-1.27	0.68	-2.58	0.06
	<i>typeHerbs</i>	-2.08	0.69	-3.42	-0.74
	<i>typeShrubleaves</i>	0.50	0.69	-0.87	1.84
	<i>typeShrubstems</i>	1.23	0.68	-0.08	2.55
	<i>firecontrol:years_since_fire28</i>	-0.27	0.82	-1.84	1.35
	<i>firecontrol:years_since_fire>44</i>	-2.05	0.84	-3.72	-0.45
	<i>firecontrol:typeBryophytes</i>	-4.41	0.87	-6.10	-2.68
	<i>firecontrol:typeGraminoids</i>	-4.62	0.82	-6.22	-3.05
	<i>firecontrol:typeHerbs</i>	-4.58	0.92	-6.36	-2.75
	<i>firecontrol:typeShrubleaves</i>	-3.67	0.83	-5.28	-2.02
	<i>firecontrol:typeShrubstems</i>	-3.48	0.82	-5.07	-1.89
	<i>years_since_fire28:typeBryophytes</i>	-1.25	0.83	-2.89	0.40
	<i>years_since_fire>44:typeBryophytes</i>	-1.69	0.87	-3.38	0.04
	<i>years_since_fire28:typeGraminoids</i>	-2.11	0.82	-3.71	-0.50
	<i>years_since_fire>44:typeGraminoids</i>	-3.31	0.84	-4.97	-1.69
	<i>years_since_fire28:typeHerbs</i>	-1.32	0.83	-2.94	0.32
	<i>years_since_fire>44:typeHerbs</i>	-3.64	0.97	-5.54	-1.75
	<i>years_since_fire28:typeShrubleaves</i>	-0.40	0.82	-1.99	1.21
	<i>years_since_fire>44:typeShrubleaves</i>	-2.03	0.84	-3.69	-0.40
	<i>years_since_fire28:typeShrubstems</i>	-0.55	0.82	-2.13	1.04
	<i>years_since_fire>44:typeShrubstems</i>	-1.85	0.83	-3.48	-0.24
	<i>firecontrol:years_since_fire28:typeBryophytes</i>	1.05	1.09	-1.10	3.16
	<i>firecontrol:years_since_fire>44:typeBryophytes</i>	1.21	1.15	-1.05	3.43
	<i>firecontrol:years_since_fire28:typeGraminoids</i>	1.54	1.06	-0.52	3.64
	<i>firecontrol:years_since_fire>44:typeGraminoids</i>	3.04	1.08	0.96	5.16
	<i>firecontrol:years_since_fire28:typeHerbs</i>	-2.11	1.30	-4.66	0.42
	<i>firecontrol:years_since_fire>44:typeHerbs</i>	3.05	1.30	0.49	5.59
	<i>firecontrol:years_since_fire28:typeShrubleaves</i>	-0.03	1.04	-2.11	2.02
<i>firecontrol:years_since_fire>44:typeShrubleaves</i>	1.47	1.07	-0.59	3.59	
<i>firecontrol:years_since_fire28:typeShrubstems</i>	-0.05	1.05	-2.10	2.01	
<i>firecontrol:years_since_fire>44:typeShrubstems</i>	1.33	1.06	-0.72	3.43	
<i>sigma</i>	1.03	0.05	0.94	1.12	
N stocks biomass	<i>Intercept</i>	-8.59	0.59	-9.78	-7.45
	<i>firecontrol</i>	2.84	0.67	1.58	4.19
	<i>years_since_fire28</i>	0.04	0.68	-1.28	1.40
	<i>years_since_fire>44</i>	1.77	0.69	0.45	3.11
	<i>typeBryophytes</i>	1.56	0.70	0.18	2.96
	<i>typeGraminoids</i>	-0.93	0.68	-2.24	0.44
	<i>typeHerbs</i>	-1.55	0.68	-2.87	-0.19
	<i>typeShrubleaves</i>	0.88	0.67	-0.40	2.25
	<i>typeShrubstems</i>	0.65	0.67	-0.66	1.99
	<i>firecontrol:years_since_fire28</i>	0.11	0.82	-1.52	1.65
	<i>firecontrol:years_since_fire>44</i>	-1.34	0.82	-2.97	0.25
	<i>firecontrol:typeBryophytes</i>	-3.16	0.87	-4.85	-1.46
	<i>firecontrol:typeGraminoids</i>	-3.31	0.81	-4.95	-1.75
	<i>firecontrol:typeHerbs</i>	-3.14	0.90	-4.93	-1.37
	<i>firecontrol:typeShrubleaves</i>	-2.37	0.81	-3.98	-0.82
	<i>firecontrol:typeShrubstems</i>	-2.21	0.81	-3.83	-0.65
	<i>years_since_fire28:typeBryophytes</i>	-0.72	0.84	-2.38	0.89
	<i>years_since_fire>44:typeBryophytes</i>	-1.02	0.87	-2.72	0.66
	<i>years_since_fire28:typeGraminoids</i>	-1.43	0.83	-3.11	0.14
	<i>years_since_fire>44:typeGraminoids</i>	-2.53	0.85	-4.19	-0.87

	<i>years_since_fire28:typeHerbs</i>	-0.54	0.84	-2.21	1.10
	<i>years_since_fire>44:typeHerbs</i>	-2.70	0.96	-4.58	-0.86
	<i>years_since_fire28:typeShrubleaves</i>	-0.05	0.82	-1.67	1.54
	<i>years_since_fire>44:typeShrubleaves</i>	-1.37	0.82	-2.98	0.23
	<i>years_since_fire28:typeShrubstems</i>	-0.10	0.81	-1.68	1.51
	<i>years_since_fire>44:typeShrubstems</i>	-1.15	0.82	-2.77	0.44
	<i>firecontrol:years_since_fire28:typeBryophytes</i>	0.61	1.11	-1.56	2.78
	<i>firecontrol:years_since_fire>44:typeBryophytes</i>	0.43	1.14	-1.78	2.63
	<i>firecontrol:years_since_fire28:typeGraminoids</i>	1.18	1.06	-0.84	3.33
	<i>firecontrol:years_since_fire>44:typeGraminoids</i>	2.26	1.07	0.19	4.39
	<i>firecontrol:years_since_fire28:typeHerbs</i>	-2.77	1.31	-5.30	-0.24
	<i>firecontrol:years_since_fire>44:typeHerbs</i>	2.04	1.29	-0.50	4.60
	<i>firecontrol:years_since_fire28:typeShrubleaves</i>	-0.48	1.04	-2.50	1.60
	<i>firecontrol:years_since_fire>44:typeShrubleaves</i>	0.56	1.05	-1.52	2.61
	<i>firecontrol:years_since_fire28:typeShrubstems</i>	-0.49	1.02	-2.47	1.56
	<i>firecontrol:years_since_fire>44:typeShrubstems</i>	0.49	1.04	-1.56	2.52
	<i>sigma</i>	1.04	0.05	0.95	1.13
	<i>Intercept</i>	2.03	0.19	1.65	2.41
	<i>firecontrol</i>	0.19	0.28	-0.36	0.75
	<i>years_since_fire28</i>	0.08	0.28	-0.46	0.63
	<i>years_since_fire>44</i>	0.56	0.28	0.04	1.10
	<i>depth5M30cm</i>	-0.24	0.25	-0.73	0.24
	<i>depth30M60cm</i>	-0.61	0.26	-1.11	-0.10
	<i>firecontrol:years_since_fire28</i>	0.09	0.40	-0.70	0.88
	<i>firecontrol:years_since_fire>44</i>	-0.75	0.39	-1.52	0.01
	<i>firecontrol:depth5M30cm</i>	-0.05	0.36	-0.75	0.66
	<i>firecontrol:depth30M60cm</i>	-0.18	0.37	-0.91	0.53
	<i>years_since_fire28:depth5M30cm</i>	0.11	0.36	-0.59	0.82
	<i>years_since_fire>44:depth5M30cm</i>	-0.56	0.36	-1.26	0.13
	<i>years_since_fire28:depth30M60cm</i>	-0.11	0.36	-0.83	0.60
	<i>years_since_fire>44:depth30M60cm</i>	-0.56	0.36	-1.26	0.15
	<i>firecontrol:years_since_fire28:depth5M30cm</i>	0.35	0.51	-0.64	1.35
	<i>firecontrol:years_since_fire>44:depth5M30cm</i>	1.06	0.51	0.08	2.07
	<i>firecontrol:years_since_fire28:depth30M60cm</i>	-0.02	0.52	-1.04	1.00
	<i>firecontrol:years_since_fire>44:depth30M60cm</i>	0.56	0.51	-0.46	1.55
	<i>sigma</i>	0.57	0.04	0.50	0.65
	<i>Intercept</i>	-0.33	0.14	-0.61	-0.05
	<i>firecontrol</i>	-0.03	0.21	-0.45	0.39
	<i>years_since_fire28</i>	-0.06	0.21	-0.48	0.35
	<i>years_since_fire>44</i>	0.25	0.21	-0.16	0.67
	<i>depth5M30cm</i>	-0.21	0.18	-0.57	0.15
	<i>depth30M60cm</i>	-0.40	0.19	-0.78	-0.02
	<i>firecontrol:years_since_fire28</i>	0.24	0.30	-0.34	0.82
	<i>firecontrol:years_since_fire>44</i>	-0.37	0.30	-0.96	0.21
	<i>firecontrol:depth5M30cm</i>	0.04	0.27	-0.49	0.56
	<i>firecontrol:depth30M60cm</i>	-0.01	0.27	-0.54	0.52
	<i>years_since_fire28:depth5M30cm</i>	0.25	0.26	-0.28	0.76
	<i>years_since_fire>44:depth5M30cm</i>	-0.35	0.26	-0.87	0.17
	<i>years_since_fire28:depth30M60cm</i>	0.04	0.27	-0.47	0.56
	<i>years_since_fire>44:depth30M60cm</i>	-0.39	0.27	-0.92	0.14
	<i>firecontrol:years_since_fire28:depth5M30cm</i>	-0.08	0.38	-0.81	0.66
	<i>firecontrol:years_since_fire>44:depth5M30cm</i>	0.69	0.38	-0.04	1.44
	<i>firecontrol:years_since_fire28:depth30M60cm</i>	-0.16	0.37	-0.90	0.56
	<i>firecontrol:years_since_fire>44:depth30M60cm</i>	0.34	0.38	-0.39	1.10
	<i>sigma</i>	0.42	0.03	0.36	0.48

Table S9: Bayesian R^2 with 95 % credible intervals (CrI's) and structure of the models analysing effects of fire and functional type/depth on C and N concentrations and stable isotope ratios in aboveground biomass and soil.

	Est.	Est.Error	Q2.5	Q97.5	Structure
$\delta^{15}\text{N}$ biomass	0.75	0.02	0.71	0.78	d15N~fire*years_since_fire*type + (1 pairs/plot), sigma ~ 0 + type
$\delta^{13}\text{C}$ biomass	0.76	0.01	0.73	0.79	d13C~fire*years_since_fire*type + (1 pairs/plot), sigma ~ 0 + type
C concentration biomass	0.69	0.03	0.63	0.74	C_conc~fire*years_since_fire*type + (1 pairs/plot), sigma ~ 0 + type
N concentration biomass	0.74	0.02	0.71	0.77	N_conc~fire*years_since_fire*type + (1 pairs/plot), sigma ~ 0 + type
C/N biomass	0.89	0.01	0.86	0.90	CN~fire*years_since_fire*type + (1 pairs/plot), sigma ~ 0 + type
$\delta^{13}\text{C}$ soil	0.48	0.05	0.38	0.56	d13C~fire*years_since_fire*depth + (1 pairs/plot), sigma ~ 0+depth
C concentration soil	0.26	0.04	0.18	0.34	C_conc~fire*years_since_fire*depth + (1 pairs/plot), sigma ~ 0+depth
N concentration soil	0.22	0.04	0.15	0.31	N_conc~fire*years_since_fire*depth + (1 pairs/plot), sigma ~ 0+depth
C/N soil	0.37	0.05	0.28	0.46	CN~fire*years_since_fire*depth + (1 pairs/plot), sigma ~ 0+depth

Table S10: Estimates and 95 % credible intervals (CrI's) for coefficients of the models analysing effects of fire and functional type/depth on C and N concentrations and stable isotope ratios in aboveground biomass and soil.

	Coefficients	Estimate	Est.Error	l-95%	u-95%
$\delta^{15}\text{N}$ biomass	Intercept	-5.05	0.81	-6.62	-3.45
	firecontrol	-2.00	0.93	-3.84	-0.16
	years_since_fire28	-0.08	0.94	-1.93	1.77
	years_since_fire>44	-0.42	0.96	-2.34	1.47
	typeBryophytes	2.45	0.89	0.72	4.18
	typeGraminoids	7.40	1.09	5.27	9.54
	typeHerbs	7.55	1.94	3.75	11.48
	typeShrubleaves	-0.22	1.22	-2.63	2.17
	firecontrol:years_since_fire28	-3.79	1.16	-6.05	-1.52
	firecontrol:years_since_fire>44	0.03	1.18	-2.26	2.33
	firecontrol:typeBryophytes	1.35	1.09	-0.77	3.47
	firecontrol:typeGraminoids	2.26	1.42	-0.50	5.07
	firecontrol:typeHerbs	4.98	2.96	-0.97	10.71
	firecontrol:typeShrubleaves	2.13	1.60	-0.99	5.24
	years_since_fire28:typeBryophytes	-0.47	1.07	-2.56	1.62
	years_since_fire>44:typeBryophytes	-0.36	1.10	-2.55	1.81
	years_since_fire28:typeGraminoids	1.75	1.44	-1.04	4.59
	years_since_fire>44:typeGraminoids	1.05	1.45	-1.71	3.92
	years_since_fire28:typeHerbs	3.62	2.67	-1.63	8.79
	years_since_fire>44:typeHerbs	-2.48	3.10	-8.66	3.64
	years_since_fire28:typeShrubleaves	-0.14	1.61	-3.33	2.94
	years_since_fire>44:typeShrubleaves	0.35	1.61	-2.75	3.53
	firecontrol:years_since_fire28:typeBryophytes	3.68	1.42	0.92	6.44
	firecontrol:years_since_fire>44:typeBryophytes	0.38	1.42	-2.40	3.21
	firecontrol:years_since_fire28:typeGraminoids	3.67	1.96	-0.08	7.52
	firecontrol:years_since_fire>44:typeGraminoids	1.05	1.97	-2.91	4.88
	firecontrol:years_since_fire28:typeHerbs	-3.66	5.20	-13.67	6.82
	firecontrol:years_since_fire>44:typeHerbs	2.46	4.43	-6.16	11.19
	firecontrol:years_since_fire28:typeShrubleaves	2.52	2.20	-1.79	6.75
	firecontrol:years_since_fire>44:typeShrubleaves	-1.92	2.19	-6.17	2.38
	sigma_typeLichens	0.33	0.12	0.09	0.57
	sigma_typeBryophytes	0.14	0.16	-0.18	0.43
sigma_typeGraminoids	0.90	0.10	0.71	1.11	
sigma_typeHerbs	1.65	0.13	1.42	1.92	
sigma_typeShrubleaves	1.09	0.10	0.91	1.29	
$\delta^{13}\text{C}$ biomass	Intercept	-26.68	0.26	-27.18	-26.16
	firecontrol	1.04	0.30	0.45	1.63
	years_since_fire28	0.25	0.31	-0.37	0.84
	years_since_fire>44	0.46	0.31	-0.16	1.07
	typeBryophytes	-2.12	0.39	-2.90	-1.36
	typeGraminoids	-0.31	0.31	-0.92	0.28
	typeHerbs	-1.31	0.54	-2.34	-0.23
	typeShrubleaves	-3.22	0.34	-3.90	-2.55
	firecontrol:years_since_fire28	0.38	0.37	-0.35	1.13
	firecontrol:years_since_fire>44	-0.34	0.38	-1.09	0.42
	firecontrol:typeBryophytes	-1.21	0.53	-2.23	-0.17
	firecontrol:typeGraminoids	-0.52	0.39	-1.26	0.25
	firecontrol:typeHerbs	-0.05	0.82	-1.71	1.53
	firecontrol:typeShrubleaves	-0.54	0.44	-1.42	0.32
	years_since_fire28:typeBryophytes	-0.24	0.50	-1.22	0.73
	years_since_fire>44:typeBryophytes	-0.78	0.52	-1.79	0.26
	years_since_fire28:typeGraminoids	0.17	0.39	-0.60	0.95
	years_since_fire>44:typeGraminoids	-0.18	0.40	-0.94	0.62
	years_since_fire28:typeHerbs	0.81	0.74	-0.67	2.27
	years_since_fire>44:typeHerbs	-0.72	0.84	-2.35	0.91
	years_since_fire28:typeShrubleaves	0.96	0.44	0.10	1.84
	years_since_fire>44:typeShrubleaves	0.12	0.45	-0.75	1.01

	<i>firecontrol:years_since_fire28:typeBryophytes</i>	-0.13	0.72	-1.52	1.28
	<i>firecontrol:years_since_fire>44:typeBryophytes</i>	1.17	0.72	-0.26	2.60
	<i>firecontrol:years_since_fire28:typeGraminoids</i>	-0.13	0.52	-1.18	0.88
	<i>firecontrol:years_since_fire>44:typeGraminoids</i>	0.24	0.53	-0.81	1.26
	<i>firecontrol:years_since_fire28:typeHerbs</i>	-1.74	1.40	-4.50	1.05
	<i>firecontrol:years_since_fire>44:typeHerbs</i>	0.65	1.20	-1.72	3.07
	<i>firecontrol:years_since_fire28:typeShrubleaves</i>	-0.81	0.59	-1.98	0.35
	<i>firecontrol:years_since_fire>44:typeShrubleaves</i>	0.26	0.60	-0.89	1.46
	<i>sigma_typeLichens</i>	-0.76	0.14	-1.03	-0.49
	<i>sigma_typeBryophytes</i>	-0.17	0.12	-0.38	0.06
	<i>sigma_typeGraminoids</i>	-0.56	0.11	-0.77	-0.34
	<i>sigma_typeHerbs</i>	0.33	0.13	0.08	0.61
	<i>sigma_typeShrubleaves</i>	-0.33	0.10	-0.53	-0.12
	<i>Intercept</i>	42.09	0.49	41.13	43.01
	<i>firecontrol</i>	-1.29	0.55	-2.38	-0.19
	<i>years_since_fire28</i>	-1.34	0.58	-2.50	-0.20
	<i>years_since_fire>44</i>	-0.94	0.59	-2.08	0.23
	<i>typeBryophytes</i>	-0.18	0.74	-1.65	1.27
	<i>typeGraminoids</i>	-2.43	0.56	-3.54	-1.31
	<i>typeHerbs</i>	-3.03	1.03	-5.06	-0.95
	<i>typeShrubleaves</i>	4.90	1.33	2.26	7.46
	<i>firecontrol:years_since_fire28</i>	1.31	0.68	-0.03	2.67
	<i>firecontrol:years_since_fire>44</i>	0.91	0.70	-0.48	2.31
	<i>firecontrol:typeBryophytes</i>	3.13	1.02	1.17	5.12
	<i>firecontrol:typeGraminoids</i>	2.29	0.70	0.93	3.68
	<i>firecontrol:typeHerbs</i>	-0.31	1.55	-3.35	2.79
	<i>firecontrol:typeShrubleaves</i>	-0.59	1.82	-4.11	3.05
	<i>years_since_fire28:typeBryophytes</i>	2.56	0.96	0.71	4.45
	<i>years_since_fire>44:typeBryophytes</i>	2.98	0.99	1.04	4.97
	<i>years_since_fire28:typeGraminoids</i>	1.50	0.72	0.10	2.89
	<i>years_since_fire>44:typeGraminoids</i>	2.42	0.73	0.98	3.86
	<i>years_since_fire28:typeHerbs</i>	-0.52	1.42	-3.36	2.26
	<i>years_since_fire>44:typeHerbs</i>	0.88	1.67	-2.42	4.16
	<i>years_since_fire28:typeShrubleaves</i>	2.80	1.82	-0.85	6.37
	<i>years_since_fire>44:typeShrubleaves</i>	1.75	1.83	-1.79	5.37
	<i>firecontrol:years_since_fire28:typeBryophytes</i>	-1.90	1.36	-4.59	0.79
	<i>firecontrol:years_since_fire>44:typeBryophytes</i>	-4.40	1.38	-7.16	-1.73
	<i>firecontrol:years_since_fire28:typeGraminoids</i>	-1.51	0.94	-3.35	0.29
	<i>firecontrol:years_since_fire>44:typeGraminoids</i>	-2.19	0.96	-4.10	-0.29
	<i>firecontrol:years_since_fire28:typeHerbs</i>	1.17	2.70	-4.16	6.53
	<i>firecontrol:years_since_fire>44:typeHerbs</i>	-1.45	2.35	-6.08	3.17
	<i>firecontrol:years_since_fire28:typeShrubleaves</i>	0.88	2.53	-4.10	5.80
	<i>firecontrol:years_since_fire>44:typeShrubleaves</i>	1.73	2.55	-3.22	6.77
	<i>sigma_typeLichens</i>	-0.25	0.17	-0.60	0.05
	<i>sigma_typeBryophytes</i>	0.51	0.12	0.28	0.75
	<i>sigma_typeGraminoids</i>	0.09	0.12	-0.15	0.33
	<i>sigma_typeHerbs</i>	1.00	0.13	0.76	1.27
	<i>sigma_typeShrubleaves</i>	1.35	0.10	1.17	1.55
	<i>Intercept</i>	1.18	0.16	0.88	1.49
	<i>firecontrol</i>	-0.87	0.19	-1.24	-0.51
	<i>years_since_fire28</i>	-0.68	0.19	-1.04	-0.32
	<i>years_since_fire>44</i>	-0.72	0.19	-1.10	-0.35
	<i>typeBryophytes</i>	-0.39	0.16	-0.72	-0.08
	<i>typeGraminoids</i>	0.10	0.17	-0.22	0.43
	<i>typeHerbs</i>	0.40	0.20	0.00	0.79
	<i>typeShrubleaves</i>	0.39	0.21	-0.03	0.79
	<i>firecontrol:years_since_fire28</i>	0.60	0.23	0.14	1.06
	<i>firecontrol:years_since_fire>44</i>	0.69	0.24	0.23	1.16
	<i>firecontrol:typeBryophytes</i>	1.01	0.20	0.62	1.41
	<i>firecontrol:typeGraminoids</i>	1.16	0.21	0.75	1.55
	<i>firecontrol:typeHerbs</i>	1.39	0.27	0.87	1.93

	<i>firecontrol:typeShrubleaves</i>	1.17	0.27	0.65	1.68
	<i>years_since_fire28:typeBryophytes</i>	0.60	0.20	0.22	1.00
	<i>years_since_fire>44:typeBryophytes</i>	0.67	0.20	0.28	1.06
	<i>years_since_fire28:typeGraminoids</i>	0.68	0.21	0.27	1.08
	<i>years_since_fire>44:typeGraminoids</i>	0.80	0.21	0.38	1.21
	<i>years_since_fire28:typeHerbs</i>	0.70	0.26	0.20	1.20
	<i>years_since_fire>44:typeHerbs</i>	0.83	0.28	0.27	1.39
	<i>years_since_fire28:typeShrubleaves</i>	0.30	0.26	-0.22	0.82
	<i>years_since_fire>44:typeShrubleaves</i>	0.56	0.27	0.03	1.10
	<i>firecontrol:years_since_fire28:typeBryophytes</i>	-0.69	0.25	-1.20	-0.20
	<i>firecontrol:years_since_fire>44:typeBryophytes</i>	-0.82	0.26	-1.32	-0.33
	<i>firecontrol:years_since_fire28:typeGraminoids</i>	-0.60	0.27	-1.14	-0.09
	<i>firecontrol:years_since_fire>44:typeGraminoids</i>	-0.90	0.27	-1.44	-0.38
	<i>firecontrol:years_since_fire28:typeHerbs</i>	-1.01	0.42	-1.85	-0.18
	<i>firecontrol:years_since_fire>44:typeHerbs</i>	-1.15	0.39	-1.92	-0.39
	<i>firecontrol:years_since_fire28:typeShrubleaves</i>	-0.75	0.36	-1.45	-0.06
	<i>firecontrol:years_since_fire>44:typeShrubleaves</i>	-0.98	0.36	-1.69	-0.27
	<i>sigma_typeLichens</i>	-1.20	0.11	-1.41	-0.97
	<i>sigma_typeBryophytes</i>	-1.95	0.15	-2.26	-1.66
	<i>sigma_typeGraminoids</i>	-1.55	0.12	-1.77	-1.31
	<i>sigma_typeHerbs</i>	-1.00	0.13	-1.25	-0.74
	<i>sigma_typeShrubleaves</i>	-0.86	0.10	-1.05	-0.65
	<i>Intercept</i>	59.89	15.75	28.78	90.33
	<i>firecontrol</i>	80.78	18.71	44.37	117.45
	<i>years_since_fire28</i>	30.22	18.51	-5.88	66.67
	<i>years_since_fire>44</i>	44.95	18.86	7.86	82.18
	<i>typeBryophytes</i>	-3.85	16.52	-35.96	28.42
	<i>typeGraminoids</i>	-28.51	15.76	-58.88	2.72
	<i>typeHerbs</i>	-31.63	16.02	-62.79	0.13
	<i>typeShrubleaves</i>	-29.68	15.78	-60.33	1.48
	<i>firecontrol:years_since_fire28</i>	14.95	23.26	-30.86	60.77
	<i>firecontrol:years_since_fire>44</i>	-31.05	23.80	-77.33	16.40
	<i>firecontrol:typeBryophytes</i>	-87.61	20.04	-126.55	-48.00
	<i>firecontrol:typeGraminoids</i>	-85.27	18.75	-122.13	-48.78
	<i>firecontrol:typeHerbs</i>	-90.75	19.30	-128.09	-53.35
	<i>firecontrol:typeShrubleaves</i>	-82.14	18.82	-118.67	-45.12
	<i>years_since_fire28:typeBryophytes</i>	-21.08	19.66	-59.85	17.02
	<i>years_since_fire>44:typeBryophytes</i>	-38.69	20.10	-78.28	1.29
	<i>years_since_fire28:typeGraminoids</i>	-30.27	18.56	-66.70	6.16
	<i>years_since_fire>44:typeGraminoids</i>	-44.56	18.90	-81.72	-7.06
	<i>years_since_fire28:typeHerbs</i>	-34.89	18.96	-72.46	1.84
	<i>years_since_fire>44:typeHerbs</i>	-48.34	19.52	-86.71	-9.56
	<i>years_since_fire28:typeShrubleaves</i>	-18.82	18.60	-55.56	17.58
	<i>years_since_fire>44:typeShrubleaves</i>	-40.72	18.92	-77.79	-3.28
	<i>firecontrol:years_since_fire28:typeBryophytes</i>	-12.85	25.37	-63.41	36.42
	<i>firecontrol:years_since_fire>44:typeBryophytes</i>	36.59	25.77	-14.78	86.45
	<i>firecontrol:years_since_fire28:typeGraminoids</i>	-15.59	23.30	-61.22	30.37
	<i>firecontrol:years_since_fire>44:typeGraminoids</i>	33.38	23.88	-13.75	79.77
	<i>firecontrol:years_since_fire28:typeHerbs</i>	-3.76	24.78	-52.40	44.88
	<i>firecontrol:years_since_fire>44:typeHerbs</i>	37.41	24.81	-12.06	85.55
	<i>firecontrol:years_since_fire28:typeShrubleaves</i>	-18.21	23.37	-63.72	28.21
	<i>firecontrol:years_since_fire>44:typeShrubleaves</i>	32.84	23.93	-14.97	79.47
	<i>sigma_typeLichens</i>	3.42	0.11	3.22	3.63
	<i>sigma_typeBryophytes</i>	2.63	0.11	2.42	2.87
	<i>sigma_typeGraminoids</i>	1.37	0.16	1.03	1.66
	<i>sigma_typeHerbs</i>	2.19	0.14	1.94	2.47
	<i>sigma_typeShrubleaves</i>	1.66	0.12	1.43	1.89
	<i>Intercept</i>	-24.60	0.21	-25.02	-24.18
	<i>firecontrol</i>	-0.71	0.31	-1.32	-0.12
	<i>years_since_fire28</i>	-0.61	0.31	-1.21	0.00
	<i>years_since_fire>44</i>	-0.88	0.30	-1.46	-0.29

	<i>depth5M30cm</i>	0.44	0.33	-0.22	1.09	
	<i>depth30M60cm</i>	0.75	0.32	0.12	1.39	
	<i>firecontrol:years_since_fire28</i>	0.35	0.43	-0.51	1.20	
	<i>firecontrol:years_since_fire>44</i>	1.27	0.43	0.43	2.11	
	<i>firecontrol:depth5M30cm</i>	0.30	0.48	-0.64	1.26	
	<i>firecontrol:depth30M60cm</i>	0.76	0.45	-0.14	1.66	
	<i>years_since_fire28:depth5M30cm</i>	-0.47	0.48	-1.39	0.48	
	<i>years_since_fire>44:depth5M30cm</i>	0.41	0.48	-0.51	1.32	
	<i>years_since_fire28:depth30M60cm</i>	0.42	0.46	-0.49	1.31	
	<i>years_since_fire>44:depth30M60cm</i>	0.63	0.45	-0.25	1.52	
	<i>firecontrol:years_since_fire28:depth5M30cm</i>	-0.02	0.67	-1.32	1.31	
	<i>firecontrol:years_since_fire>44:depth5M30cm</i>	-1.27	0.69	-2.61	0.09	
	<i>firecontrol:years_since_fire28:depth30M60cm</i>	-0.62	0.65	-1.88	0.65	
	<i>firecontrol:years_since_fire>44:depth30M60cm</i>	-0.67	0.64	-1.93	0.59	
	<i>sigma_depth0M5cm</i>	-0.49	0.12	-0.74	-0.26	
	<i>sigma_depth5M30cm</i>	-0.14	0.11	-0.35	0.08	
	<i>sigma_depth30M60cm</i>	-0.25	0.11	-0.45	-0.03	
	<i>Intercept</i>	0.54	0.20	0.15	0.93	
	<i>firecontrol</i>	0.23	0.29	-0.34	0.80	
	<i>years_since_fire28</i>	0.15	0.28	-0.40	0.72	
	<i>years_since_fire>44</i>	0.81	0.29	0.26	1.38	
	<i>depth5M30cm</i>	-0.04	0.38	-0.78	0.70	
	<i>depth30M60cm</i>	-0.19	0.20	-0.57	0.22	
C concentration soil	<i>firecontrol:years_since_fire28</i>	0.07	0.41	-0.74	0.87	
	<i>firecontrol:years_since_fire>44</i>	-0.97	0.41	-1.78	-0.17	
	<i>firecontrol:depth5M30cm</i>	-0.16	0.54	-1.21	0.90	
	<i>firecontrol:depth30M60cm</i>	-0.26	0.29	-0.85	0.31	
	<i>years_since_fire28:depth5M30cm</i>	0.34	0.53	-0.70	1.39	
	<i>years_since_fire>44:depth5M30cm</i>	-0.65	0.54	-1.70	0.40	
	<i>years_since_fire28:depth30M60cm</i>	-0.17	0.29	-0.74	0.38	
	<i>years_since_fire>44:depth30M60cm</i>	-0.80	0.29	-1.37	-0.24	
	<i>firecontrol:years_since_fire28:depth5M30cm</i>	0.21	0.76	-1.28	1.72	
	<i>firecontrol:years_since_fire>44:depth5M30cm</i>	1.09	0.77	-0.41	2.61	
	<i>firecontrol:years_since_fire28:depth30M60cm</i>	-0.04	0.42	-0.87	0.77	
	<i>firecontrol:years_since_fire>44:depth30M60cm</i>	0.92	0.42	0.11	1.74	
	<i>sigma_depth0M5cm</i>	-0.47	0.10	-0.66	-0.27	
	<i>sigma_depth5M30cm</i>	0.01	0.10	-0.18	0.21	
	<i>sigma_depth30M60cm</i>	-1.95	0.17	-2.32	-1.64	
		<i>Intercept</i>	0.05	0.01	0.03	0.07
		<i>firecontrol</i>	0.01	0.02	-0.03	0.04
	<i>years_since_fire28</i>	0.00	0.02	-0.03	0.03	
	<i>years_since_fire>44</i>	0.04	0.02	0.01	0.07	
	<i>depth5M30cm</i>	0.00	0.02	-0.05	0.04	
	<i>depth30M60cm</i>	-0.01	0.01	-0.03	0.01	
N concentration soil	<i>firecontrol:years_since_fire28</i>	0.01	0.02	-0.03	0.06	
	<i>firecontrol:years_since_fire>44</i>	-0.05	0.02	-0.09	0.00	
	<i>firecontrol:depth5M30cm</i>	-0.01	0.03	-0.07	0.05	
	<i>firecontrol:depth30M60cm</i>	-0.01	0.02	-0.04	0.02	
	<i>years_since_fire28:depth5M30cm</i>	0.02	0.03	-0.04	0.09	
	<i>years_since_fire>44:depth5M30cm</i>	-0.03	0.03	-0.10	0.03	
	<i>years_since_fire28:depth30M60cm</i>	-0.01	0.02	-0.04	0.03	
	<i>years_since_fire>44:depth30M60cm</i>	-0.04	0.02	-0.07	-0.01	
	<i>firecontrol:years_since_fire28:depth5M30cm</i>	0.00	0.05	-0.09	0.09	
	<i>firecontrol:years_since_fire>44:depth5M30cm</i>	0.06	0.05	-0.03	0.15	
	<i>firecontrol:years_since_fire28:depth30M60cm</i>	-0.01	0.02	-0.05	0.04	
	<i>firecontrol:years_since_fire>44:depth30M60cm</i>	0.05	0.02	0.00	0.09	
	<i>sigma_depth0M5cm</i>	-3.35	0.10	-3.54	-3.15	
	<i>sigma_depth5M30cm</i>	-2.79	0.10	-2.97	-2.58	
	<i>sigma_depth30M60cm</i>	-4.65	0.18	-5.03	-4.32	
	C/ σ^2	<i>Intercept</i>	10.61	0.82	8.99	12.25
		<i>firecontrol</i>	2.85	1.19	0.49	5.20

<i>years_since_fire28</i>	1.85	1.20	-0.51	4.19
<i>years_since_fire>44</i>	3.96	1.18	1.67	6.27
<i>depth5M30cm</i>	-0.26	1.53	-3.26	2.70
<i>depth30M60cm</i>	-1.95	1.19	-4.29	0.39
<i>firecontrol:years_since_fire28</i>	-1.99	1.67	-5.26	1.27
<i>firecontrol:years_since_fire>44</i>	-4.90	1.68	-8.22	-1.60
<i>firecontrol:depth5M30cm</i>	-0.97	2.20	-5.23	3.44
<i>firecontrol:depth30M60cm</i>	-2.41	1.69	-5.74	0.91
<i>years_since_fire28:depth5M30cm</i>	-0.39	2.18	-4.56	3.94
<i>years_since_fire>44:depth5M30cm</i>	-2.65	2.17	-6.82	1.58
<i>years_since_fire28:depth30M60cm</i>	-1.40	1.67	-4.68	1.87
<i>years_since_fire>44:depth30M60cm</i>	-2.56	1.67	-5.85	0.75
<i>firecontrol:years_since_fire28:depth5M30cm</i>	4.66	3.10	-1.47	10.69
<i>firecontrol:years_since_fire>44:depth5M30cm</i>	4.40	3.16	-1.90	10.52
<i>firecontrol:years_since_fire28:depth30M60cm</i>	1.62	2.36	-2.99	6.32
<i>firecontrol:years_since_fire>44:depth30M60cm</i>	3.27	2.35	-1.37	7.87
<i>sigma_depth0M5cm</i>	0.92	0.11	0.71	1.13
<i>sigma_depth5M30cm</i>	1.42	0.10	1.23	1.62
<i>sigma_depth30M60cm</i>	0.95	0.11	0.74	1.17

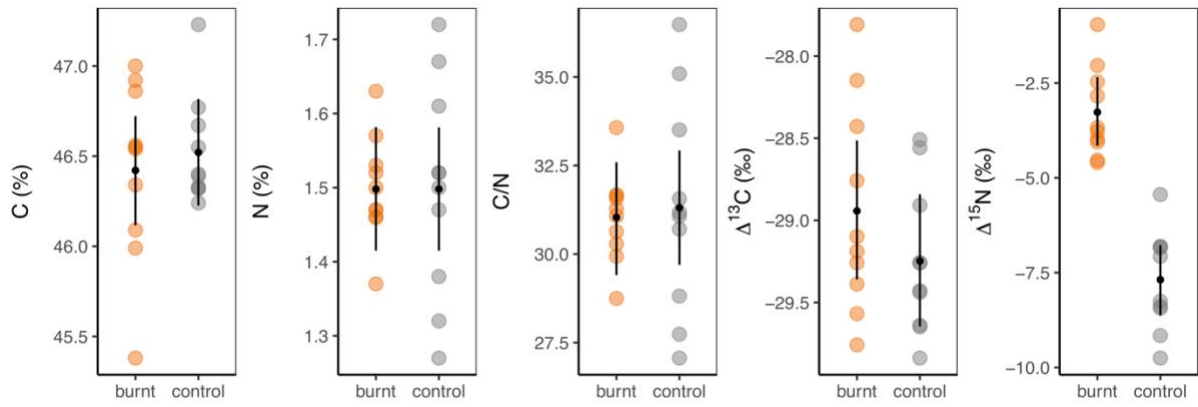


Figure S11: Predicted means and 95 % credible intervals (in black) for C and N concentrations as well as C/N-ratio and isotope ratios in *Betula nana* leaves for the intermediate fire scar (28 years after fire) on burnt and control plots. Coloured dots are raw data. We can only show data from the intermediate fire scar, as we did not sample *Betula nana* leaves separately in the other fire scars.