

Supporting Information for the research paper:

**SOM: a sustainability indicator for wildfire control and bioenergy production  
in the urban/forest interface**

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**This work was presented at the “North America Forest Soils Conference, Montana 2013”,  
in the “New Technologies in Soil Research” session.**

*Soil Science Society of America Journal*

## **Soil Organic Matter: a sustainability indicator for wildfire control and bioenergy production in the urban/forest interface**

### **Simulation of forest stands in interior British Columbia**

For each pilot community, GIS maps of the surrounding area in a 25-km radius were generated, using the data from BC's Vegetation Resources Inventory (available at: <http://www.for.gov.bc.ca/hts/vri/>). Forest stands (GIS polygons) in each map were classified into different forest types depending on their biogeoclimatic zone, dominant tree species, density and tree age (Table S1). Each stand type is simulated as a forest starting on a set of ecological conditions determined by its previous disturbance regime. Based on data on fire regimes for each biogeoclimatic zone, the initial conditions were created for each ecosystem type using the parameters shown in Table S2. These conditions were created by several iterations of the natural fire return interval, until reaching steady state conditions.

### **References**

Pojar, J., Klinka, K., Meidinger, D.V., 1987. Biogeoclimatic ecosystem classification in British Columbia. *Forest Ecology and Management* 22, 119–154.

**Table S1.** Forest types simulated in the 25-km radius around each community. SI: Site index (dominant top height) at year 50. Age: average tree age. BGC: initial conditions used to simulate each biogeoclimatic ecotype code corresponding to the classification by Pojar et al. (1987) and extended. Species (n): initial density of up to three dominant tree species in each forest type.

Forest type name	Area 10 <sup>3</sup> Ha	SI m	Age year	BGC ecotype	Species 1 Stems ha <sup>-1</sup>	Species 2 Stems ha <sup>-1</sup>	Species 3 Stems ha <sup>-1</sup>			
BURNS LAKE										
Sx B poor	18.7	11.6	126	ESSF mc	Sx	1190	B	510	-	-
B Pl Sx Poor	15.6	10.8	137	ESSF mc	B	800	Pl	600	Sx	600
Sx At poor	88.4	14.8	106	SBS dk	Sx	1600	At	400	-	-
Sx B poor	67.6	13.1	119	SBS mc	Sx	1050	B	450	-	-
Pl At Sx poor	44.2	14.4	107	SBS dk	Pl	1020	At	340	Sx	340
At Sx Pl poor	29.7	15.3	101	SBS dk	At	1500	Sx	900	Pl	600
Pl B poor	17.2	12.8	135	SBS mc	Pl	1200	B	800	-	-
B Pl poor	13.7	11.3	140	SBS mc	B	1200	Pl	800	-	-
B Pl Sx poor	7.8	13.4	113	SBS dk	B	1000	Pl	500	Sx	500
INVERMERE										
Fd Pl Sx poor	10.1	12.3	156	ESSF dk	Fd	1300	Pl	400	Sx	300
B Sx Pl poor	5.7	9.0	135	ESSF dk	B	1950	Sx	600	Pl	450
B Pl Sx poor	4.7	8.5	200	ESSF dk	B	1400	Pl	400	Sx	200
Pl Fd Sx poor	26.0	11.9	122	ESSF dk	Pl	1500	Fd	300	Sx	200
Sx Pl B poor	16.4	10.5	182	ESSF dk	S	1080	Pl	450	B	270
Fd Pl Sx medium	6.6	15.5	116	ICH mk	Fd	1200	Pl	900	Sx	900
Fd Pl At poor	30.9	14.4	103	IDF dm	Fd	1875	Pl	375	At	250
Pl Fd At medium	4.0	15.7	65	IDF dm	Pl	825	Fd	450	At	225
Fd Pl poor	13.2	13.1	108	IDF xk	Fd	1700	Pl	300	-	-
Pl Fd Sx medium	21.7	16.0	85	MS dk m	Pl	1750	Fd	375	Sx	375
Sx Pl Fd medium	8.5	15.5	118	MS dk m	S	1250	Pl	625	Fd	625
Fd Pl Sx poor	27.0	14.5	119	MS dk p	Fd	2100	Pl	600	Sx	300
SICAMOUS										
Fd Cw Hw medium	62.0	16.7	103	ICH mw	Fd	780	Cw	325	Hw	195
B Sx poor	50.7	8.5	162	ESSF wc	B	750	Sx	250	-	-
Fd At Cw medium	22.7	17.3	102	IDF mw	Fd	960	At	240	-	-
Sx B poor	17.8	12.1	150	ESSF wc	S	845	B	455	-	-
Fd Cw Hw medium	14.3	16.2	96	ICH wk	Fd	780	Cw	325	Hw	195
Hw Cw Fd poor	12.8	14.0	150	ICH mw	Hw	780	Cw	325	Fd	195
Cw Hw Fd poor	10.1	14.1	141	ICH mw	Cw	715	Fd	390	Hw	195
Hw Cw Fd poor	9.9	14.3	150	ICH wk	Hw	845	Cw	325	Fd	130
Cw Hw Fd poor	8.1	13.8	173	ICH wk	Cw	780	Hw	390	Fd	130
Ep Fd rich	7.2	18.8	78	ICH mw	Ep	1540	Fd	660	-	-
At Fd Cw rich	4.8	19.1	101	ICH mw	At	1320	Fd	550	Cw	330
Pl Fd medium rich	4.7	18.8	37	ICH mw	Pl	1200	Fd	800	-	-
Sx B Hw poor	13.1	14.8	99	ICH wk	S	1260	B	540	-	-

<sup>1</sup> Forest species codes: B: Subalpine fir (*Abies lasiocarpa* (Hooker) Nuttall); Pl: lodgepole pine (*Pinus contorta* Doug.); At: trembling aspen (*Populus tremuloides* Michx.); Sx: hybrid spruce (*Picea engelmannii* x *glauca*); Fd: Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco); Cw: western redcedar (*Thuja plicata* Donn ex D.Don).

**Table S2.** Parameters used to create the starting conditions for different ecotypes, corresponding to the biogeoclimatic classification by Pojar et al. (1987). SI: site index (fertility) range (dominant top height at year 50). Return: average time between consecutive fires in the same site. Cycles: number of return intervals needed to reach steady state conditions. Species (1-2): initial tree density. Tree codes are the same as in Table S1.

Ecotype	SI m	Fire return years	Cycles	Species 1 Trees ha <sup>-1</sup>	Species 2 Trees ha <sup>-1</sup>
<b>BURNS LAKE</b>					
ESSF mc	<16	150	5	Sx	1000
SBS dk	<16	100	5	Sx	375
SBS mc	<16	150	6	Sx	800
<b>INVERMERE</b>					
ESSF dk	<15	150	6	B	900
ICH mk	≥15	200	6	Sx	1620
IDF dm	≥15	125	7	Fd	1350
IDF dm	<15	150	6	Fd	1200
IDF xk	<15	150	9	Fd	1500
MS dk	≥15	200	7	Pl	1100
MS dk	<15	200	6	Pl	1000
<b>SICAMOUS</b>					
IDF mw	>16	100	12	Ep	1125
ICH wk	≥16	250	6	Pl	1620
ICH mw	<16	250	5	Sx	1200
ESSF wc	<16	200	5	Sx	900