

## Supplementary material

**Interdependencies between flame length and fireline intensity in predicting crown fire initiation and crown scorch height**

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A typographical error in the original version of Table S1 as posted in 2012 has been brought to our attention. The coefficient in the Thomas (1963) equation (0.02665) is correct but the exponent should have read 0.667 and not 0.46. Any calculations using the equation on our part relied upon the correct exponent.

We acknowledge Paulo Fernandes (Universidade de Trás-os-Montes e Alto Douro) for bringing the error to our attention.

**Estimating flame length from fireline intensity**

Table 1 presents equations for calculating fireline intensity ( $I_B$ , kW m<sup>-1</sup>) from flame length ( $L$ , m). Reciprocals of these equations can be useful for estimating flame length where fireline intensity is known. To facilitate estimation of flame length, Table S1 contains reciprocals of the equations from Table 1.

**Table S1. Reciprocals of the fireline intensity-flame length equations in Table 1**

Reference	Equation
Byram (1959)	$L = 0.0775 I_B^{0.46}$
Fons <i>et al.</i> (1963)	$L = 0.127 I_B^{0.667}$
Thomas (1963)	$L = 0.02665 I_B^{0.667}$
Anderson <i>et al.</i> (1966) – lodgepole pine slash	$L = 0.074 I_B^{0.651}$
Anderson <i>et al.</i> (1966) – Douglas-fir slash	$L = 0.0447 I_B^{0.67}$
Newman (1974)	$L = 0.0577 I_B^{0.50}$
Nelson (1980) – understorey fuels	$L = 0.04425 I_B^{0.50}$
Nelson (1980) – Southern US fuels	$L = 0.0377 I_B^{0.50}$
Clark (1983) – grasslands (head fire)	$L = 0.00015 I_B^{1.75}$
Clark (1983) – grasslands (backfire)	$L = 0.000722 I_B^{0.99}$
Nelson and Adkins (1986)	$L = 0.0475 I_B^{0.493}$
van Wilgen (1986)	$L = 0.0075 I_B^{0.46}$
Burrows (1994)	$L = 0.0147 I_B^{0.767}$
Weise and Biging (1996)	$L = 0.016 I_B^{0.7}$
Vega <i>et al.</i> (1998)	$L = 0.087 I_B^{0.493}$
Catchpole <i>et al.</i> (1998)	$L = 0.0325 I_B^{0.56}$
Fernandes <i>et al.</i> (2000)	$L = 0.0516 I_B^{0.453}$
Butler <i>et al.</i> (2004)	$L = 0.0175 I_B^{0.667}$
Fernandes <i>et al.</i> (2009) – maritime pine (head fire)	$L = 0.045 I_B^{0.543}$
Fernandes <i>et al.</i> (2009) – maritime pine (backfire)	$L = 0.029 I_B^{0.724}$

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### Interdependencies between flame length and fireline intensity in predicting crown fire initiation and crown scorch height

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### Estimating flame length from fireline intensity

Table 1 presents equations for calculating fireline intensity ( $I_B$ , kW m<sup>-1</sup>) from flame length ( $L$ , m).

Reciprocals of these equations can be useful for estimating flame length where fireline intensity is known.

To facilitate estimation of flame length, Table S1 contains reciprocals of the equations from Table 1.

**Table S1. Reciprocals of the fireline intensity–flame length equations in Table 1**

Reference	Equation
Byram (1959)	$L = 0.0775 \cdot I_B^{0.46}$
Fons <i>et al.</i> (1963)	$L = 0.127 \cdot I_B^{0.667}$
Thomas (1963)	$L = 0.02665 \cdot I_B^{0.46}$
Anderson <i>et al.</i> (1966) – lodgepole pine slash	$L = 0.074 \cdot I_B^{0.651}$
Anderson <i>et al.</i> (1966) – Douglas-fir slash	$L = 0.0447 \cdot I_B^{0.67}$
Newman (1974)	$L = 0.0577 \cdot I_B^{0.50}$
Nelson (1980) – understorey fuels	$L = 0.04425 \cdot I_B^{0.50}$
Nelson (1980) – Southern US fuels	$L = 0.0377 \cdot I_B^{0.50}$
Clark (1983) – grasslands (head fire)	$L = 0.000722 \cdot I_B^{0.99}$
Clark (1983) – grasslands (backfire)	$L = 0.00015 \cdot I_B^{1.75}$
Nelson and Adkins (1986)	$L = 0.0475 \cdot I_B^{0.493}$
van Wilgen (1986)	$L = 0.046 \cdot I_B^{0.51}$
Burrows (1994)	$L = 0.0147 \cdot I_B^{0.767}$
Weise and Biging (1996)	$L = 0.016 \cdot I_B^{0.7}$
Vega <i>et al.</i> (1998)	$L = 0.087 \cdot I_B^{0.493}$
Catchpole <i>et al.</i> (1998)	$L = 0.0325 \cdot I_B^{0.56}$
Fernandes <i>et al.</i> (2000)	$L = 0.0516 \cdot I_B^{0.453}$
Butler <i>et al.</i> (2004)	$L = 0.0175 \cdot I_B^{0.667}$
Fernandes <i>et al.</i> (2009) – maritime pine (head fire)	$L = 0.045 \cdot I_B^{0.543}$
Fernandes <i>et al.</i> (2009) – maritime pine (backfire)	$L = 0.029 \cdot I_B^{0.724}$