The causes and prevention of wildfire on heathlands and peatlands in England (NEER014)

Appendix 10:
Fire shape, terminology and danger

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Appendix 10. Fire shape, terminology and danger

Fire shape, terminology and characterstics

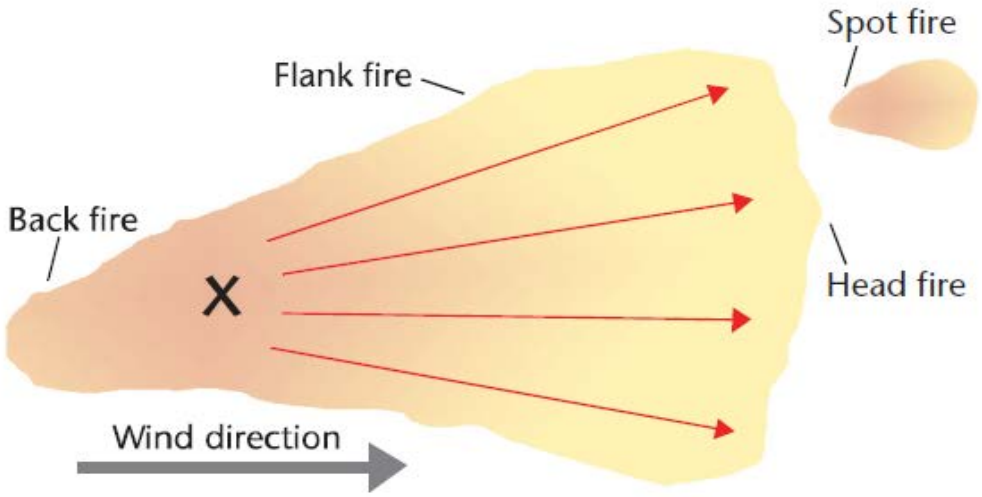

Figure A10.1. Typical fire shape and terminology. Taken from: Murgatroyd, I. 2002. *Forest and moorland fire suppression*. Forestry Commission Scotland.

Table A10.1. Characteristics of heel, flank and head fires.

Heel	**Flanks**	**Head**
Low flames	Moderate flames	Large flames
Slow rate of spread	Moderate rate of spread	Fast rate of spread
Little smoke	Little smoke	Lots of smoke
		Very hot air

Source: EuroFire Training Unit EF1: http://gfmc.online/wp-content/uploads/EuroFire-Training-Materials-EF1-Safety-ENG.pdf.

Table 10.2. Flame length and characeristics.

Flame length (m)	Significance
0–0.5	Fires generally self-extinguish.
0.5–1.5	Fire intensity low. Hand tools can be used in direct attack to control the fire.
1.5–2.5	Fire too intense for direct attack with hand tools. Pumped water or bulldozers may be needed. Flanking / parallel attack recommended.
2.5–3.5	Fire too intense for direct attack with hand tools. Helicopters & fixed wing aircraft drops may be needed. Flanking / parallel attach depending upon local flame length.
3.5–3.5	Very intense fire. Back-burning and backfiring may knockdown the head fire. Flanking / parallel and indirect attack recommended depending upon local flame length.
≥8	Extreme fire behaviour. Defensive strategies recommended.

Source: EuroFire Training Unit EF1: http://gfmc.online/wp-content/uploads/EuroFire-Training-Materials-EF1-Safety-ENG.pdf.

Fire danger rating comparison

Table A10.3. Scottish heather fires and the Australian fire danger ratings comparison. Taken from: Bruce, M. 2002. United Kingdom: Country Report for the United Kingdom. IFFN No.27, July 2002, p 68–76.

Fire Danger	Flame height (M)	Intensity (kW/M)	Heather development	Significance
Low	0–0.5	0–50	-	Fires generally self-extinguish
Moderate	0.5–1.5	50–100	Pioneer Degenerate (some)	Hand tools (beaters) can control fire
High	1.5–3	500–2000	Building Mature Degenerate (some)	Fire too intense for direct attack with hand tools. Water needed. Parallel / flanking attack recommended
Very High	3–10	2000–4000	Runaway heather fires. Wind, slope, fuel driven	Crown fire at upper intensities. Indirect / flanking attack recommended
Extreme	>10	>4000	Historical events recorded	Crowning, spotting, & major runs. Control ineffective, defensive strategy recommended.

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