

The Untidy Wildfire

Wildfires in west-central Alberta tend to be patchy – very patchy. Even wildfires less than 15 ha in size can have two or more individual burnt patches. However, there is nothing haphazard about these wildfires in terms of the *density*, *sizes*, or *spacing* of burnt patches.

1) Density. As wildfires get bigger, the number of disturbed patches increases. For example, the average 100 ha wildfire event includes five separate disturbed patches, and a 1,000 ha event has, on average, 13 disturbed patches.

2) Sizes. Wildfires in this landscape almost always consist of one large burnt patch surrounded by several smaller ones (see Quicknote #13). In fact, the largest patch is always at least 50% of the total burnt area, and half of the time, the largest burnt patch accounts for at least 80% of the total area burnt. Furthermore, the proportional size of the largest burnt patch is unrelated to fire size.

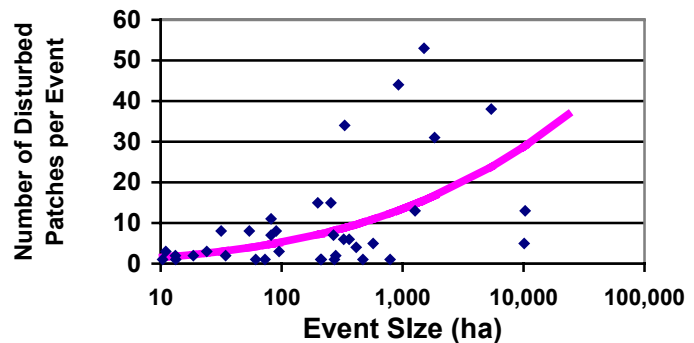
3) Spacing. The average distance between burnt patches increases as wildfires become larger. For example, all of the burnt patches within wildfires smaller than 1,000 ha are within 200m of each other, but in fires larger than 5,000 ha, some of the burnt patches are more than 500m apart.

To summarize, west-central wildfires tend to have one large burnt patch surrounded by a number of smaller burnt patches. As fires become larger, the relative size of the single large burnt patch stays constant, but the number of smaller burnt patches increases, as does the distance between them.

The patterns noted here suggest that forest fires in the foothills of Alberta commonly generate “spot-fires” - frequently attributable to wind-born embers. The evidence also suggests that spot fire activity increases with larger fires.

The ecological significance of multiple burnt patches is unknown. However, we do know that multiple disturbed patches create high levels of intermediate-scale structural complexity, which is not difficult to appreciate as biologically relevant. We also know that undisturbed areas between disturbed patches (or, “matrix remnants”) are the dominant type of residual within natural wildfires on these landscapes (Quicknote #22).

Number of Disturbed Patches Per Event, by Event Size



Proportional Size of the Largest Disturbance Patch in Multi-Patch Events

