FMF Natural Disturbance Program Research

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Historical Fire Sizes. Easy one… Right?

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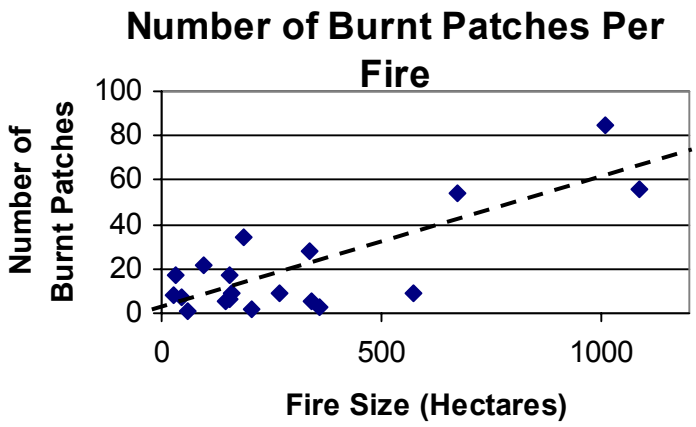
Not necessarily. Fire size is one of the most fundamental aspects of natural disturbance pattern. Such information can be easily and directly compared to managed landscapes. The best way to estimate fire size is to have lengthy and high quality historical fire records - which are not common. The next best thing is to estimate sizes from the current landscape using GIS software. However, there are three problems with leaving it at that, and calling it a "natural" pattern.

First, the current landscape is probably not very natural. Cutblocks, roads, and other human activities are prevalent on most of our landscapes. Luckily, such activities create "holes", and in many cases, records exist. Historical maps and photos also commonly provide an excellent means of reconstruction. In other words, it is possible to fill in these holes with a high level of confidence.

The second problem is that fires burn on top of other fires. A 50 year-old stand is just a fire that burnt 50 years ago. But you would not expect to find all of the original boundaries to, or area of, that 50 year-old fire because of the subsequent fires that burnt over it. So as time progresses, the area of older fires declines, and is broken up into smaller patches by more recent fires. Therefore, only the most recent fires – the youngest forest on the landscape – truly represent the sizes of fires.

The last problem is that fires create multiple burnt patches. As the figure below demonstrates for the Alberta Foothills, as fire size increases, so do the numbers of patches each fire creates. For instance, a 1,000 hectare fire on the FMF creates, *on average,* about 60 burnt patches. By not accounting for patch clustering, patch size may be "natural", but landscape pattern will not be.



Fire and patch size estimates are not as simple as one might assume. Find out where the data came from and how it was compiled. By not accounting for the issues discussed here, size estimates can be inaccurate, biased, and in the end, not very natural.