A Highway 40 North Demonstration Project Update
Putting Natural Disturbance Research to Work

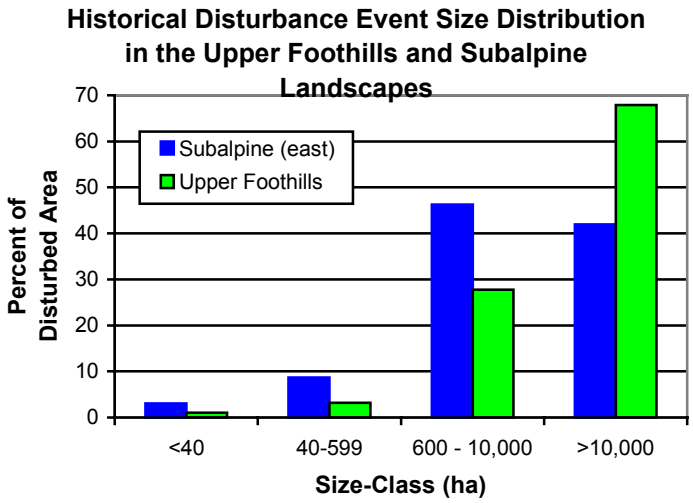
Issue #11 January 2006 ***By: David W. Andison***

Question #2: How Large are the Hwy40 Disturbance Events?

The second question in the sequence for the Hwy40 planning team was the size of the disturbance events. But first, we needed to know how much event area to look for. We know from question #1 (see update #10) that we are looking for 3,500 – 6,000 ha of *disturbed area*. We also know from FMF Natural Disturbance research that the average foothills wildfire event (see FMF ND Quicknote #22) includes about 8% of its area in island remnants, and another 31% in matrix remnants. In other words, about 39% of the area of the average foothills wildfire event is unburnt. So, if we have a target of 3,500 – 6,000 ha of disturbance, and we assume a 39% residual level, we need 4,865 – 8,340 ha of event area, calculated as follows:

3,500 ha disturbed + (39% of 3,500 ha) undisturbed = 4,865 ha event
6,000 ha disturbed + (39% of 6,000 ha) undisturbed = 8,340 ha event

In other words, the Hwy40 planning team needed to identify 4,900 – 8,300 ha of disturbance event area (within which there will be only 3,500 – 6,000 ha disturbed).



So how would Mother Nature distribute this over space? The natural range of wildfire event sizes on the landscapes relevant to the Hwy40 area suggests that most of the disturbed area is accounted for by large wildfires. In fact, wildfires larger than 600 ha cover 90% of the foothills landscape. In contrast, over the last 50 years, the largest disturbance in the Hwy40 area was only 106 ha. This strongly suggests that distributing the required area of disturbance in the Hwy40 area into one or two larger events would be ideal from a natural pattern perspective.

The Hwy40 planning team then considered the appropriateness of having one or two large disturbance events from other perspectives. Ecologically, we know that clustering disturbance activities into a small area allows for larger areas of intact interior forest elsewhere (FMF ND Quicknote #26), which benefits woodland caribou and other old forest interior species. Fewer events translate into fewer roads, which is more economical, and benefits both caribou and grizzly bear. A single large event also has the potential to reduce wildfire threat, and provide a barrier to mountain pine beetle. One possible drawback of a single large event is that it may not be appealing from a social perspective, although it does provide an opportunity for discussion and education.

In this case, by first asking, “what would Mother Nature do?”, we identified a natural event size pattern that also provides solutions for several other local values. Based on this analysis, the planning team agreed to look for opportunities for creating one or two disturbance events in the Hwy40 area covering a total area of 4,900 - 8,300 ha.

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