

Island Details: Relevant Patterns or Trivial Pursuits?

It is always possible to dig one layer deeper when studying patterns. For instance, we have already determined that remnant islands account for 10-12% of the area of historical fires in west-central Alberta, regardless of fire size (Quicknote 18). However, these same data reveal that islands within smaller fires differ both in size and structure than islands within larger fires. For example, within disturbed patches less than 100 ha in size, islands smaller than 1 ha account for 56% of the total area in islands, while islands larger than 10 ha contribute only 9%. In contrast, small islands (<1 ha) contribute only 13% of the total area in islands for fire patches larger than 1,000 ha, while large islands (>10 ha) account for 58%.

Island mortality levels are also significantly related to fire size. Islands with intermediate levels of mortality account for 94% of all island area in disturbances 100 ha or smaller, but only 54% of island area for disturbances larger than 1,000 ha. Islands with no mortality account for only 5% of island area in small disturbances (<100 ha) compared to 31% for larger disturbances (>1,000 ha).

Thus, the relative occurrence of small islands and moderately disturbed islands is significantly higher in small disturbances than in larger disturbances. This raises some interesting questions. First, from a process perspective, does this suggest that small fires burn fundamentally differently than larger ones – perhaps as a result of increased variability in fire intensity, speed, or residence time over time and space? Or is this simply a reflection of the influence of available fuel and topographic differences over different sized areas?

The second, more difficult, question is; are these shifts in island sizes and types ecologically relevant? The answer to this question is unknown, but it is not inconceivable that the ecological role of islands varies. For example, one would expect that smaller, less intact islands function mostly as seed sources (see Quicknote 28), and larger islands with little or no mortality are more relevant for forage, and cover from predators.

It is also possible that the differences noted in island types and sizes have no significant or specific biological relevance. Perhaps the most important island pattern, beyond total area and perhaps spacing, is that of variation – having as many different types of islands as possible. In the end, the only way to know for sure is to use these, and other coarse filter results, as hypotheses for fine filter studies designed to focus on the biological significance of different patterns.

