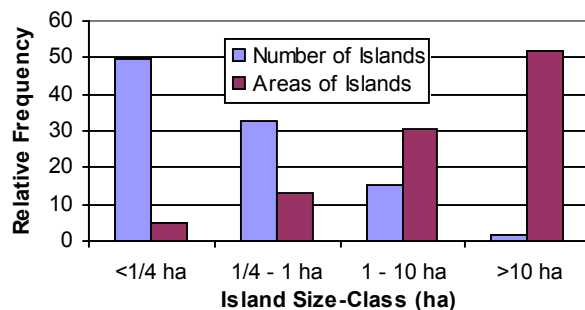


Are all Islands Created Equal?

Residual island remnants come in a wide range of sizes, shapes, types, and configurations. Adopting the definition of an island as “at least four clustered trees”, island remnant sizes range from 10 square meters to hundreds of hectares in west-central Alberta. And although very large islands are responsible for most of

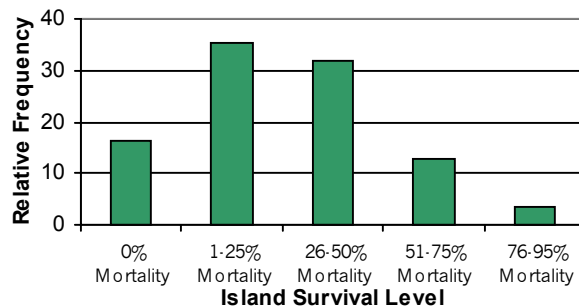
the area in island remnants, the vast majority of islands are very small. In fact, about half of all island remnants from historical fires in this area are less than ¼ of a hectare in size, and over 80% are smaller than one hectare. Islands larger than 10 hectares account for less than 2% of the numbers of islands, but over 50% of the area in islands. This happens due to the influence of a very small number of very large islands.

Relative Frequency of Numbers and Areas of Island Remnants in the Alberta Foothills



Survival levels within island remnants are also highly variable, and somewhat related to island size. Indeed, only 17% of island remnants in west-central Alberta survive forest fires with no internal mortality, and these islands tend to be smaller. Almost 2/3 of the island remnants experience between 1 – 50% mortality, and another 16% are heavily affected by fires (greater than 50% mortality). Higher mortality levels are also generally associated with larger islands.

Relative Frequency of Island Remnant Survival Levels for the Alberta Foothills



These results are revealing in several different ways. For example, it is interesting that the patterns noted here are familiar ones. Although the proportions in each size-class differ, the shape of the island size distribution in the first figure is identical to those of both disturbance events and disturbance patches (see Quicknote #4, #7 and #13).

Also, while there is tremendous variation in the type and amount of residual material left within a fire, the interaction between size and mortality suggests that this variation is not necessarily all random. This relationship has been noted before (see Quicknote #10 and #18), and is further evidence of the structural and compositional complexity created by forest fires. Furthermore, it is important to remember these fine-scale patterns are in fact all “coarse-filter” attributes. Thus, the biological functions served by variations in the sizes and types of islands are not necessarily any less critical than those served by other coarse-filter attributes such as disturbance event sizes.

The last point to note is the large influence of 1) data resolution and 2) classification systems on observed patterns. For example, if one chose to define an island as “at least 10 clustered trees” (instead of four), the data summary in the first figure would change significantly. Similarly, areas with 76-95% mortality (from the second figure) may not even qualify as “residual”, let alone as “island” in some mapping or interpretation systems. Thus, while the results presented here may or may not be unique to west-central Alberta, they are without a doubt unique to the chosen levels of resolution and rules of classification. Both factors are critical to keep in mind when measuring, comparing and planning for residual island materials.

For more information on this or other ND Quicknotes, please contact: Dr. David Andison, Bandaloop Landscape Ecosystem Services, Tel.: (604) 939 – 0830, Email: andison@bandaloop.ca, or visit www.fmf.ab.ca