Sustainable Forest Management Network

Réseau de gestion durable des forêts

Fire-Smart Forests?
New research study supports concept

Edmonton . . . Results of a statistical study conducted by Steve Cumming PhD, formerly a Research Associate in the Sustainable Forest Management Network, provides convincing statistical evidence that forest fires are selective about the fuels they choose to burn and that fire-smart forests are possible. This study provides new tools that could help forest managers better manage fires as part of their long-range planning. The study also suggests some new options that might help reduce future losses.

"Because my study covered a very large area of forest over a reasonably long time period", says Cumming, "it represents perhaps the strongest confirmation to date that fires are selective. By knowing where a fire starts, we can now predict with some confidence the proportions of various forest types it will consume."

Cumming's findings contrast with the view that fires in boreal forests are predominantly controlled by extremes of weather and burn intensely throughout the forest regardless of the fuel type that is there or its condition. "Weather is certainly important, but in most cases, the forest mosaic is important too," says Cumming. Cumming's research has relevance in the boreal mixedwood forests of northern British Columbia, Alberta and Saskatchewan.

Cumming measured the different kinds of fuels that were burned by 48 lightning fires from 1980 to 1995 within 74,000 km^2 of mixedwood boreal forest in northern Alberta. "I wanted to test," says Cumming, "if fires burn a representative sample of what is available to be burned. Using statistical methods, I was able show they do not. On the contrary, on a far broader scale than previously believed, fires are very selective. For example, on average, fires markedly avoid aspen stands relative to conifer stands, especially white and black spruce."

This new research supports the idea that it is possible to "fire-proof" certain forests by manipulating the spatial arrangement of different forest types, especially white spruce and aspen. Many forestry companies operating in western Canada are reliant on one or the other of these two tree species.   Says Cumming, "I think we now have a deeper insight into how fire interacts with the mixedwood landscape. The next challenge is to apply these results to explore and develop the concept of fire-smart forests. Ideally, we could design harvesting and silviculture strategies that exploit the properties of aspen stands to sustain the white spruce harvest."

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