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Branching Out

from the Canadian Forest Service - Laurentian Forestry Centre

Climate Change: Seeing the Forest Through the Trees

Climate change represents a major concern with regard to Canadian forests, as they will be subjected to greater temperature increases than the rest of the planet. The impacts of climate change should be sufficient to justify modifying the forest management systems used in Canada. With this in mind, researchers from the Canadian Forest Service are examining potential approaches to better equip forest managers.

Photo: NRCan

A confusing issue

Climate change is a complex issue. These new conditions have impacts on the forest sector, such as a decrease in productivity, a change in forest composition and structure, or a greater risk of damage caused by invasive species. Through specific measures, forest managers can increase forest resilience, which is the capacity of a forest to withstand a disturbance and reorganize itself in order to fulfill the same functions.

Climate change will also impact human beings. An increase in disturbances (outbreaks, fires) will entail additional costs, and will also result in situations that will jeopardize the health and safety of forest communities. Access to resources may also be limited at certain times. In terms of wood supplies, the uncertainty would be even greater.

Doing nothing is not an option

We can react to climate change in two ways: we can adapt to it or we can try to mitigate it. The latter option includes all measures implemented to reduce greenhouse gas sources or to increase their sinks. As for adaptation, it entails modifying the natural and human systems in response to the new climate conditions. The purpose of such modifications is to reduce adverse effects, take advantage of opportunities or cope with harmful consequences.

Photo: NRCan

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Adaptive measures that can apply to the forest management system include, among others, the reduction of stress factors that are not related to climate and decreasing sensitivity to climate change. For example, in order to reduce stress factors, it is advisable to increase the ability to detect and control forest invasive alien species. In order to counteract a decrease in productivity, forest managers could select seed sources based on anticipated climatic conditions. Because forest disturbances cover wide territories, developing large-scale prediction tools would optimize the decision-making process. Finally, the cumulative effects of climate change can seriously compromise forest health over the long term. Forest managers have a number of options available to reverse this trend, such as maintaining a wide variety of species and conditions within the ecosystem.

Photo: NRCan

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Forest management means adaptive management

An effective adaptation of the forest management system means integrating risk-management measures in the planning process, selecting strong, diversified and no-regret adaptation measures, and adopting an adaptive management approach. In addition, monitoring must become an integral part of any adaptive forest management strategy.

Tools on hand

In order to assist forest managers as they review potential options for dealing with climate change, researchers at the Canadian Forest Service have examined the scientific literature and identified several adaptation measures. This information has been compiled in an on-line tool, which can be queried in both directions: what are the options available to reach a given adaptation objective? Or what would be the impact of a given adaptation measure on the biophysical environment or on humans and on vulnerability?

Inventory of adaptation options proposed in the scientific literature for boreal forest management:
http://cfs.nrcan.gc.ca/adaptation-options?lang=en_CA

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