FOREST MANAGEMENT

A future on fire

Climate change and conservative forest management may mean bigger and more frequent wildfires

By **H. Anu Kramer**

On 22 September, the first day of fall, fire season in many parts of the United States should have been winding down, yet the U.S. National Interagency Fire Center reported 38 large wildfires still burning in the west (1). These fires alone had burned more than 1.4 million acres (approximately the size of the state of Delaware).

A single fire of a similar size engulfed Fort McMurray in Alberta, Canada, last summer. This blaze destroyed 2800 homes, forced the evacuation of 88,000 people, and will likely end up costing nearly $9 billion.

Why do wildfires happen? Are large fires becoming more common? Is climate change making things worse? How will these fires shape our future? Writer and photographer Edward Struzik illuminates these and many other questions in *Firestorm*. His compelling narrative combines personal stories, photographs, history, and interviews with scientists, government officials, and the public. What emerges is a portrait of the intricacies of the forest management practices, settlement patterns, economic motivators, and political pressures that lead up to and influence decisions during these wildfires.

Struzik describes how fire is a natural part of many ecosystems, explaining its role in regeneration and maintaining landscape heterogeneity, plant and animal diversity, and nutrient cycling. Yet the current extent of fire suppression, past legacies of forest management practices, and climate change—including the synergistic effects of warming, drought, disease, and the proliferation of damaging insects such as bark beetles—are leading to a longer fire season and fires that burn bigger, hotter, faster, and more frequently than in the past.

Firestorm
Edward Struzik
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These fires are powerful forces that we often cannot control—fires that create their own weather systems and can transform landscapes for decades. "Everyone called it The Beast because it was so unpredictable," recounts Sergeant Jonathan Baltzer of the Royal Canadian Mounted Police about the Fort McMurray blaze. "It would pick off two dozen houses and then it would leave three.... It was like it was taunting us, flaunting its power at will."

In addition to the dramatic changes fires incur within their charred perimeters, their impacts are also widespread. Runoff from fires can carry sediment and debris into lakes and reservoirs, clogging systems that may provide water to millions of people. These sediments often carry high concentrations of nitrogen, released by the fire, that can alter the nutrient balance in streams, rivers, and lakes and change the abundance of algae and fish. Fires also release huge plumes of smoke that can degrade air quality thousands of miles away.

Struzik warns readers of the bleak reality that may lie ahead if we continue "business as usual," describing a world where fire is commonplace and inescapable, even in the Arctic. He explores the possibility of a "carbon bomb," in which massive banks of carbon stored in boreal forests and tundra are released by fire into the atmosphere, blocking out the sun over distant parts of the globe and raining ash on glaciers, speeding their melting. He speculates that wildfires could liberate toxic compounds such as mercury, plutonium, and asbestos into the upper atmosphere, from whence they might rain down on unsuspecting communities far from the fires themselves.

Despite the apocalyptic scenarios he outlines, Struzik does not forfeit hope. He describes policies, protocols, and actions that can help mitigate and prevent such doomsday scenarios, many of which are already taking hold. Although it may seem counterintuitive, one such measure is the practice of allowing more controlled and managed wildfires in areas where the risk of escape is low. Controlled burns can help to reduce fuel loads that could lead to an uncontrollable blaze under different weather conditions.

Political pressures, however, often favor full fire suppression. Under such a system, an out-of-control fire can be deemed a natural disaster and nobody need take responsibility for its destruction, impacts on human health, or long-lasting effects on the ecosystem. Land managers subjected to such policies are confronted with a lose-lose scenario, in which inaction will likely lead to a devastating fire event, and action (in the form of controlled burns or allowing naturally ignited fires to burn) could result in unintended consequences, for which they will be held responsible.

More research and better planning at local, national, and global scales are needed to maintain our forests, concludes Struzik. The decisions and policies we make now, as a nation and as a global community, will have a profound influence on what our world looks like in the future. ■

Hoses and helicopters are deployed to fight the La Tuna fire near Burbank, California, on 2 September 2017.

PHOTO: DAVID MCNEW/STRINGER/GETTY IMAGES

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