FIRE MANAGEMENT

Where there's fire, there's smoke.

Smoke is as inevitable as fire in wilderness ecosystems. In the past, fires burned freely across the landscape. Some were started by lightning, others by aboriginal peoples. Later, settlers and then land managers tried to extinguish fire. Today, we recognize that fire plays a vital role in nature. Many parks use prescribed fire to restore and sustain healthy ecosystems.

Prescribed fire helps maintain the native biodiversity of national parks. It renews forests, promotes fire-dependent plants and creates wildlife habitat. It also reduces the wildfire hazard by decreasing the forest fuels available if a big wildfire strikes.

But we can't have fire without smoke. This raises concerns for park visitors and residents. Will smoke affect their health? Does it contribute to global warming? Will tourists avoid smoky areas? Can we control smoke emissions?

Controlling Smoke

The amount and type of smoke produced depends on the fuel available and how well it burns. Efficient combustion produces less smoke. The concentration of smoke depends on the distance from the fire and how well it spreads out or disperses in the air.

Fire managers use a variety of techniques to reduce smoke impacts from prescribed fire. They evaluate weather, topography and fire behavior to predict how much smoke will be produced and where it will go. As much as possible, prescribed fires are located and conducted under conditions that limit the smoke produced and direct it away from areas of human use.

Typically, prescribed fires are carried out on days with low humidity and light winds, following a spell of hot weather. This permits efficient combustion while still allowing control over the fire. Good mixing in the atmosphere, which helps to disperse the smoke, is also a desired condition for prescribed burning.

Each prescribed fire has its own smoke characteristics. Large canopy fires may produce a lot of smoke, but the intense heat produces a convection column that lifts the smoke plume and disperses it in the upper atmosphere. An understory burn produces less smoke but it can linger lower to the ground, affecting local visibility.

Prescribed fire permits some control over smoke, especially during ignition. However,