The Myrtleford Fire

A prescribed fire for safely securing a wildfire

The first time aerial ignition was used to burn-out a substantial area during summer was on the Myrtleford fire in 1968 (Hodgson and Cheney 1968)[1]. This condensed account illustrates how a prescribed fire can be safely applied in summer. It provides an example of the conditions that may be needed to burn out heavy fuels before embarking on a burning program something akin to indigenous cultural burning. It is also an example of how selection of conditions and placement of ignition points could safely secure a wildfire perimeter and burn out all ground-fuels within the control line while minimising damage to the forest canopy.

The prescription:

- Low fuel moisture across all aspects – this was predetermined by the summer drought conditions with a Keetch-Byram drought index > 100,
- Rising surface fine fuel moisture (estimated <10%),
- Low wind speed < 10 kmh^{-1},
- Ignite at a spacing so all aspects would burn out before 0800 the following day and before the onset of strong winds and extreme fire danger.

Ignition was carried out from a helicopter. This allowed incendiaries to be placed in the topography so that the intensity of developing fires was minimised and the crown scorch reduced. Ignition was commenced at 1810 hrs and completed at 1930 hrs (Figure 1.).

Figure 1. *Myrtleford fire 4 Feb 1968. Aerial burning-out circa 1900 hrs to secure complete burn-out within the control lines before predicted extreme weather the next day.*

[1] A. Hodgson & N. P. Cheney (1968) Aerial ignition for Backburning*. Aust. For. 33:4 268 – 274.
*Since this was written terminology has changed and “back-burning” is restricted to lighting fire ahead of a wildfire front to stop its progress. The operation described here is now called “burning out” to reflect the primary objective of removing all flammable fuel within the control line.

Ground crews commenced ignition of the forest/grassland perimeter at 1945 and the operation was completed by 2100. Spot ignitions on the perimeter were closely spaced and soon joined to form wide head fires which then burnt rapidly up-slope with crown fires in places (Figure 2).

By 2115 the convection column developed a definite cyclonic twist. The column was very constricted at the top just below an inversion at 3,350 m. The wind inflow into the fire was noticeable at 3 km from the fire, and estimated to be in the order of 3 km/h at 1.5m above the ground.

Figure 2. *Myrtleford fire 4 Feb 1968, circa 2030 hrs. Note ground crews are lighting up to secure the boundary with private property. Fires ignited towards the top of the mountains are starting to draw together.*

Although the reflection of ground fire in the smoke suggests there were massive towering flames as the fires converged towards the top of the mountain, most of the flames are below the canopy. This is a common illusion on large wildfires when the smoke from the fires almost completely blocks out the sun. Figure 2 illustrates the age-old axiom that bushfires always look worse from a distance and worse at night - see article on **Initial Attack** elsewhere on the site or else click on this **link**.

The area burnt in this operation was around 2,000 ha. The following day the burn extent and severity was later examined from a helicopter. It was estimated that 40% of the area was fully scorched and less than 1% was defoliated by crown fire (see Figure 3). Most scorch was associated with the perimeter lighting on the lower slopes. The level of scorch was certainly less than would be expected if the area had been burned out by perimeter lighting alone.

Figure 3. Myrtleford Fire 5 February 1968 circa 1000 hrs. Close up view of the burning-out operation illustrated in Figures 1 and 2.

Implications for Cultural burning

Burning out operations can be carried out in heavy fuels under drought conditions to remove a high fraction of the surface fuel with acceptable canopy damage. This condition may be required before a program of frequent low-intensity burning is commenced. However the operation must be carried out with the same diligence and attention to control as is required for suppression of a summer wildfire. A trafficable bare-earth control line is essential; all combustible fine fuel is to be burnt; and, the control line controlled and mopped up until there is no smouldering combustion within 50 m of the boundary. The operation needs specific training in fire behaviour and suppression and adequate manpower and finance to do the Job correctly.

Cultural burning must not be seen as a cheap substitute for achieving landscape protection through fuel reduction. Rather it will be more costly than current practices of broad-area prescribed burning as it involves frequent burning over an annual cycle. It may well require research to define and predict the timing of optimal fuel moisture levels, and better burning guides to predict the required rates of spread, ignition placement and spacing. It is unlikely that practitioners will have a deep knowledge of the individual fire needs of the multiple varied ecosystems that can occur within a landscape. Rather, we believe that priorities will need to be set and, in places, specific prescriptions will be required to promote or regenerate selected species of flora and fauna.