THE CASS FIRE (27-28 MAY 1995) AND ITS EFFECT ON VEGETATION

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The vegetation of the whole area from Cass through to Springfield has been very much shaped by fires over the last 500-800 years which cleared most of the mountain beech (*Nothofagus solandri* var. *cliffortioides*) forest and replaced it with a mixture of shrubs and grasses. Beech remains in a number of pockets throughout this area, principally wetter spots or patches high on the side of mountains where fire apparently did not spread as well. With more recent control of fire, regeneration of beech was slowly beginning to reclaim some of the areas cleared, although in other places there was little sign of regeneration (often because of recurrent fire).

An extensive fire on the weekend of 26-27 May 1995 in the Cass area has shown in detail how forest clearance occurred all those centuries ago, and has set back recovery of the vegetation over a large area. The fire started by the railway line (see Fig. 1) apparently from sparks from a faulty wheel bearing, and over the next day spread downwind to burn a total of about 580 ha across Corner Knob, Horrible Bog, Waterfall Terrace and the lower slopes of Mt Horrible and Mt Misery. It really only stopped when it reached the edge of the Cass River.

The action of the fire was quite unusual. It seems to have been principally a fast moving canopy fire. The most severely burnt areas were stands of shrubs (principally matagouri *Discaria toumatou*, *Cassinia leptophylla*, *Coprosma propinqua*, *C.* aff. *parviflora* ('sp. T'), and manuka *Leptospermum scoparium*. In dense shrub areas the canopy burnt, and falling fragments seem to have also allowed the ground vegetation to burn, often completely down to soil level. Where shrubs were more widely spaced, their canopies burnt along with the ground layer beneath them, but grassy areas between were not burnt, creating a 'leopard spot' effect. In areas of tussock (*Festuca novae-zelandiae*), the erect tussocks caught fire and burnt to the ground while shorter *Agrostis capillaris* between was largely unburnt, again creating 'leopard spots'. Outliers of newly colonizing beech were almost all killed apparently by trunk scorching, since the taller trees did not have their leaves above 2.5 m height burnt. In larger beech patches, the edge plants have been killed but the fire apparently has not carried as well in beech as in the shrubs, and most of the larger patches of beech have survived with only edge damage. One stand of beech to the south of Corner Knob seems to have escaped fire entirely as the flames swept left and right over the knob, missing a piece of ground. In the wettest areas in Horrible Bog, the flames either burnt small amounts of dry emergent material such as dead flowering stalks, or avoided the areas entirely, so the effects there appear to be minor. A large grassy fan coming off the east face of Mt Misery also escaped being burnt, with the fire going up and around the fan.

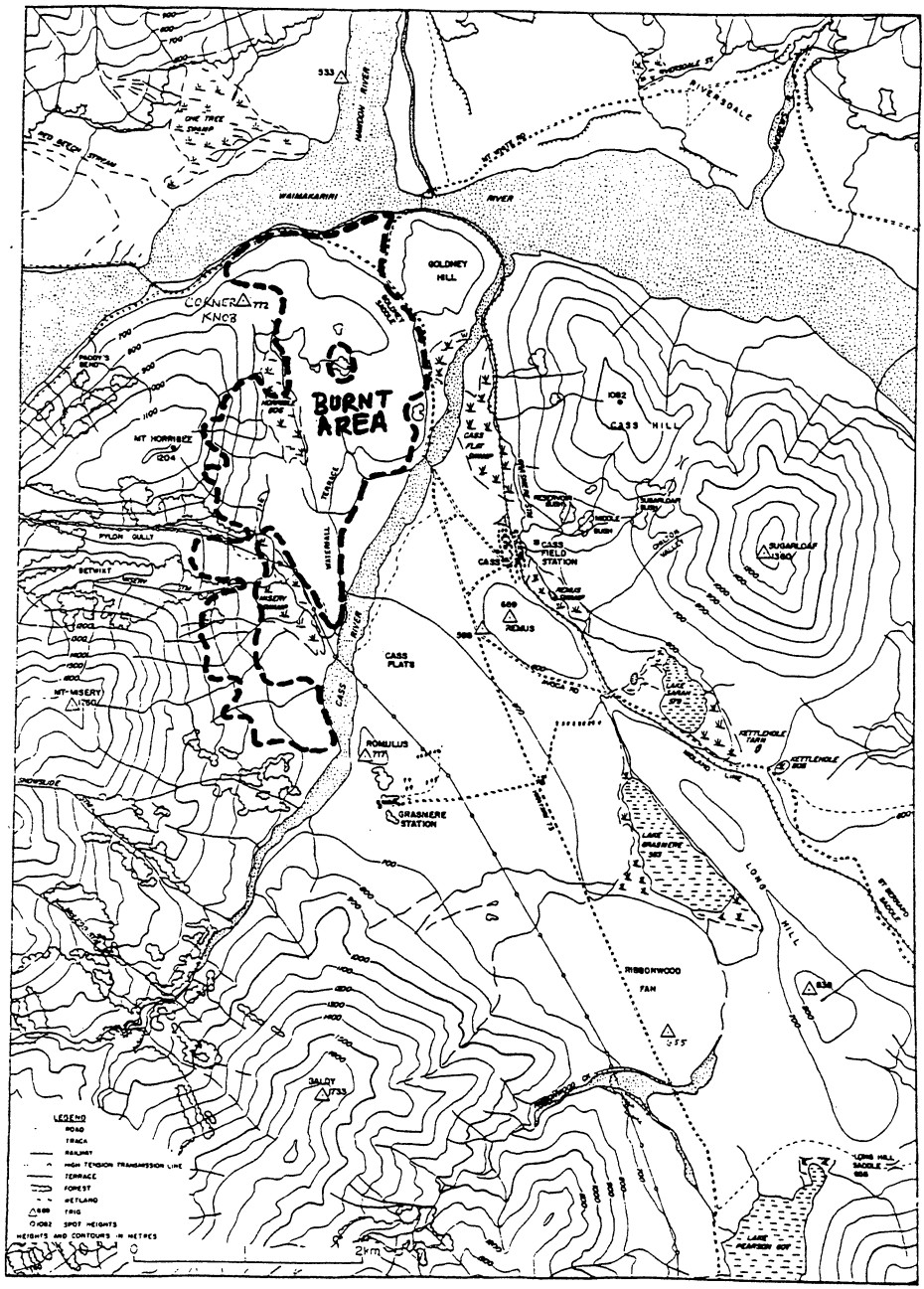

Fig. 1 Cass district, showing extent of fire

Therefore the most severe effects seem to be on the extensive shrub communities across Waterfall Terrace and the lower slopes of the two mountains involved. Tall dense shrubland up to 3 m tall seems to have been completely obliterated, along with quite advanced beech regeneration in some places - especially on the slopes below Pylon Gully where an area of manuka with frequent beech was burnt, and on the south slopes of Corner Knob. This will set back the process of regeneration to forest by perhaps 100 years at this spot.

An unfortunate aspect of this fire is that these shrub and regenerating forest areas are one of the reasons that the site was singled out as worthy of protection in the Protected Natural Areas survey of the Cass and Craigieburn Ecological Districts in 1990. The Recommended Area for Protection (RAP) 14 in Cass E.D. covered 1400 ha across Corner Knob, Mt Horrible and Mt Misery, and specified the wetland and shrub/forest communities as the principal attractions of the site. While only about 1/3 of the RAP area was burnt, this included most vegetation of interest. The RAP had not yet been formally protected in any way. While the loss of the shrub and beech areas is a significant loss to the potential RAP, it is fortunate that the very important wetlands seem to have been affected rather less.

Several sites of recent scientific study were also partly burnt by the blaze. In 1993 Colin Burrows and Janice Lord described the colonization of Corner Knob by red beech (*N. fusca*) seed blown across the Waimakariri River. They mapped an area on Corner Knob where a mixture of red and mountain beech was establishing in manuka stands. While a detailed examination has yet to be carried out, it seems that some of these trees will have been killed by the fire. The oldest trees were estimated to be 60-80 years old.

The second study area is a population of the peculiar native fern *Botrychium australe* growing on Waterfall Terrace which I described in 1994. Of about 120 marked plants at this site recensused in May 1995, all but one solitary plant had their fronds burnt off in the fire. The intensity of the fire over various marked plants varied widely. Some places experienced a light burn across the top of the ground vegetation which scorched the *Botrychium* leaves; in other areas all ground vegetation and the top soil layers were completely burnt and 2" wooden pegs used to mark plots were in some cases burnt down to stumps. It will be very interesting to follow how the fern responds to this fire; the plants are unlikely to have been killed as they have large storage organs underground and they may even benefit from reduced shading from the shrubs which were increasing in density at the site 1986-1995.

Therefore the conflagration will have both positive and negative effects on the vegetation. Sadly, a large area of regenerating shrub and forest has been set back by a long time and some noteworthy red beech trees have been killed. On the other hand early successional species, perhaps including *Botrychium*, may benefit from reduced woody plant competition. We also have a wonderful opportunity to see which beech patches resisted the fire, as a window on fires in early human settlement of the area, and a chance to document the process of recovery.

References

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