

The Crest Reserve Fire: some observations and learnings

The following information was kindly shared by Paul Angel – Canterbury Bankstown Council

The Crest Reserve at Georges Hall contains significant areas of Cumberland Plain Woodland (CPW) with a population of the rare herb, Spiked riceflower (*Pimelea spicata*). In January 2020, an act of arson resulted in a bushfire that burned around 3.8 ha. It was a hot fire with most of the canopy foliage being incinerated in many areas and severely scorched in the remainder. All groundcover and leaf litter were consumed and the exposed mineral soil was enriched with the ash.



Spiked riceflower (Greg Steenbeeke)

Since the fire, the recovery and succession of vegetation has been interesting. The native plant succession showing many pioneers and other species that had not been observed on the site in recent times.

An unfortunate outcome has been the death of many mature trees. Being CPW, Grey Box (*Eucalyptus molucanna*) was the most common species across the site. Usually, fire resulting in defoliation simply triggers the epicormic re-sprouting response. That typical response has been minimal or non-existent in a majority of the trees. The sprouting and growth of the epicormic buds would require allocation of its carbohydrate reserves to the new growth. Unfortunately, the years of drought prior to the fire seems to have left the trees with insufficient stored resources for a healthy recovery. Tree mortality has been particularly high on ridge top areas. Despite this, germination of tree seeds and successful growth of the juveniles promises a new cohort to one day create upper canopy across the site.



The Crest Reserve, Georges Hall – immediately post January 2020 fire (Paul Angel)

The succession of weeds after the fire has reflected that observed in CPW in other reserves over recent times and demonstrates a predictable pattern. With good planning and sufficient resources available, it's an unrivalled opportunity to hit each species flush and make a major impact on the subsequent abundance and resilience of most weed species. The successive flushes of resprouting and/or germination of each weed species is almost synchronous, allowing an entire cohort, or age-class, to be eradicated.

Weed control is relatively easy and spraying can be carried out with minimal impacts on native species. This is partly because the new individual plants have their own growing space and there is less intermingling, so spraying can be applied without off-target damage. Also, the distribution of the germinating or resprouting weeds tends to be clumped and much easier to identify and control before they have a chance to disperse. Importantly, the resprouting weeds are mostly the first out of the blocks with the recovery of native plants being a little slower to start but more consistent over time.

The capacity of African lovegrass (*Eragrostis curvula*) to dominate such sites is accelerated by fire. Within a few weeks it is the only green visible and rapidly produces seed to take advantage of the ash-bed, sunny conditions and lack of competition. It's easy to see how it could grow to totally dominate large areas if given the chance. Its early emergence has the advantage of allowing for a heavy treatment via Glyphosate spraying. Teams soon get their eye in for the differences between the re-sprouting African lovegrass and natives species that may also re-sprout from a tussock root mass.



African lovegrass (NSW DPI)

Asparagus fern is soon following and while it doesn't have the capacity to quickly colonise burnt areas like African lovegrass, it's a great opportunity to spray it with minimal off-target damage.

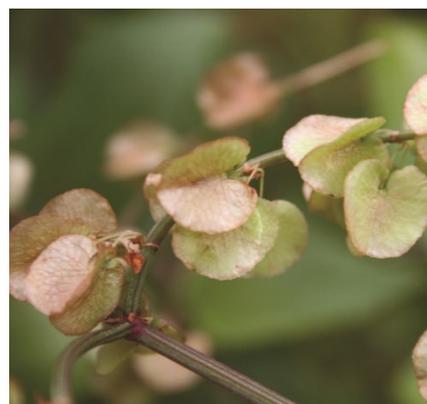
Other early emergers include Paddy's lucerne and Onion grass and are ripe to treat before seed set.

Bidens and Sowthistle lead the next wave of weed emergence, followed later by Fleabane. When the seasonal grasses like *Briza subaristida*, and Pigeon Grass present themselves, there's a short window of opportunity to make a major impact to their long-term persistence on the site. The wind-dispersed species like Fleabane and Sowthistle have an amazing ability to spread in the post fire environment where their seeds can be blown unfettered.



Asparagus fern (Sheldon Navie)

Their early control is vital. Fortunately, Bidens and similar remain relatively localised should they escape control and be allowed to set seed. When exotic vines resprout, we usually wait until sufficient foliage develops maximises the herbicide dose into the root. Bridal creeper will appear in the cooler months and, of course, Turkey rhubarb (*Acetosa sagittata*) root stock will survive fire. Again, we allow the growth of enough foliage for spraying to effectively kill the root structures.



Turkey rhubarb

Resprouting woody weeds can be problematic and it can be difficult to find live wood to treat. Thankfully, hot fires seem to consume much of the soil seed bank of woody weeds and the resprouters won't be an immediate problem. With many priorities seeming to converge, it's great to have a chance to leave some problems for later.

Despite the heat of the fire most weeds seem sufficiently adapted to recover. Thankfully, Mother of millions (*Bryophyllum delagoense*) is almost eradicated and Panic veldt grass (*Ehrharta erecta*) is severely impacted, probably owing to its shallow root. However, any survivors will grow quickly and to a huge size, producing massive amounts of seed with the ash-bed providing perfect nutrient conditions.

The changes after a fire occur surprisingly quickly and opportunities need to be taken without delay. It's important to monitor sites at least weekly as the successional changes and flushing of new species occurs at an incredible rate. Sites go forward rapidly but could go backwards just as quickly if appropriate weed control is not implemented.

From this point we are considering culling some of the *Acacia decurrens* that have geminated prolifically. We have previously observed that dense thickets formed reduces diversity and later they create obstacles for weed control. Of course, sites will have a weed list different to those typical ones I've listed here but hopefully the general patterns and observations I've jotted down are some help for you. Good luck my fellow weedies!



The Crest Reserve, Georges Hall – 3 months post fire (Paul Angel)