

## Fire: An important tool in keeping Eastern Suburbs Banksia Scrub healthy, but ‘stop the rabbits’

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Eastern Suburbs Banksia Scrub (called ESBS for short) is an endangered ecological community recognised at both national and state levels. The majority of substantial remnants of ESBS occur at North Head at Manly, where we have an estimated 68.85ha of the remaining 146ha of this ecological community that once covered as much as 3,500ha of coastal Sydney. Fire is an essential regenerative tool in this and other coastal scrub communities, with the preferred interval between fires in ESBS being 8-30 years.

However the challenges faced in re-introducing fire in areas close to both built and cultural heritage sites and densely settled urban interfaces are numerous and the costs high.

In June 2012 the North Head Sanctuary Foundation (NHSF), working in partnership with the Australian Wildlife Conservancy (AWC), received funding from the Foundation for National Parks & Wildlife to compare the benefits of fire and selective thinning as management tools for restoring senescent Eastern Suburbs Banksia Scrub (ESBS). The project also compared the restorative ability of these two treatments under conditions where rabbits were excluded and where rabbits were allowed free access to graze on the areas being restored.

Hazard reduction burns done by the Rural Fire Service, Fire & Rescue NSW, the National Parks & Wildlife Service and the Sydney Harbour Federation Trust on 6 September 2012, provided the opportunity to conduct this experiment. Fenced and unfenced study plots were set up across sites at North Fort and adjacent to the Third Cemetery on the Trust’s land.

During the past 12 months, we’ve worked with Australian Museum botanist Dr Belinda Pellow and staff from AWC, to study in detail what happens to the plants that emerge after fire, and how North Head’s endangered population of Long-nosed Bandicoots use the site before and after fire.

The early results of this study were not spectacular, but as time has progressed, clear differences are emerging.



1. Before the burn – Dense bush with just a few species dominating



2. Hazard reduction burn in progress



3. Immediately after the hazard reduction burn, when fences were being built



4. The same fenced location, 12 months after the burn

Within 12-months after a controlled burn or selective thinning of dominant species in areas of senescent ESBS we can see that:

- Burning produces a larger, “healthier” and more diverse plant community than does thinning, but...
- Where rabbits are not excluded these benefits are lost as they eat off much of what emerges from the burnt areas.

We conclude that controlled fire, introduced at appropriate intervals and in a mosaic pattern, is beneficial in maintaining the health and diversity of Eastern Suburbs Banksia Scrub. The positive effects of fire were generally greater than the effects of disturbance created by selective thinning to remove dominant species. Species diversity, plant abundance and vegetation cover were improved in burnt as compared with thinned sites and the abundance of weeds was somewhat greater in thinned than in burnt sites.

Time is needed for the positive impacts of a controlled burn to become apparent within Eastern Suburbs Banksia Scrub.

One of the strongest messages to emerge from this small project is the importance of protecting recently treated areas from predation by rabbits and other herbivores. A major rabbit reduction program should be conducted in the period leading up to any burn. However, rabbit eradication is a labour- and cost-intensive task, and in the absence of full eradication, results may not endure. In the face of uncertainty as to when a controlled burn will actually take place, because of reliance on achieving appropriate conditions, other measures such as erection of an effective exclusion fence around the burn area should be considered for all ecologically sensitive sites, such as those containing endangered species or ecological communities.

Consistent with research in other places, a controlled burn of low to moderate intensity appears to have had little, if any, impacts on the local endangered population of Long-nosed Bandicoots. The relative absence of major predators (foxes and dogs) and the availability of alternative sites familiar to the bandicoot population are probable key factors in the continued well-being of the bandicoot population at these sites.

With the funded project now nearing its end, we are preparing signs to explain to passers-by the significance of this work and we'll be sharing our results with the Trust and other land managers at North Head. We also plan to publish a scientific paper reporting on our findings, so that the messages from North Head can help scientists and others managing other coastal bushland.

We are grateful both to the Foundation for National Parks & Wildlife for their funding and to the agencies that conducted the hazard reduction burn. Without their support we could not have done this work.