

Conference Proceedings – Speaker Transcript

If we burn it, will they come? Monitoring fauna impacts of ecological burning

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[Link to Slides](#)

Thank you. I'd like to give you an overview of what Ku-ring-gai Council is doing in terms of burning and how we're thinking about monitoring the impacts associated with burning on fauna (Slide 1). Ku-ring-gai is a very green local government area, adjoining three National Parks (Slide 2). It has a number of different vegetation communities, EECs and critically endangered ecological communities, with high biodiversity in general.

The reserves are of different shapes, sizes and connectivity (Slide 3). They face a number of different urban pressures from a range of factors such as encroachment, hollow removal, invasive species, foxes, roaming cats, dog walkers and black rats. These issues are scattered across the local government area in different ways.

Increasingly, fire is being used as a tool to support restoration of vegetation in the local government area (Slide 4). This work has been guided by a vegetation's resilience and its anticipated response. Usually the measurement of success of that is based on the vegetative response as well (Slide 5). So this has been a vegetation-centric approach to burning with flora structure, composition and diversity increasing and the hope that fauna will increase along with that. But until recently the fauna response hasn't been something that we've been testing.

So we raised a few issues in regards to fauna (Slide 6). I wanted to try to ask a few specific questions about what was happening: What happens to animal biodiversity during burns? Are there any management actions that we can put in place to mitigate impacts? How do species and populations recover post-burn? The first place we looked at was at Sheldon Forest (Slide 7), which has a burn program over the next 20 or more years. We looked at all guilds, mammals, reptiles, frogs and we even looked at a few invertebrates.

This image just shows how the survey effort was stratified across the site, and you can see that it's focused on two areas which have different burn classes (Slide 8). There were also two sites in that area which were very recently burned. We surveyed just post those burns. It would have been nice to have surveyed just before, but that's not how it happened and this is just a

quick look at what we actually found over a two week survey (Slide 9). We get a basic snapshot, which acts as both our baseline and also our comparison between those burn classes. Just hearing the other presentations, I don't think it will be too much of a surprise that we didn't find too much of a difference between our sites. These are very small, mosaic burns that are set up with good patchiness across the reserve. When I first sort of went into this I was kind of hoping that something would jump out of the data and say, I'll be the bio-indicator for fauna and we can monitor that across the LGA. That's certainly not what happened. As part of the process we started thinking that we need to really ask more targeted questions that are more related to specific circumstances.

Here is another area, which is the Ku-ring-gai Flying Fox Reserve (Slide 10). You can see the small area in orange was a burn completed in 2015 and the area in yellow is a proposed burn. I should just mention now that this is a program sponsored through the Environmental Trust. The main question on impacts to fauna is going to be what are the impacts to flying fox? The long term goal is restoring habitat for that area, but we also need to look at what are the direct impacts to flying fox, which roost up in that northern point of the reserve. So we do that by extent mapping and monthly counts. We can have a look at how we are going to manage those impacts over time, and realize what the fire has actually done for the habitat of the flying foxes, how it's impacted them. In the short term, there are specific management measures. We will burn either at night or during a time when the flying foxes aren't actually there.

This is another example at Governor Philip Reserve (Slide 11). I run a pygmy possum program in Ku-ring-gai and it's been successful in finding pygmy possums in appropriate habitat adjoining Garigal National Park. The site in green here is separated from Garigal National Park by Eastern Arterial Road. Now, in 2005 there are records of pygmy possums in that area. There was a burn in 2009. After that burn, we've done a lot of surveying and there are no pygmy possums in that reserve. There are a number of pressures that, I guess the question is whether or not burning has somehow exacerbated those pressures. In an urban area with fragmentation, you've got a vulnerable population. It may have been pushed to extinction and it's now got no way to recolonize that area. I haven't actually tested that as I don't have any data from before, it's just an observation.

This is another small burn in Blue Gum High Forest at Maddison Reserve (Slide 12). It's only a very small planned burn, but it's a substantial area of that small patch of bushland. There's an old record of a green tree snake, some anecdotal evidence of some bandicoots and potentially an antechinus. The site itself is looking like it will respond very well in terms of the flora. But what are the impacts to fauna? It's got a number of houses around it with cats. It could be in fact that we're actually looking at losing an urban haven. It could turn out to be a trade-off between a degraded vegetative site, which is providing a haven for our urban biodiversity, or restoring and regenerating a site, which could potentially end up being devoid of fauna.

It's not a coincidence that I've run out of time before coming to any of the real solutions (Slide 13) but I do have a couple of ideas. We're looking at e-bird data and how to get as much free data as we can and then looking at a similar thing to what the CSIRO do, which is the Australian Bird Index, seeing if that's relevant on a reserve scale. There's an Australian Museum program called Web to Spider, and I'm hoping that some Scouts or some other community groups could go out and look at webs in our reserves, so we could use that as a data set. We're increasingly relying on some very passive survey techniques with Anabats and remote cameras. In terms of direct impacts, we're looking at nest boxes directly adjacent to the burns, and potentially some tiles. I appreciate everyone giving me the opportunity to talk and we're at a very early stage. If anyone has any ideas, comments or would like to collaborate, I hope you come and have a chat with me during the break.

Questions from audience

Question: What type of environmental approval did you get to burn around the bats?

Jacob: That's a good question. The burn area in the reserve with the bats is separated from where the bats are. The distance is actually about 140 metres from where the burn is planned to where the bats are roosting. For this reserve we've got a very long data set of extent mapping. We can burn in that area with approval from OEH Environmental Trust. We did the 7 Part Test to look at the impacts, and we've got approval that way. Thank you.