

## **Supporting Information:**

### **Small Bird Habitat in the Urban Landscape. Some things to consider when planning restoration projects.**

Presentation by Sue Stevens, Ecologist

#### Background

After working in bush regeneration for a few years, I started to wonder about *who* are we doing bush regeneration for? In other words, I had started to notice, that often, the 'weedy' areas were far more abundant with insect, bird and reptile life than the regenerated parts.

This led to my Masters' thesis *Small Bird Habitat in the Urban Landscape: What vegetation types are suitable habitat?*. In this research, I compared landscape and vegetation characteristics and bird assemblages in small patches of remnant (assisted regeneration sites), revegetation, and weedy vegetation in urban Sydney. To find my study sites, I searched 66 sites to find 12 sites I eventually studied. I looked for close replicates for size, distance from water, distance from other similar vegetation types, distances from other sites of different vegetation types, and similar vegetation structures within the replicate sites. This proved quite difficult to do in the urban landscape. (See slides for images of the sites.) The remnant sites were on sandstone or sand. The revegetation sites were 5 to 15 years old, and trees and shrubs were closely spaced. The weedy sites were woody weeds, especially Lantana, fennel, vines and tall grasses.

What I found was that: Remnant vegetation had the tallest canopy and greatest plant diversity but the sparsest ground cover. Weedy vegetation had the least canopy and densest mid-storey and ground cover layers. The weedy vegetation type had the most small bird species, greatest bird abundance and greatest small bird abundance. Structural complexity and density of vegetation is the most important attribute for small bird habitat, and although influential, plant species are of lesser importance.

My conclusion was that to ensure persistence of small insectivorous bird species in the urban landscape, dense woody weeds need to be retained and revegetation projects need to be carefully planned and managed.

From my experience, planning of regeneration and restoration projects have not paid too much attention to fauna needs (either fauna present before works began or what fauna would use the site after works had been completed, and that planning mostly came from a weed control perspective. Fauna habitat considerations were often at a quite simple level, or an assumption that regenerated bushland would attract the fauna which might have once lived there, with little regard for fauna that was present in the landscape or how it would reach the site. Also, are the fauna expected to move elsewhere while works are undertaken and then come back?

The mosaic clearing approach might not be enough for small birds that are vulnerable to edge species as this kind of pattern would and would also reduce the amount of habitat resources available, and therefore not be able to support the population size it had previously. The clearing pattern in the slide might not benefit small birds as canopy trees (harbor for predators) remain and there are many more edges. The horseshoe shape of this design is good though as there is more than one way to escape if predators come.

Two case studies of revegetation sites:

#### 1. Marrickville Bush Pocket

Aims: volunteer site – the volunteers wanted to increase visual aesthetics and floral diversity in the area and also create habitat 'for birds'. This site already had a tall eucalypt – this was already territory for wattlebirds and no small birds use the site so bird diversity was not increased by this project. (However, across the road from this site is a railway line planting of acacias and tea trees which is sometimes used by small birds.)

#### 2. Rosedale Reserve

Another volunteer site. The volunteers were disappointed that they couldn't plant trees as the site was beneath high-tension powerlines. This turns out to be a bonus for small birds. Other things to note about this site: no honeyeater-attracting plants were planted at this site, ie. no eucalypts or showy grevilleas; nor are there eucalypts to attract noisy miners and other aggressive honeyeaters when in flower or to harbour carnivores such as currawongs. Instead there are a variety of insect-attracting shrubs (with small yellow or white flowers) such as acacias and hakeas, and vines including hardenbergia. Vegetation is about 3m high and reaches to the ground. This makes it easy for small birds to hop in and form.

#### Conclusions

**Be specific:** Define the purpose(s) of your restoration, assisted regeneration, revegetation or weed control works before plans are made and work commences. Including:

**Asses the site** in terms of habitat both on a site scale and in the broader landscape context

**Decide who the works are for:** any particular species that might use the site and what their habitat needs are – food, shelter, breeding, dispersal and territorial needs.

**Be realistic:** Will your target fauna use the site? Will all their needs be provided for? Where will they come from? Some vegetation structures will suit some species but not others.

**Be wholistic:** Consider your site in its greater landscape context. Does the surrounding landscape support your target fauna or their predators?

**Then: Monitor!!!** Before, during and after works take place. We will never know what works and what doesn't unless we collect data.

#### Questions

Question: Would a complex native understory get the same or better results?

Answer: Sue's research looked at 66 sites. It is hard to find these types of sites in Sydney.

At restoration sites, remember to look at other issues going on. Nutrients, creeks, rivers are more productive, more insects for the birds.

Chaos and untidiness of vegetation is best for small birds. You don't need to trees to have biodiversity.