



## Guidelines for the Development of Bird Habitat

User: Local Councils, Urban and Development Planners (local, state and private) and the Housing Industry

### Why design landscapes for birds?

The design and planning of residential housing and new developments can make a critical difference to the environmental sustainability of our cities and towns and the conservation of urban wildlife.

Birds are the most conspicuous animal species in urban environments, making them outstanding indicators of our performance in meeting obligations to sustainability<sup>1</sup> Unfortunately in most urban areas bird diversity continues to decline, indicating our continuing failure to maintain suitable habitat. Small native birds such as the Red-browed Finch and Superb Fairy-wren in eastern Australia, are becoming less common, replaced by dominant and aggressive species. In NSW these include the Noisy Miner, Pied Currawong and the Rainbow Lorikeet, but other states may have a different mix.

Areas of high human-population density are the places where we have the resources to design and manage habitat to meet the specific needs of particular fauna. In the long-term, by meeting these needs we can facilitate an increase in local populations or possibly the return of a species that was previously present. In managing such large areas of urban habitat, you have a great influence on the bird community. However many new developments on the urban fringe, often near bushland and having conservation potential, have rather created habitat conditions that reduce diversity of local native bird species and encourage one or two larger species to dominate the area.

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<sup>1</sup> All local governments in Australia are legally obliged to operate according to the principles of ecologically sustainable development. Three essential goals of ESD are:

- to maintain essential ecological processes and life-support systems;
- to preserve genetic diversity;
- to ensure the sustainable utilisation of species and ecosystems.



For more detailed guidelines for creating habitat for birds in the urban environment, please refer to the *Scientific Report* available at: [www.birdsinbackyards.net/spaces/guidelines.cfm](http://www.birdsinbackyards.net/spaces/guidelines.cfm)

## How to improve the urban habitat for native birds

The following steps are a guide to those who have a role in planning and managing large scale habitats for birds.

### 1. Assess the site and the current bird life and consider these questions:

- *What birds are using the site and are in the area?* Know which species you are trying to target, for example small birds or parrots. While in the short term, only species located in the immediate area may use the site, over the long term as the plantings develop and mature, the site will provide important habitat for an even wider range of species. Therefore the future value of the habitat should also be considered. Simple 20-min bird surveys conducted in and around the site for a month or so, preferably in spring to ascertain breeding use, should be completed prior to the commencement of remediation and will give an idea of what birds are using the site. The Birds in Backyards surveys are ideal for this <http://www.birdsinbackyards.net/surveys>. Talk to households in the immediate area and see what birds they see or ask them to fill in weekly or monthly surveys. Not only can you collect valuable information but also spark public interest and enthusiasm and develop a sense of community.
- *Are remnants of bushland to be conserved?* Remnant habitat is vital for many different bird species, especially those that cannot survive in totally urban areas. However, the size and shape of the remnant will influence what birds are found in it. Small remnants (1-2 ha) tend to only support very common urban birds. At least 4 ha is needed to support the less common urban birds (such as small honeyeaters and wrens) while at least 50 ha is needed to support species that do not use urban areas at all and live in the interior of forests. Edge effects (like changes in temperature and elevated predation levels) affect long, thin remnants greater than more round ones. The very common urban birds are more likely to dominate linear remnants.
- **We recommend** that if bushland habitat is to be removed for development, then a number of larger (at least 4 ha and some as large as 50 ha), round remnants be retained to provide habitat for birds.
- *What vegetation is currently available? Is it natural bushland or is it very simple such as open lawn and a few scattered trees? Is the site structurally complex with lots of layers of different vegetation?* A more structurally diverse site will support more bird species. In understanding the habitat currently available you can then select new vegetation that needs to be planted.



- *Are weeds invading the site? Are these being used by birds?* Some weeds such as Lantana in NSW are popular with birds and provide important habitat. If all weeds are removed in a short space of time then birds using them are unlikely to survive. Their importance to many birds must be considered (see 2. d.).
- *Is the site connected to other patches of vegetation like remnants or parks?* Increasing connectivity through corridor systems (whether that is linear such as along streets or as stepping-stones) will allow birds to move between large patches of vegetation. The location of these should be planned out prior to the commencement of a new or redevelopment using streets, creeks or other waterways. Corridors should be designed to be as wide as practically possible. Corridors of at least 80 m wide may be needed for some forest birds however more narrow corridors will be used by more common species.
- *What is the current land use and future land use?* Sites used for public recreation may need to have a managed interface between areas for recreational access and wildlife habitat. However, if the wildlife habitat is sufficiently large, walking paths can be created to allow the public to also enjoy these areas.

## 2. Design a Plan of Management

Outline the management strategies you are undertaking, identifying the actions that must be undertaken and the order in which this must occur. Seek out and receive input from people experienced in restoration ecology and bird identification.

### Consider these issues:

#### 2. a. What do the birds require?

While the amount and type might vary greatly, all birds need food and water, shelter and a place to nest, whether that is a dense thicket, tall tree or hollow. Most of these requirements can be met by the availability of suitable vegetation. In most cases locally native vegetation is best for birds, although exotic vegetation can also be important and should not be automatically removed.

Because urban habitats are so fragmented, one site will not be large enough to provide all of the requirements that a bird will need. However, each patch is vital in forming the web of habitat that birds use.



Consider the future usage of the site as well as the current ones. Hollows are in short supply in urban areas and are usually restricted to large patches of bushland. **Clear felling a site to construct a housing estate, removes important shelter and nest sites for a large number of birds which are then unable to live in the area. It may take over a hundred years for newly planted trees to develop hollows. Retaining patches of bushland with this important feature is vital for the long-term survival of the bird community.**

## 2. b. What and how to plant

- *Assess the current vegetation:* Most vegetation can provide habitat for birds. Before removing any vegetation, exotic plantings, weeds or otherwise, be sure to observe usage by birds. Protect and enhance any native remnant, eg planting native understorey species under remnant canopy.
- *Wherever possible do not remove vegetation immediately:* instead wait until new vegetation establishes (produces flowers and/or fruit). Alternatively remove only small (< 20 m) patches of vegetation at a time and replace it immediately with new plantings. Be aware that it can take years for new vegetation to establish so patience is important. However many birds may abandon the site if all or large portions of the intact vegetation is removed too quickly.
- *What to plant - floristics:* We recommend locally native vegetation be planted. This vegetation was traditionally used by birds in the area and is best suited to the conditions of the site. Use a variety of different species throughout the planting rather than a single, or select few plants. Gardens that contain a broad range of plant species are more likely to support a broad range of bird species. Plant clumps of 5-7 plants of the same species together so there is enough of the resource (food or shelter) available to be used by the birds. Numerous groupings or thickets of different plant species is also better for overall aesthetics and design. Plant lists can be obtained from most local councils.
- Along the east coast of Australia, sites where Eucalypts are the major or only canopy species are more likely to become dominated by an aggressive honeyeater, the Noisy Miner. These birds drive out other bird species from their preferred territory. Hybrid grevilleas should be avoided as they provide food for Noisy Miners and other large aggressive honeyeaters, especially when Eucalypts are not in flower. Small-flowering locally native grevilleas used instead.



- *What to plant – structure:* The key is to create structural diversity – so lots of plants and lots of different layers. Having a mix of trees, shrubs of varying heights, grasses and ground covers will maximise the numbers of birds using a site. Retaining patches of open grass is also important for some birds such as the parrots and finches to forage on.
- *Native plants do not need to look messy:* Small birds like dense shrubs. Pruning can encourage a much denser growth pattern, which provides good protection for small birds. Pruning can also help create a more formal and neater garden, which some people may prefer.
- *How to plant - Parks:* In areas where public recreation must be balanced with potential bird habitat, garden beds can be used. These should be as large with as little fragmentation as possible. By utilizing perhaps a quarter of the park in one block a limited area is taken away from the public. Alternatively, beds should be placed close to each other so birds can move easily between them. If there is public concern about shrubs concealing criminal activity, shrubs in a dense block can easily be avoided and do not have to be tall.
- Waterways are often associated with high bird diversity. Planting grasses, shrubs and trees around natural or artificial lakes and ponds should also be conducted. Vegetation also stabilises the banks and can assist in keeping the water quality high.
- *How to plant – gardens:* Domestic gardens do not have to have trees to attract birds, therefore if space is an issue a garden consisting of shrubs and grasses can still be effective. Retaining some patches of open unmown grass is also important for some birds such as the parrots and finches to forage on. Developing high-quality habitat in small yards is difficult but should be encouraged. While an individual garden may be too small to provide much value, a number of bird-friendly gardens along a street can create important bird habitat. Households should be encouraged to create these gardens using incentives such as pamphlets or vouchers to nurseries stocking locally native plants.
- *Maintenance:* Maintaining these types of garden beds is much less time consuming than mowing vast areas of lawn. Some native grasses only need to be mown once a year after seeding, to keep them in good shape thus reducing maintenance requirements at the same time as providing a good source of protein-rich food for birds. Pruning is very quick and rarely has to be done. Heavily mulching the beds reduces the need to weed and also provides a source of insects for insectivores and mowing can simply occur around the beds. Creating beds with edges (rectangular or square), makes mowing around them simple.



## 2. c. Requirements of specific bird groups

Bird Type	Food Source	Habitat Preference
<b>Large Nectarivores</b> (nectar feeders) Honeyeaters and some parrots e.g. Noisy Miners, Red and Little Wattlebirds, Rainbow and Scaly-breasted Lorikeets	<i>Banksia</i> , <i>Callistemon</i> (Bottlebrush), <i>Eucalyptus</i> , <i>Grevillea</i> , <i>Hakea</i> , <i>Melaleuca</i> (Paperbark)	Shrubs and trees for foraging, perching and nesting Some require hollows for nesting
<b>Small Nectarivores</b> Honeyeaters e.g. Eastern Spinebill, New Holland Honeyeater, Brown Honeyeater	<i>Banksia</i> , <i>Callistemon</i> (Bottlebrush), <i>Eucalyptus</i> , <i>Grevillea</i> , <i>Hakea</i> , <i>Melaleuca</i> (Paperbark), <i>Epacris</i> , <i>Correa</i>	Spend most time foraging and perching in shrubs but also use trees. Generally nest in dense shrubs
<b>Granivores (Seed Eaters)</b> Parrots, finches and pigeons e.g. Eastern Rosella, Pale-headed Rosella, Galah, Sulphur-Crested Cockatoo, Common Bronzewing, Red-Browed Finch, Double-Barred Finch, Chestnut-breasted Manikin	Trees and shrubs: <i>Acacia</i> (wattle), <i>Casuarina</i> (she-oak), <i>Leptospermum</i> (tea-tree) Grasses: <i>Lomandra</i> , <i>Themeda</i> , <i>Poa</i>	Utilise shrubs and trees for perching, nesting and foraging but also forage on mature grasses
<b>Frugivores (fruit eaters)</b> Pigeons and cuckoos e.g. Wonga Pigeon, Common Koel, Silvereye, Satin Bowerbird	<i>Ficus</i> (figs), <i>Syzygium</i> (Lillipillies), <i>Eleocharpus</i> (Quandong)	Shrubs and trees important habitat
<b>Insectivores</b> e.g. Superb Fairy-wren, Eastern Yellow Robin, Spotted and Striated Pardalotes, Willie Wagtail	Insects and other invertebrates either on the bark and foliage of shrubs and trees or on the ground	Dense shrubs important for protection and nest sites as well as some open areas for foraging
<b>Carnivores (Meat Eaters)</b> e.g. All species of Currawongs, Laughing Kookaburra, Grey and Pied Butcherbirds, Powerful Owl, Black-shouldered Kite, Peregrine Falcon	Other birds, reptiles, frogs, mammals, invertebrates	Tall trees for perching, roosting and nesting. Some require hollows for nesting

## 2. d. How to manage weeds.

Some weeds provide important food, shelter and nest sites for birds. In some cases, replacing this habitat slowly is important. Lantana, for example, is used by many smaller birds due largely to its dense habit but birds also feed on its nectar and the insects it attracts. In other instances, weeds are thought to be responsible for the dominance of some birds. Privet, once a popular garden tree, is partially responsible for an increase in Pied Currawong abundance in urban areas of the east Australian coast by providing an important winter food source, its fruit. Identify and research any of the weeds at the site you are working on. If they provide habitat for birds, especially small birds, then slowly remove the weeds, taking out areas of no larger than 20 x 20 m at a time. Only once the replacement plantings are established should the next patch of weeds





be removed and a patchwork or mosaic pattern followed. This allows birds to use the remaining weeds till new vegetation becomes established. The new vegetation should provide a similar structure or food source to the weeds.

## 2. e. What else affects the bird community?

Habitat is the most important factor that influences whether a bird will visit a site, however it is not the only one. A range of other factors also play a role and must be considered when creating bird habitat.

- *Other birds:* Urban habitats are dominated by medium to large birds that are often very aggressive. There are a number of these who have been shown to influence what other birds occur at a site. Red Wattlebirds and Rainbow Lorikeets have demonstrated aggression and Pied Currawongs are predatory on smaller birds. However there are two species in particular that are thought to be especially important in shaping urban bird communities.

**Noisy Miners** are a particularly aggressive species that chase out other birds from their territory. These birds prefer sites with a Eucalypt canopy and no understorey. **Therefore we strongly recommend that planting simple eucalypt and grass plantings are avoided.** Planting a dense shrub layer and including other plants as well as Eucalypts should assist in reducing their impact over time.

- **Common (or Indian) Mynas** are a much hated pest however little research has been undertaken to examine how they effect the rest of the bird community. While aggression in general has not been documented, they have been shown to compete with and exclude other hollow-nesting birds such as parrots, from hollows. At sites where there are natural hollows or nest boxes set up, regular monitoring and removal of Common Myna nests should be conducted to ensure they are not using them.
- *Domestic pets:* Cats in particular have been shown to have an impact on birds in some urban areas and dogs may cause problems by chasing and disturbing birds. There is also some evidence that cat and dog urine can damage vegetation. The only way to limit the impact that pets have on birds in remnants is to stop or limit access. Cats should be kept indoors or in cat runs and dogs should be kept in secure yards and only allowed in public areas when on-leash with trapping done in remnants to remove wandering or feral animals (including cats and foxes). This must be coupled with education to inform pet owners of the dangers of roaming pets, both to local wildlife and also to the pets themselves.



- *Other threats:* Living in urban areas exposes birds to a wide range of disturbances. Care must be taken to limit the extent to which these different disturbances, such as pesticides and herbicides, trampling of vegetation, and the dumping of rubbish, can impact on the bird community using the site. Colourbond fencing may impede the movement of some birds, instead hedges formed from local native plants can be used.

### 3. Community Involvement

#### 3.a. Engage new residents in conservation projects as part of community development activities

Community acceptance and understanding of landscaping design and choices made for conservation outcomes can make the difference in achieving those desired outcomes. Encouraging community participation in developing habitat for wildlife in residential developments can serve three invaluable purposes.

1. Assistance in undertaking ongoing tasks such as planting, weeding and long term monitoring of the site. Residential “Landcare” groups could be formed to support larger areas of community land that are being managed for habitat.
2. Getting the right conservation messages out into the community. There are many misconceptions in the community such as “weeds must all be removed” and “feeding birds is helpful.” Involving residents and the community in urban habitat projects provides the opportunity to educate them on a wide range of issues.
3. Increasing public awareness and involvement throughout the initial planning stages provides residents and the community with a sense of ownership, increasing the likelihood that the project will be accepted and has long-term support. Information about the conservation planning approaches can be provided to residents through newsletters, organised project campaigns, public meetings and technical workshops. Making contact with environmental volunteer organisations such as ‘Bushcare’ or ‘Landcare’ can also make available a wealth of knowledge and experience.





### **3.b. Focusing on iconic species:**

Focusing on a particular iconic species can be an effective way of encouraging community participation in the remediation of urban habitats. Iconic species that have been used in this way are typically well-known attractive or interesting birds that are sometimes in decline in urban areas. Examples are small birds like Superb Fairy-wrens or Red-browed Finches or large carnivores like Powerful Owls.

### **3.c. Monitor the site regularly:**

Baseline bird surveys should be obtained before any work begins and continue into and beyond its remediation. This allows comparisons to be made over a long time period and forms part of assessing the success of the project.

Bird surveys are quick and easy to complete, requiring simply a 20 min observation period. How often these surveys are conducted can be up to the site manager but even surveys conducted once a month can be valuable. Community participation can be encouraged to complete these surveys. Bush regeneration contractors may also be able to undertake monitoring as part of their works.

