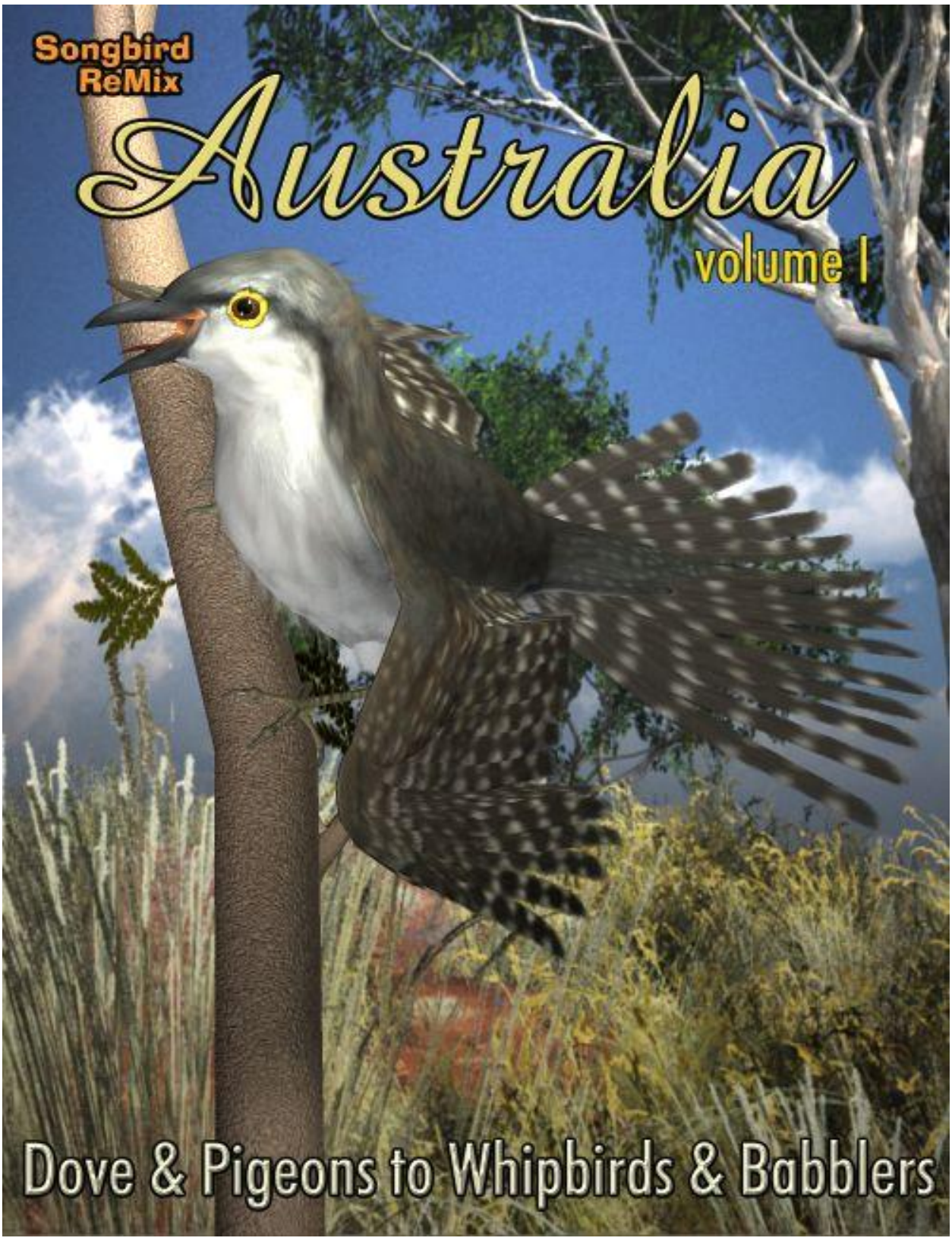

Avian Models for 3D Applications

Characters and Procedural Maps by Ken Gilliland

Songbird ReMix Australia Volume I

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Songbird ReMix Australia Volume I
Manual & Field Guide

Introduction

Songbird ReMix Australia Volume 1 contains the first half of Australian game birds, parrots, and songbirds from endemic “Doves and Pigeons” to “Whipbirds and Babblers”. Featured are such common Australian birds as the Common Bronzewing, the Australian Ringneck Parrot and the Weebill, and iconic birds like the Superb Lyrebird. As with all Songbird Remix volumes, more unusual and endangered birds are also included such as the tiny Mallee Emu-wren that is more tail than bird and the colorful and vivid Rainbow Bee-eater.

Overview and Use

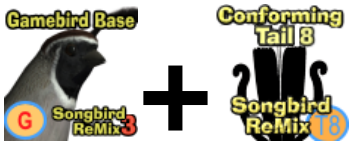
Select **Figures** in Runtime Folder and go to the **Songbird ReMix** folder. Here you’ll find an assortment of files that are easily broken into 2 groups: **Conforming Parts** and **Bird Base models**. Let’s look at what they are and how you use them:

- **Bird Base Models included in this volume:**
  - **Songbird ReMix3 Base** - This model is used with all songbirds.
  - **Songbird ReMix3 Gamebird Base** – This model is used with all Doves, Pigeons and other Gamebirds and is identified with the “**G**” icon.
  - **Songbird ReMix3 Parrots Base** – This model is used with all Parrots and Cockatoos and is identified with the “**P**” icon
  - **Songbird ReMix3 Syndactyl Base** – This model is used with all Kingfishers and Kookavurras and is identified with the “**S**” icon
  - **Songbird ReMix3 Zydodactyl Base** – This model is used with all Woodpeckers, Cuckoos and Trogons and is identified with the “**Z**” icon
- **Conforming Parts** (All Conforming Crests have alpha-numeric icons in the lower right corners such as “C02”, “C07” or “T4”. This corresponds with characters in the Pose folders. All MAT/MOR files with the same icon use that particular Conforming Part. ***Be sure to read this:*** Most conforming parts are Crest which covers the head part. When posing the Base Model, the Conforming Part will follow any Bend, Twist or Rotate Commands. It will not obey any **SCALE** or **MORPH** commands you give the Base Model. You must manually scale the Conforming Part and with morphs such as “OpenBeak” you must also set it’s counterpart in the head part of the Conforming Crest. So Now let’s look at what’s included in Conforming Parts:

  - **<T08> Conforming Tail 8 (aka “Lyrebird Tail”).** For use with the Lyrebird. This is an exceptionally complex tail model with over 150 body

parts. Most of the ERC controls can be found in the BODY section. It is identified with the "**T08**" icon.

Conforming Crest Quick Reference

Load Model(s)	To Create… (apply MAT/MOR files)
	• Grey-cheeked Babbler • Mallee Emu-wren • Rainbow Bee-eater • Splendid Fairy-wrens • Varied Sittella, Weebill • White-fronted Honey-eater • Yellow-rumped Thornbill • Eastern Whipbirds
	• Common Bronzewing • Diamond Dove • Superb Lyrebird (female)
	• Superb Lyrebird (male)
	• Australian Ringnecks • Bourke's Parrots • Princess Parrot
	• Azure Kingfisher
	• Pallid Cuckoo • Pheasant Coucal

Creating a Songbird ReMix Bird

1. Choose what you want to load. For this example, we'll create a Wren species.
2. Load Poser or DAZ Studio and select **FIGURES** and the Songbird ReMix folder. DAZ Studio users will select the "Poser Formats" → "My Library" → "FIGURES" → "Songbird ReMix".
3. Because all of the Wren use the "Songbird" base model we'll load that.
4. Go to the **POSES** folder and **Songbird ReMix** Master folder, then select the appropriate Songbird Remix library. This again, for DAZ Studio users will be found in the "Poser Formats" file section.
5. Select one of the Wren Species and load/apply it by clicking the mouse on to our loaded Songbird ReMix base model. This species pose contains morph and texture settings to turn the generic model into the selected Wren. It will automatically apply the correct DAZ Studio material settings if you are using DAZ Studio.

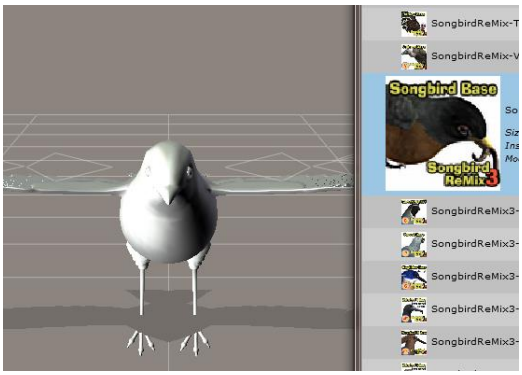
Scaling and Square Shadows in Poser

All the birds in this package have to scaled proportionally to DAZ 3D's Victoria and Michael models. The smallest of the included birds **MAY** render with a Square shadow or improper lighting. This is a bug in Poser. Poser can't figure out how to render a shadow for something really small, so it creates a square shadow. The solution is to put a larger item that casts a normal Poser shadow in the scene (even if it is off camera) and the square shadows will be fixed or BODY scale the bird to a larger size.

without prop off screen

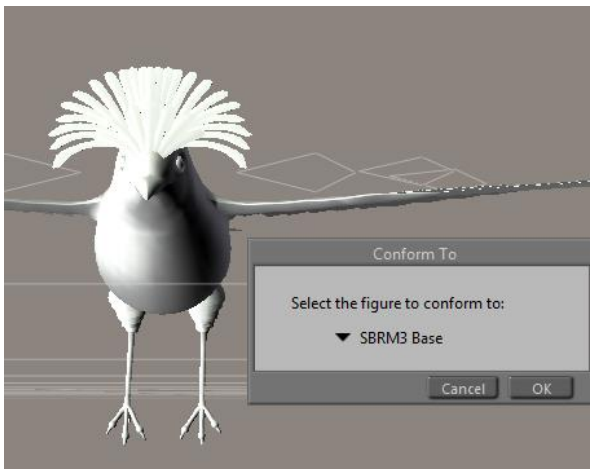
with prop off screen, lights/shadows will properly render

How to build a Songbird ReMix Character with a Conforming Crest in Poser

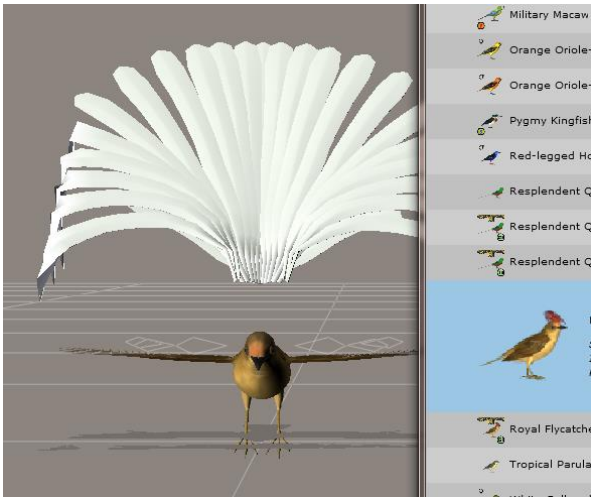


1. In the Figures section, load a Bird base Model. Then load the appropriate conforming part for the bird you're trying to create.

2. **Conform it** to the bird base model.



3. Select the Base Model and go to **POSES.** Select and apply the appropriate Character/Material pose setting for the bird you're creating.



4. The Conforming part will look wrong. That's okay—we're going to fix that now. Select the conforming part and apply appropriate Character/Material pose for the part.

5. Voila! Your bird is done. Just remember to select the bird base when posing and often there are additional morphs in the conforming part you can use.

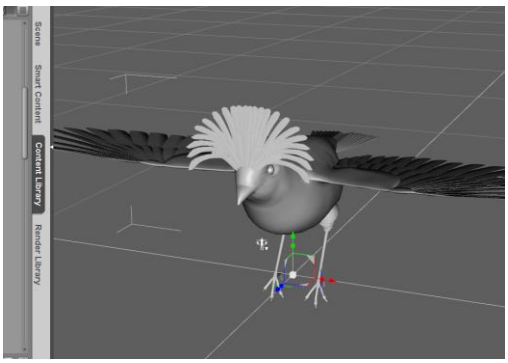
Updates and Freebies

The Songbird ReMix series is constantly growing and improving. New morphs and additions to upcoming and future products often end up benefiting existing sets with new geometry, morphs and textures.

Songbirdremix.com always has the latest updates and additions to existing Songbird ReMix products (often months before they are updated at DAZ), plus the latest digital and real bird news, tutorials, videos, all the Field Guides, free bird characters, props and much more…

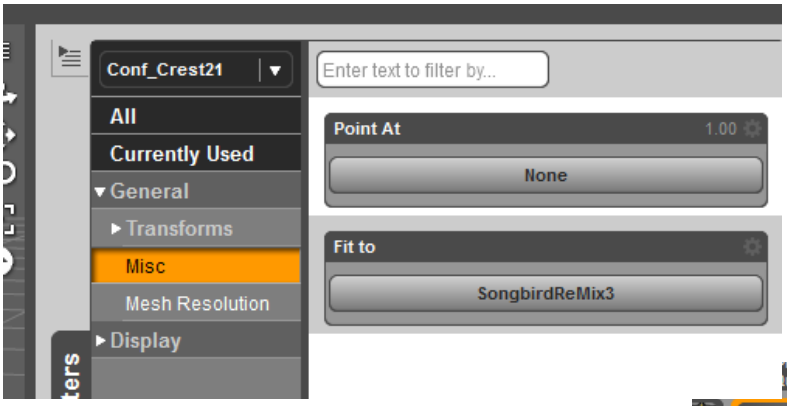
Songbird ReMix.com

How to build a Songbird ReMix Character with a Conforming Crest in DAZ Studio

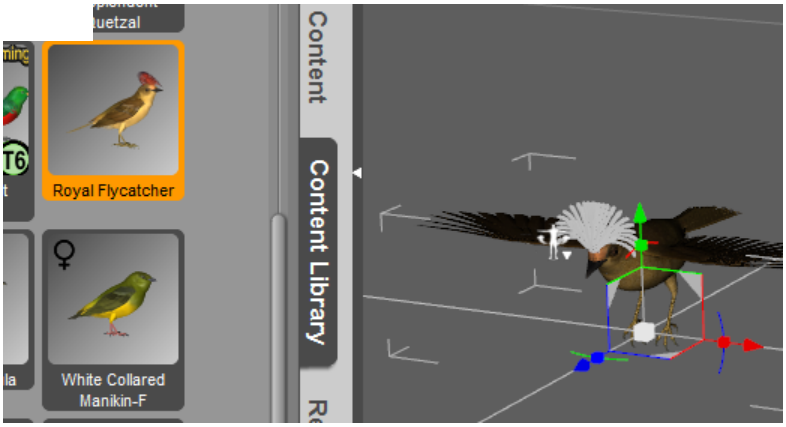


In the **Runtime** folder, select **Figures** and load the Songbird ReMix Model and the appropriate Conforming Crest in Studio. Select the Conforming Crest by selecting on the screen or in the **Scene** Tab.

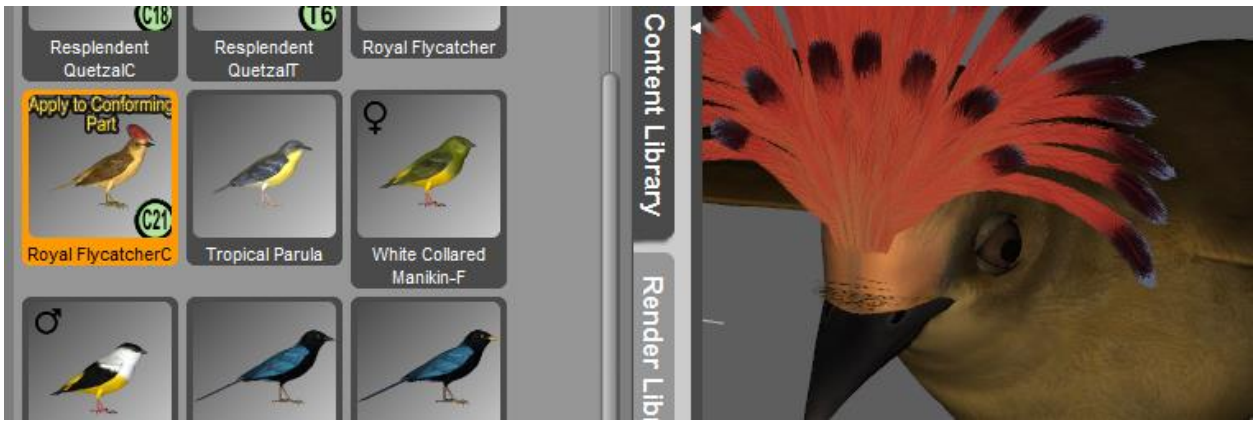
Now, using the “FIT TO” command in the Parameters Tab, Select the Songbird ReMix Model. Go back to the **Scene** Tab and select the Songbird ReMix Model.



Select the Studio **Content** Folder and go to the **Animals : SBRM : !CreateYour Own : Characters** folder and select the appropriate Songbird Remix library. Apply the Character setting to the bird base. It will probably reduce the size significantly and change the shape of the bird.
Now that the bird is sized, select the conforming part and apply the conforming part character settings.



Voila! Your bird is done. Just remember to select the bird base when posing and often there are additional morphs in the conforming part you can use.



Rendering & Posing Tips

Taming the Lyrebird Tail

I won't pretend that posing the male Lyrebird's tail with it's over 150 parts is going to be easy. There's a huge amount of ERC controls that are found in the BODY section—maybe too many. The best place to start is by using one of the prebuilt full or partial poses that I've created for the tail. I devised three bend master controls; one for bending the two outer Lyre-shaped feathers, one for bending the two spike-shaped feathers and a final one to control the filament feathers. There's also a master control for folding the tail.

The average tail length of a Lyrebird is slightly longer than the default settings. A setting of "**0.1**" on **FeatherLength** is about right. The maximum the tail should be folded at this length is "**0.9**". The maximum lengthening the Tail (from 0 to 0.5) will alter the maximum tail Fold setting (from 1.0 to 0.6).

Working with "Creation" morphs

Because birds in the Songbird ReMix series use generic bird bases and morphs, adding morphs upon morphs more often than not will create undesirable results. Case in point is the Parrot base which defaults with the "Parrot" morph be loaded found in the HEAD section (*Creations morphs : Specific Bird morphs*). Adding the other creation morphs on top of that will be a hit and miss experience. Press **CTRL + E** to clear all the morphs in that section. The reason why I have chosen to leave non-parrot morphs on for instance the parrot base is for experimentation and creating unique and imaginary species. In some cases, such as with a parakeet, it's better to shape the parakeet head from the standard Songbird ReMix head than the default parrot morphs.

Songbird Remix and Vue

Vue has trouble with back-facing polygons which tend to show-up in certain wing and "Fluff" poses. The easiest and fast solution is to limit the amount of bending in the Forearm, Hand and Feather controllers and the hide or limit the 'Fluff' used

Bake it! The better (but much slower solution) is to in "Polygon Mesh Options", **bake the model**. You might also click "Force double-sided baking" as well as playing with the Max smoothing angle and checking Dynamic Subdivison. Put Quality boost into the + area. Then bake it—"baking" will take hours on most computers.

The "Eye" material uses a Poser reflection map; since Vue has a built-in environment, it's better to use the Vue one and cut down the reflection to 20-50% depending on light in the scene.

I also often find in better to also cut down the "Highlight Global Intensity" to 40% and "Highlight Global Size" to 50% on Plumage, Wings and Beak materials in the "Highlights" section.

Songbird ReMix Australia Volume One

FIELD GUIDE

Australian Birds from Pigeons and Doves to Whipbirds and Babblers and their eco-regions

Australia

Edited from Wikipedia and other sources by Ken Gilliland

In approaching Songbird ReMix Australia, I knew a very little about Australia other than that's the place where Kangaroos, Kookaburras and Koalas come from. As I started the project and writing the manual it came apparent that I needed a crash course in Australian geography and environmental science to accurately create images using my Australian birds. I decided to include this information in the field guides so you too can have an instant reference source when using Songbird ReMix Australia.

The field guide refers to various regions within Australia, so here's a topographical map to help pin point the regions mentioned in the Field Guide.

Environment History

The world is also split into 14 terrestrial habitats of which eight are shared by Australia. The Australian land mass is divided into 85 bioregions and 403 subregions. Each region is a land area made up of a group of interacting ecosystems that are repeated in similar form across the landscape.

Although most of Australia is semi-arid or desert, it includes a diverse range of habitats from alpine heaths to tropical rainforests, and is recognized as a megadiverse country. Because of the continent's great age, extremely variable weather patterns, and long-term geographic isolation, much of Australia's flora and fauna is unique and diverse. About 85% of flowering plants, 84% of mammals, more than 45% of birds, and 89% of in-shore, temperate-zone fish are endemic. Australia has the greatest number of reptiles of any country, with 755 species.

Australian forests often contain a wide variety of eucalyptus trees and are mostly located in higher rainfall regions. Most Australian woody plant species are evergreen and many are adapted to fire and drought, including many eucalypts and acacias. Australia has a rich variety of endemic legume species that thrive in nutrient-poor soils because of their symbiosis with rhizobia bacteria and mycorrhizal fungi. Among well-known Australian fauna are the monotremes (the platypus and echidna); a host of marsupials, including the kangaroo, koala, and wombat; the saltwater and freshwater crocodiles; and birds such as the emu and the kookaburra. Australia is home to many dangerous animals including some of the most venomous snakes in the world. The dingo was introduced by Austronesian people who traded with Indigenous Australians around 3000 BCE. Many plant and animal species became extinct soon after first human settlement, including the Australian megafauna; others have become extinct since European settlement, among them the Tasmanian tiger (thylacine).

Many of Australia's ecoregions, and the species within those regions, are threatened by human activities and introduced plant and animal species. The federal Environment Protection and Biodiversity Conservation Act 1999 is a legal framework for the protection of threatened species. Numerous protected areas have been created under the national Biodiversity Action Plan to protect and preserve unique ecosystems; 64 wetlands are registered under the Ramsar Convention, and 15 natural World Heritage Sites have been established. Australia was ranked 46th of 149 countries in the world on the 2008 Environmental Performance Index.

Climate change has become an increasing concern in Australia in recent years, with many Australians considering protection of the environment to be the most important issue facing the country. The Australian Government initiated several emission reduction activities. This new awareness led Prime Minister Rudd to his first official act, on his first day in office, ratifying of the Kyoto Environmental Treaty in December 2007. Nevertheless, Australia's carbon dioxide emissions per capita are among the highest in the world, lower than those of only a few other industrialized nations. Rainfall in

Australia has slightly decreased over the past century, both nationwide and for two quadrants of the nation, while annual mean temperatures increased significantly over the past decades. Water restrictions are currently in place in many regions and cities of Australia in response to chronic shortages due to urban population increases and localized drought.

Ecoregions of Australia

Ecoregions in Australia are geographically distinct plant and animal communities, defined by the World Wide Fund for Nature based on geology, soils, climate, and predominant vegetation. They are based heavily upon the Interim Biogeographic Regionalization for Australia (IBRA) regionalization. Like the IBRA, it was developed for use as a planning tool for conservation science, with the goal of establishing a system of nature reserves in each of the ecoregions or bioregions sufficient to preserve biodiversity.

Tropical and subtropical moist broadleaf forests

- Lord Howe Island subtropical forests
- Norfolk Island subtropical forests
- Queensland tropical rain forests

Temperate broadleaf and mixed forests

- Eastern Australian temperate forests
- Southeast Australia temperate forests
- Tasmanian Central Highland forests
- Tasmanian temperate forests
- Tasmanian temperate rain forests

Tropical and subtropical grasslands, savannas, and shrublands

- Arnhem Land tropical savanna
- Brigalow tropical savanna
- Cape York tropical savanna
- Carpentaria tropical savanna
- Einasleigh upland savanna
- Kimberly tropical savanna
- Mitchell grass downs
- Victoria Plains tropical savanna

Temperate grasslands, savannas, and shrublands

- Eastern Australia mulga shrublands
- Southeast Australia temperate savanna

Montane grasslands and shrublands

- Australian Alps montane grasslands

Tundra

- Antipodes Subantarctic Islands tundra (Australia, New Zealand)

Mediterranean forests, woodlands, and scrub

- Coolgardie woodlands
- Esperance mallee
- Eyre and York mallee
- Jarrah-Karri forest and shrublands
- Kwongan heathlands
- Mount Lofty woodlands
- Murray-Darling woodlands and mallee
- Naracoorte woodlands
- Southwest Australia savanna
- Southwest Australia woodlands

Deserts and xeric shrublands

- Carnarvon xeric shrublands
- Central Ranges xeric scrub
- Gibson Desert
- Great Sandy-Tanami Desert
- Great Victoria Desert
- Nullarbor Plain xeric shrublands
- Pilbara shrublands
- Simpson Desert
- Tirari-Sturt Stony Desert
- Western Australian mulga shrublands

Victoria Plains Tropical Savanna

This is an area of large plains of dry grassland lying between the Tanami Desert to the south and the wetter, greener grassland to the north towards the coast. Sandstone outcrops rise from the grassland, the most famous of which is the Bungle Bungle Range in Purnululu National Park. The grasslands have long been used for cattle grazing. The climate is wetter in the north (average annual rainfall 1200mm) which receives some coastal monsoonal rain, and drier in the south (average 600mm). The rainy season is between November and March and the whole area is almost completely dry for the rest of the year and the climate is hot with maximum temperatures between 25°C and 35°C year round.

The plain is largely covered with Mitchell Grass scattered with bloodwood eucalyptus trees and large patches of lancewood acacia *(Acacia shirleyi)* woodland. The sandstone outcrops have thinner cover of eucalyptus over hummock grass or heathland scattered with Grevillea and Acacia trees.

There are few endemic species as these grasslands are typical of much of northern Australia at this latitude but the grasslands are nonetheless largely intact and rich in

wildlife. Mammals include the large Eastern Wallaroo, Northern Nail-tail Wallaby *(Onychogalea unguifera),* and the Long-tailed Planigale which is the smallest marsupial in the world. The lancewoods are home to the Spectacled Hare-wallaby *(Lagorchestes conspicillatus)*, while the Bungle Bungle has some unique plants and an endemic Lerista skink lizard.

Birds include Australian Bustards, Singing Bushlark, and Red-backed Fairy-wren while there are important populations of Purple-crowned Fairywren *(Malurus coronatus)* along the rivers especially the Victoria. The eucalyptus trees are habitat for Lorikeets, Friarbirds, and Honeyeaters. Termites are a source of food for many of these birds and animals.

Southeast Temperate Forests

Comprising the lowland temperate forests around the Great Dividing Range, the Southeast Australian Temperate Forests comprise a wide variety of vegetation. Unlike the rest of mainland Australia, this region is well-watered with a temperate climate. Wet forest grows along the coast and dry forest and woodland is found inland of the Dividing Range. Avian and mammalian richness is high in this ecoregion, but human impact has been severe. Logging operations and pine plantations dot the wet forests, and farming and grazing has modified the drier vegetation. The major urban centers of Canberra and Melbourne are also located in this ecoregion.

The quintessential Australian genus, Eucalyptus dominates in all better-watered regions of Australia, including the Southeast Australia Temperate Forests. There are approximately 700 species of Eucalyptus, and only seven are found outside Australia. Unlike the rest of mainland Australia, soils here are moderately fertile with a cool temperate climate. Australian temperate eucalyptus forests exhibit a long evolutionary history compared with other continents where glaciation was repeated and extensive. Plant diversity is exceptionally high in the sandstone Grampians Ranges in Victoria, where approximately 1,100 plants, or one-third of Victoria's flora are found in the 1,700 km2 Grampians National Park. Temperate woodlands also contain a high number of endangered plant species, including the button winklewort *(Rutidosis leptorrynchoides).*

Warm-temperate rainforest replaces subtropical rainforest on poorer soils or with increasing altitude and latitude in NSW and Victoria. Cool-temperate rainforests are widespread in Tasmania (Tasmanian temperate rain forests ecoregion) and they can be found scattered from the World Heritage listed Border Ranges National Park and Lamington National Park on the NSW/Queensland border to Otway Ranges, Strzelecki Ranges, Dandenong Ranges and Tarra Bulga in Victoria. In the northern NSW they are usually dominated by Antarctic Beech (Nothofagus moorei), in the southern NSW by Pinkwood *(Eucryphia moorei)* and Coachwood *(Ceratopetalum apetalum)* and in Victoria and Tasmania by Myrtle Beech *(Nothofagus cunninghamii)*, Southern Sassafras *(Atherosperma moschatum)* and Mountain Ash *(Eucalyptus regnans)*. The montane rainforests of Tasmania are dominated by Tasmanian endemic conifers (mainly

Athrotaxis spp.).They are dominated by ferns such as *Cyathea cooperi, Cyathea australis, Dicksonia Antarctica, Cyathea cunninghamii* and *Cyathea leichhardtiana*

Mallee Woodlands and Shrublands

Mallee is an Aboriginal name for a group of eucalypts which grow to a height of 2 - 9 m and have many stems arising from a swollen woody base known as a lignotuber. They have an umbrella-like leaf canopy and the trees shade 30-70% of the ground.

Several layers of vegetation grow in association with Mallee eucalypts, from large shrubs up to 3 m high to very small grasses and forbs, and ephemerals. There is a lot of bare ground and any leaf litter decomposes slowly in the dry conditions.

Mallee is also a name given to the type of vegetation community in which the Mallee eucalypts grow. Mallee areas are generally very flat, and without hills or tall trees it is very easy to become lost. Some areas of Mallee have expanses of vegetated sand dunes. This probably accounts for the fear of the Mallee felt by many early explorers and settlers.

Distribution of Mallee Shrublands

The Mallee is a complex and sensitive environment. It contains a great diversity of organisms many of which are under threat. Since European settlement one third of all
mammal species have disappeared from the Mallee of south-eastern Australia more than a dozen plant species are now considered threatened or rare as a result of clearing and grazing.

Mallee soil is generally sandy and in some areas contains a high proportion of lime. In other areas the soil is quite salty and/or very shallow. It is often covered by a ‘crust’ of lichens and algae.

In 2001, the area covered by this vegetation group was estimated to be 65% of its pre-1788 coverage. The most extensive extant area of this group in Australia today is found in the Great Victoria Desert. Prior to 1788, the largest area occurred in the Murray-Darling Basin.

Plants of the Murray-Darling woodlands and mallee

Trees	
Eucalyptus gracilis	Yorrel. A mallee eucalypt.
Eucalyptus oleosa	Giant Mallee. One of the larger mallee trees.
Eucalyptus socialis	Pointed Mallee. Very common species.
Eucalyptus anceps	Kangaroo Island Mallee. Somewhat uncommon.
Myoporum platycarpum	Sugarwood. Common leafy tree to about 6m with small white flowers often quite prolific and long lasting.
Santalum acuminatum	Quandong. Small tree with edible fruits.
Large Shrubs	
Acacia nyssophilla	Wait-a-while. Prickly wattle shrub with attractive globular golden-yellow flowers
Exocarpus aphylla	Leafless Ballart. Very shady but leafless large shrub.
Melaleuca lanceolata	Moonah. Dryland bottlebrush flowering plant.
Small Shrubs	
Dodonaea attenuata	Narrow-leaf hopbush. While not a true hop, the early settlers nevertheless did make beer from the fruits.
Eremophila glabra	Common Emu Bush. Very common attractive small shrub with red sigmoidal flowers.
Eremophila alternifolia	Poverty Bush. Uncommon attractive small shrub with mauve spotted or white sigmoidal flowers.
Scaevola spinescens	Spiny Fan-Flower. Unusual one-sided fan shaped flowers.
Senna eremophila	Cassia. Very common small shrub, very attractive when flowering. Yellow pea-like flowers very profuse in good years.
Westringia rigida	Very common low shrub to about 0.5m with small cylindrical leaves and small white spotted long lasting flowers.
Beyeria leschenaultii	Felted Wallaby-Bush.
Smaller Plants	
Atriplex stipitata	Kidney Saltbush. Small dome-shaped shrub with grey green leaves.
Maireana erioclada	Rosy Bluebush. Attractive wheel-shaped fruits green to pink when fresh.
Maireana brevifolia	Yanga Bush. Another bluebush with wheel-shaped fruits.
Olearia magniflora	Mangificent Daisy. Attractive, large purple daisy-like flowering bush
Rhagodia gaudichaudiana	Cottony Saltbush. Unusual spade shaped leaves.
Rhagodia nutans	Climbing Saltbush. Unusual lobed leaves but otherwise rather forgettable.
Teucreum racemosum	Grey Germander. Small plant with distinctive and prolific white flowers.
Thysanotus baueri	Mallee Fringe-lily. Small, short lived, mauve flowers with long fringes on the petal margins.
Zygophyllum apiculatum	Gall Weed. Very common low ground cover, large, brilliant green leaves with attractive yellow flowers and unusual ridged fruits. Doesn't deserve the name.
Zygophyllum aurantiacum	Shrubby Twinleaf. Very common small woody shrub, small twinned leaves with attractive yellow flowers and four-winged fruits.

The Australian bustards and endangered black-eared miners live within the Mallee forests.

Western Mallee

Western Mallee is roughly defined as the western half of the Mallee biogeographic region. It has an area of 47,636 square kilometres, which is only lightly populated. The main towns are Hyden, Gnowangerup and Lake Grace; lesser towns include Kulin, Ongerup, Duggan, Newdegate, Lake King and Kondinin.

The subregion contains many endemic plant species in the Eucalyptus, Acacia, Proteaceae such as Grevillea, Hakea and Banksia; and various Asteraceae.

It also supports a number of rare or endangered fauna, including some that fall within the critical weight range for predation by foxes. The Pig-footed Bandicoot *(Chaeropus ecaudatus)* and Crescent Nailtail Wallaby *(Onychogalea lunata)* previously occurred in the subregion, but both are now extinct. The Rufous Hare-wallaby *(Lagorchestes hirsutus)* is now extinct in the wild, and a further ten species of mammal are extinct in the subregion. The endangered Red-tailed Phascogale *(Phascogale calura)* still occurs in the region, as do the vulnerable Black-flanked Rock-wallaby *(Petrogale lateralis)* and Heath Rat *(Pseudomys shortridgei)*, and the Western Brush Wallaby *(Macropus irma).*

More information of Mallee plants is available from the Australian government.

Mangroves

Mangroves are trees and shrubs that grow in saline coastal habitats in the tropics and subtropics – mainly between latitudes 25° N and 25° S. The saline conditions tolerated by various species range from brackish water, through pure seawater (30 to 40%), to water of over twice the salinity of ocean seawater, where the salt becomes concentrated by evaporation (up to 90%).

There are many species of trees and shrubs adapted to saline conditions. Not all are closely related, and the term "mangrove" may be used for all of them, or more narrowly only for the mangrove family of plants, the Rhizophoraceae, or even more specifically just for mangrove trees of the genus Rhizophora.

Mangroves form a characteristic saline woodland or shrubland habitat, called mangrove swamp, mangrove forest, mangrove or mangal. Mangals are found in depositional coastal environments where fine sediments (often with high organic content) collect in areas protected from high energy wave action. They occur both in estuaries and along open coastlines. Mangroves dominate three quarters of tropical coastlines.

More than fifty species of Rhizophoraceae (Red Mangrove) grow in Australasia with particularly high biodiversity on the island of New Guinea and northern Australia.

Australia has approximately 11,500 km2 of mangroves primarily on the northern and eastern coasts of the continent, with occurrences as far south as Miller's Landing in Wilson's Promontory, Victoria (38°54′S) and Barker Inlet in Adelaide, South Australia.

The Great Victoria Desert

The Great Victoria is the biggest desert in Australia and consists of many small sandhills, grassland plains, areas with a closely packed surface of pebbles (called desert pavement or gibber plains) and salt lakes. It is over 700 km (430 mi) wide (from west to east) and covers an area of 424,400 square km (163,900 sq mi) from the Eastern Goldfields region of Western Australia to the Gawler Ranges in South Australia. The Western Australia Mallee shrub ecoregion lies to the west, the Little Sandy Desert to the northwest, the Gibson Desert and the Central Ranges xeric shrublands to the north, the Tirari and Sturt Stony deserts to the east, while the Nullarbor Plain to the south separates it from the Southern Ocean. Average annual rainfall is low and irregular, ranging from 200 to 250 mm (7.9 to 9.8 in) per year. Thunderstorms are relatively common in the Great Victoria Desert, with an average of 15 - 20 thunderstorms per annum. Summer daytime temperatures range from 32 to 40 °C (90 to 104 °F) while in winter, this falls to 18 to 23 °C (64 to 73 °F).

As this area has never been used for agriculture habitats remain largely undisturbed while parts of the desert are protected areas including Mamungari Conservation Park

(formerly known as Unnamed Conservation Park) in South Australia, a large area of pristine arid zone wilderness which possesses cultural significance and is one of the fourteen World Biosphere Reserves in Australia. Habitat is also preserved in the large Aboriginal local government area of Anangu Pitjantjatjara Yankunytjatjara in South Australia and in the Great Victoria Desert Nature Reserve of Western Australia.

Only the hardiest of plants can survive in much of this environment. Between the sand ridges there are areas of wooded steppe consisting of *Eucalyptus gongylocarpa*, *eucalyptus youngiana* and mulga (*Acacia aneura*) shrubs scattered over areas of resilient spinifex grasses particularly *Triodia basedownii*.

Wildlife adapted to these harsh conditions includes few large birds or mammals but the desert does sustain many types of lizard including the vulnerable great desert skink *(Egernia kintorei)* and a number of small marsupials including the Sandhill Dunnart *(Sminthopsis psammophila)* and the vulnerable Crest-tailed Mulgara *(Dasycercus cristicauda)*. One way to survive here is to bury into the sands and there are a number of animals doing that including the endangered Southern Marsupial *Mole (Notoryctes typhlops)*, and the Water-holding Frog. Birds include the Chestnut-breasted Whiteface *(Aphelocephala pectoralis)* found on the eastern edge of the desert and the malleefowl of Mamungari Conservation Park. Predators of the desert include the dingo (as the desert is north of the Dingo Fence) and two large monitor lizards, the perentie *(Varanus giganteus)* and the sand goanna *(Varanus gouldii).*

The nuclear weapons trials carried out by the United Kingdom at Maralinga and Emu Field in the 1950s and early 1960s has left areas contaminated with plutonium-239 and other radioactive material.

Billabongs

While not an eco-region, billabongs are important areas and are a term familiar even to those outside Australia. Billabong is an Australian word meaning a small lake, specifically an oxbow lake. An oxbow lake or billabong, is a section of still water adjacent to a river, cut off by a change in the watercourse. Billabongs are usually formed when the path of a creek or river changes, leaving the former branch with a dead end. The word, *Billabong*, most likely from the Wiradjuri term “*bilabaŋ*”.

Billabongs appear relatively often in Australian literature. One of the most prominent references is in the opening line of Banjo Paterson's famous folk song "Waltzing Matilda".

Plant life in billabongs varying from region to region but certain plants types are usually found there such as Eucalypts, Salix, Typhia, Grevilleas and Banksias.

Songbird ReMix Australia Volume One

List of Bird Species

Doves & Pigeons
Diamond Dove
Common Bronzewing

Cockatoos and Parrots
Bourke's Parrot
Australian Ringneck
Princess Parrot

Cuckoos and Coucals
Pallid Cuckoo
Pheasant Coucal

Kingfishers & Kookaburras
Azure Kingfisher

Bee-eaters, Rollers and Pittas
Rainbow Bee-eater

Lyrebirds and Scrub-birds
Superb Lyrebird

Sittellas and Treecreepers
Varied Sittella

Fairy-wrens and their allies
Splendid Fairy-wren
Mallee Emu-wren

Pardalotes, Bristlebirds, Scrubwrens, Gerygones and Thornbills
Weebill
Yellow-rumped Thornbill

Honeyeaters and Australian Chats
White-fronted Honeyeater

Whipbirds, Wedgebills, Quail-thrushes and Babblers
Eastern Whipbird
Grey-crowned Babbler

Common Name: Diamond Dove
Scientific Name: *Geopelia cuneata*

Size: 7 ½ - 9 ½ inches (19-24 cm)

Habitat: Australia; endemic to Australia and fairly widely distributed in arid and semi-arid grassland savannah. Diamond Doves gather in small parties or flocks in dry open savanna in mulga areas often among spinifex or grasses. They are also often in open riparian woodland (beside waterways).

Status: Least Concern to threatened. **Global population**: Unknown. The Diamond Dove is listed as threatened on the Victorian Flora and Fauna Guarantee Act (1988).

Diet: Feed on the ground for seeds from herbs and grasses and are never far from water. They walk sedately when feeding but can run quickly, with tail raised, if disturbed.

Nesting: Diamond Doves breed throughout their range, at any time after heavy rainfall. The nest is small flimsy platform of fine twigs or grass stems in low shrub or a scrubby tree. The eggs may be visible through the nest material. Both birds incubate and the eggs are never left unattended. Both also feed the young.

Cool Facts: Doves need water as they have a dry seed diet and they can suck up water without lifting their heads; Only Doves and Pigeons can drink without raising their heads to swallow.

Diamond doves can be kept and bred well in captivity and some lines have been bred for so many generations as to be considered domesticated. They spend a considerable amount of time on the ground and require a wide area to walk around. Wire-bottomed cages are not desirable; also, the floor of the cage should be kept clean since they will be walking on it. The cage should also contain perches spaced widely enough for the bird to fly safely.

Diamond doves should be encouraged to eat a variety of greens and vegetables in addition to their seed diets. They swallow seeds whole and should be given access to

grit to help digest the seeds. In winter, the birds suffer in cold and should not be placed near drafts; a heating pad or basking rock (such as those sold in pet stores for lizards) can be used as a supplemental heat source, and is greatly enjoyed by many diamond doves.

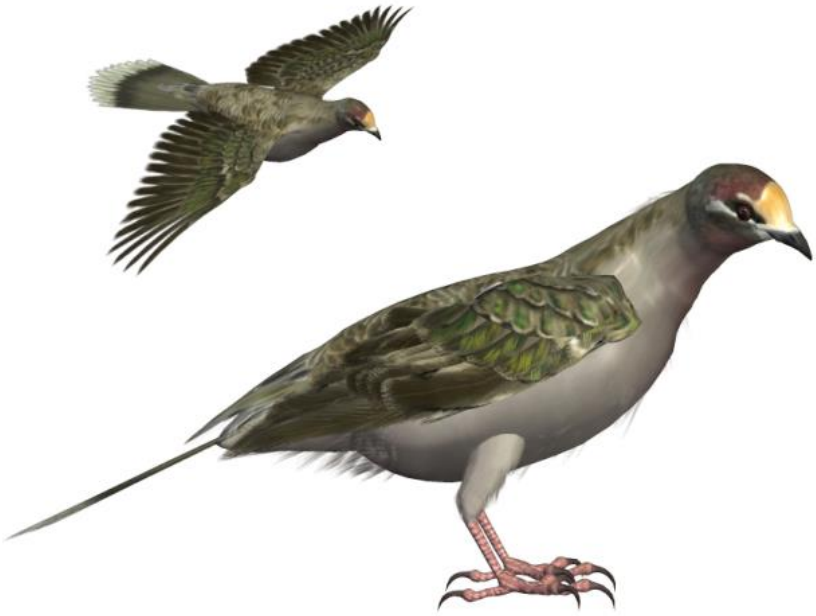
Diamond doves build nests in open scoops, and will appreciate open-topped nest baskets. They will nest in whatever they find, however, including the seed dish. The mating behavior begins with a repeated call, usually by the male but sometimes by a female if kept singly. The male will display his tail feathers by dipping his head low and raising his tail, spreading the long feathers like a fan towards a desired female while uttering a two-note coo. The pair will stay together for long periods, greeting each other with low coos and vibrating their wings, or symbolically preening each other with rapid light pecks.

Generally, they must live in pairs or flocks, as their need for companionship is high. Single diamond doves can bond to humans if acquired when relatively young, but this requires a commitment of time and attention from the owner because they require months or years to tame and will then require significant companionship time with their owner, much like a parrot. Once tamed, the dove is a sweet and gentle pet, who greets its owner with happy coos and will perch on the finger or shoulder. They will also preen their owner with rapid light pecks, and accept being stroked gently in return. Care must be taken to avoid the bird thinking of its owner as a mate, as this leads to egg-laying and excessive dependence on its owner's companionship, and is stressful to the bird. This can be avoided by not being affectionate with the bird while it is engaging in nesting or display behaviors.

Common Name: Common Bronzewing
Scientific Name: *Phaps chalcoptera*

Size: 12-14 inches (30-36 cm)

Habitat: Australia; found throughout Australia; Bronzewing is able to live in almost any habitat, with the possible exception of very barren areas and dense rainforests



Status: Least Concern.
Global population: Unknown.

Diet: Seeds and all varieties of vegetables. It searches for food in small groups. The search can sometimes last for days, and, since the pigeon must drink frequently, it utilizes watering holes or any other available source of water

Nesting: Males of the species have pale-yellow to yellow-white foreheads, and pink breasts. Both males and females have an easily discernible white line around and close to their eyes. Common Bronzewings also have patches of red, blue and green on their wings, a feature which is characteristic of all bronzewing pigeons. Young birds are usually duller in color and browner than the mature Common Bronzewing.

Common Bronzewings construct a rough nest of twigs and sticks, which is placed low down in a tree or bush. The eggs hatch after a period of roughly 14 to 16 days, after being incubated by both the male and the female. Both parents share the responsibility of caring for the young. Bronzewings, like other pigeons, secrete a special milk-like substance from their crop, which is fed to the young chicks.

Cool Facts: Bronzewings are endemic to Australia and one of the country's most common pigeons. Rarely found far from a source of water, Common Bronzewings either travel alone or in pairs or in flocks, and are usually cautious, making approach by humans or other animals difficult

Common Name: Bourke's Parrot
Scientific Name: *Neopsephotus bourkii*

Size: 7 ½ - 9 inches (19-23 cm)

Habitat: Australia; widespread across arid and semi-arid areas of the inland, from north-western New South Wales and south-western Queensland to the mid-coast of Western Australia, and from the Devil's Marbles in Northern Territory south to Port Augusta, South Australia. Found in mulga and other acacia scrubs, and in native cypress and other open eucalypt woodlands.

Status: Least Concern. **Global population**: Unknown. In eastern Australia, Bourke's Parrot appears to have been adversely affected by overstocking and rabbit plagues, both of which remove understory plants. In some areas of Western Australia, populations of Bourke's Parrots have expanded since grazing was scaled down, allowing vegetation to regenerate.

Diet: Seeds of grasses and herbs**.** Feeding mainly on the ground, and only occasionally in trees. Pairs, or small groups of four to six. They need to be near a source of water, which they visit usually at dawn and dusk.

Nesting: The adult male has a blue forehead while the adult female has a little or no blue on the forehead.

The Bourke's Parrot has a clutch of 3 to 6 eggs, which are incubated by the female for 18–19 days, with the chicks fledging at about 4 weeks of age. The female also feeds and tends to the chicks by herself. While the female Bourke's Parrot is incubating the eggs, and also while she is feeding the chicks in the nest, she is fed by the male Bourke's Parrot

Cool Facts: This parrot is also known as the Bourke's Parakeet or "Bourkie" and the only species in its genus *Neopsephotus*. It is named after General Sir Richard Bourke, Governor of New South Wales from 1831 to 1837.

Another name for Bourke's Parrot is 'Night Parrot', as it will fly into watering places at night. However it is not to be confused with the real, and extremely rare *and probably extinct*, Night Parrot, *Pezoporus occidentalis*.

Common Name: Australian Ringneck
Scientific Name: *Barnardius zonarius*

Size: 11 inches (33 cm)

Habitat: Australia; found throughout Australia with the exception of extreme tropical and highland areas. Found mostly in eucalypt woodlands and eucalypt-lined watercourses.

Status: Least Concern. **Global population**: Unknown.

Diet: Nectar, insects, seeds, fruit, and native and introduced bulbs. It will eat orchard-grown fruit and is sometimes comsidered as a pest by farmers

Nesting: Breeding season for the Northern populations starts in June or July, while the central and southern populations breed from August to February, but this can be delayed when climatic conditions are unfavorable. The nesting site is a hollow in a tree trunk. Generally four or five white oval eggs are laid measuring 29 mm x 23 mm, although a clutch may be as few as three and as many as six. Fledgling survival rates have been measured at 75%

Cool Facts: Traditionally, two species were recognized in the genus Barnardius, the Port Lincoln Parrot (*Barnardius zonarius*) and the Mallee Ringneck (*Barnardius barnardi*), but the two species readily interbred at the contact zone and are now considered one species. Currently, four subspecies are recognized, each with a distinct range.

The subspecies of the Australian Ringneck differ considerably in coloration. It is a medium size species around 33 cm (11 in) long. The basic color is green, and all four subspecies have the characteristic yellow ring around the hindneck; wings and tail are a mixture of green and blue.

The *B. z. zonarius* and *B. z. semitorquatus* subspecies have a dull black head; back, rump and wings are brilliant green; throat and breast bluish-green. The difference between these two subspecies is that *B. z. zonarius* has a yellow abdomen while *B. z. semitorquatus* has a green abdomen; the latter has also a prominent crimson frontal band that the former lacks (the intermediate shown in the box has characteristics of both subspecies). The two other subspecies differ from these subspecies by the bright green crown and nape and blush cheek-patches. The underparts of *B. z. barnardi* are turquoise-green with an irregular orange-yellow band across the abdomen; the back and mantle are deep blackish-blue and this subspecies has a prominent red frontal band. The *B. z. macgillivrayi* is generally pale green, with no red frontal band, and a wide uniform pale yellow band across the abdomen.

The calls of the Mallee Ringneck and Cloncurry Parrot have been described as "ringing", and the calls of the Port Lincoln Ringneck and Twenty-eight have been described as "strident". The name of the Twenty-eight Parrot is an onomatopoeic derived from its distinctive 'twentee-eight' call.

The Australian Ringneck is active during the day and can be found in eucalypt woodlands and eucalypt-lined watercourses. The species is gregarious and depending on the conditions can be resident or nomadic.

Common Name: Princess (Alexandra) Parrot
Scientific Name: *Polytelis alexandrae*

Size: 13 ¼ - 18 inches (34-46 cm)

Habitat: Australia; Found through the interior. It inhabits arid woodland and scrub with spinifex, eucalypts, and acacias.

Status: Near Threatened. **Global population**: Unknown.

Diet: Seeds of grasses and shrubs.

Nesting: The male also has a coral-red beak, while the female's is duller and has a greyish crown. Another difference is that the male has an orange iris, while the female's is much browner. In addition, the male of the species has a longer, projecting extension from the end of the 3rd primary (flight) feather on each side. This projection is called a 'spatula' or 'spatule". It appears in mature male birds.

Four to six white eggs are laid which are incubated for 19 days. The chicks leave the nest about 35 days after hatching.These parakeets are truly opportunistic breeders, with pairs choosing to nest when food is plentiful. They nest in a hollow in a eucalypt or desert oak.

Cool Facts: This species is nomadic, arriving in small groups to breed and then disappearing. It is one of Australia's least known parakeets although it is spread across the interior of Australia.

They are unusual among parrots in engaging in mobbing behavior against predators.

Common Name: Pallid Cuckoo
Scientific Name: *Cuculus pallidus*

Size: 11 -13 inches (28-33 cm)

Habitat: Australia; found in Australia, Christmas Island, Indonesia, New Zealand, and Papua New Guinea. Its natural habitats are subtropical or tropical dry forests and subtropical or tropical mangrove forests.

Status: Least Concern. **Global population**: Unknown.

Diet: Hairy caterpillars, other insects and their larvae. Prey is spotted from low perch and is pounced on, usually on the ground. Some insects are taken from foliage.

Nesting: The Pallid Cuckoo lays its eggs in the nests of honeyeaters, woodswallows, whistlers and flycatchers. Common host species include the Willie Wagtail and the Hooded Robin. The female cuckoo removes one of the host's eggs and replaces it with one of her own. The cuckoo egg usually closely resembles the host egg, and the unsuspecting host hatches it along with its own. The cuckoo egg usually hatches more quickly and the young cuckoo instinctively forces the other eggs (or chicks) out of the nest. The cuckoo rapidly outgrows its 'foster' parents, who frantically search for sufficient food to satisfy the demanding young bird.

Cool Facts: All cuckoos have Zygodactyl feet (two toes forward, two back as like parrots and woodpeckers). The Pallid Cuckoo is identified by its grey plumage, which is darker on the wings and back, and its broadly barred black and white undertail. The bill is brown, the legs and feet are grey-brown, and there is a bright yellow ring around the eye. No other Australian cuckoo has this coloration.

Common Name: Pheasant Coucal
Scientific Name: *Centropus phasianinus*

Size: 19 ½ - 27 ½ inches (50-70 cm)

Habitat: Australia; found in northern and eastern Australia, as well as New Guinea and East Timor. It is found from the Pilbara, Western Australia, to south-eastern New South Wales. In New South Wales it is mainly found east of the Great Dividing Range from the Queensland border to the southern Hunter region, with some around Sydney and further south to Illawarra. The Pheasant Coucal prefers dense understorey vegetation, particularly grasses, rushes, bracken and sedges, in open forests and woodlands, and around wetlands. Often found in sugar cane plantations near wetlands, on farmlands with thick grasses and weed-infested thickets, such as Lantana. Often seen in parks, gardens and along roads or railway lines.

Status: Least Concern. **Global population**: Unknown. Pheasant Coucals have benefited from land clearing where weedy thickets have grown up, especially of Blackberry or Lantana. However have been adversely affected by widening urban development and where overgrazing by livestock has occurred.

Diet: Large insects, frogs, lizards, eggs and young of birds and, sometimes, small mammals.

Nesting:
Pheasant Coucals form lasting pairs and, unlike other Australian cuckoos, build their own nests and raise their young themselves. The nest is usually hidden in thick grass or sugar cane or in weedy thickets and is a platform of sticks, grass or rushes, lined with leaves and grasses. The male usually incubates the eggs and feeds the young, with the female helping with feeding. More than one clutch can be laid in one season.

Cool Facts: The Pheasant Coucal is the only Australian cuckoo to build its own nest. It also lives and nests on the ground, unlike other cuckoos.

The Pheasant Coucal's summer voice is a low descending 'boop boop boop'. Its winter voice is a sharp hissing.

Common Name: Azure Kingfisher
Scientific Name: *Alcedo azurea*

Size: 6 ½ - 7 ½ inches (17-19cm)

Habitat: Australia; found in Northern and Eastern Australia and Tasmania, as well as in the Moluccas and Lesser Sundas (Indonesia), New Guinea and surrounding islands. In Australia, it is found from the Kimberley region, Western Australia, across the Top End to Queensland, and is widespread east of the Great Dividing Range to the Victorian border and south into Victoria. Habitat includes the banks of vegetated rivers and creeks as well as billabongs, lakes, swamps and dams, usually in shady overhanging vegetation. It is sometimes seen in parks on rivers, as well as duck or goldfish ponds in urban areas.

Status: Least Concern. **Global population**: Unknown. Stock trampling vegetation around waterholes affects the Azure Kingfisher. Human activities that cause artificial flooding of waterways can drown nests. Water that is turbid (not clear) and the introduction of European Carp (which competes for food resources) can also adversely affect local populations.

Diet: Yabbies (crayfish), small fish, aquatic insects and other invertebrates, and, sometimes, frogs. They will often bash their prey against the perch before swallowing it head first. Often watch Platypuses foraging underwater and catch any food items that are disturbed.

Nesting: Nest in a chamber up to 1 m long in an earthen creek bank. 5-7 white, rounded, glossy eggs.

Cool Facts: Often difficult to see until it quickly darts from a perch above water. Voice is a high-pitched, shrill, 'pseet-pseet'.

Common Name: Rainbow Bee-eater
Scientific Name: *Merops ornatus*

Size: 7-8 inches (17.5-20.3 cm)

Habitat: Australia; found during the summer in un-forested areas in most of southern Australia and Tasmania, however they are becoming increasingly rare in Suburban parks. They migrate north during the winter into northern Australia, New Guinea, and some of the southern islands of Indonesia.

Status: Least Concern. **Global population**: Unknown.

Diet: Flying insects, but, as their name implies, they have a real taste for bees. Rainbow bee-eaters are always watching for flying insects, and can spot a potential meal up to 150 feet away. Once it spots an insect a bee-eater will swoop down from its perch and catch it in its long, slender, black bill and fly back to its perch. Bee-eaters will then knock their prey against their perch to subdue it. Even though rainbow bee-eaters are actually immune to the stings of bees and wasps, upon capturing a bee they will rub the insect's stinger against their perch to remove it, closing their eyes to avoid being squirted with poison from the ruptured poison sac. Bee-eaters can eat several hundred bees a day, so they are obviously resented by beekeepers, but their damage is generally balanced by their role in keeping pest insects such as locusts, hornets, and wasps under control.

Nesting: Breeding season is before and after the rainy season in the north, and from November to January in the south. Rainbow bee-eaters are believed to mate for life.

The male will bring the female insects while she digs the burrow that will be their nest. The bee-eater digs its burrow by balancing on its wings and feet, and digs with its bill, then pushing loose soil backwards with its feet while balancing on its bill. The female bee-eater can dig about three inches down every day. The nest tunnel is very narrow, and the birds' bodies press so tightly against the tunnel walls that when the birds enter and exit their movement acts like a piston, pumping in fresh air and pushing out stale air. Rainbow bee-eaters have also been known to share their nest tunnels with other bee-eaters and sometimes even other species of birds. The female lays between 3 and 7 glossy white eggs, which are incubated for about 24 days until hatching. The young bee-eaters fledge after about 30 days and are fed by both parents, as well as any older bee-eaters that may not have paired off or have lost their mate. Cane Toads are known to prey on nestlings.

Cool Facts: The rainbow bee-eater's two central tail feathers are longer than the other tail feathers, and are longer in the female rainbow bee-eaters than in the males. Like all bee-eaters, rainbow bee-eaters are very social birds. When they are not breeding they roost together in large groups in dense undergrowth or large trees.

Common Name: Superb Lyrebird
Scientific Name: *Menura novaehollandiae*

Size: 39¼ inches (100 cm); female's tail: 74-84 cm, male's tail 80-98 cm in length.

Habitat: Australia; found in the forests of southeastern Australia, from southern Victoria to southeastern Queensland.

Status: Least Concern.
Global population: Unknown.

Diet: Mainly of small invertebrates found on the forest floor or in rotting logs.

Nesting: The male is the bearer of the most elegant of all tails. It takes seven years is required for the tail to fully develop. During courtship display, the male inverts his tail over his head, fanning his feathers to form a silvery white canopy. Young males and females have brown tail feathers which are camouflaged against the forest floor.

Superb lyrebirds breed in the depth of winter. Adult males start singing half an hour before sunrise from roosts high above the forest floor. Superb lyrebirds sing less often at other times of year but a stroll through their habitat on a rainy or

misty day will sometimes find them active.

Superb lyrebirds have a promiscuous mating system. During the breeding season adult females and males defend separate territories and only females care for young. A female may visit several males before she mates but it is not known if she mates more than once. The female lays a single egg and builds a domed nest often camouflaging it with ferns or moss. The chick spends about nine months with the female before becoming independent.

Cool Facts: The superb lyrebird has an extraordinary ability to accurately mimic a huge variety of sounds from phone rings to chainsaws to songs heard over the radio and the content of the calls are unique to each individual Lyrebird

Lyrebirds are ancient Australian animals. The Australian Museum has fossils of lyrebirds dating back to about 15 million years ago. The prehistoric Menura tyawanoides has been described from early Miocene fossils found at the famous Riversleigh site.

The Superb Lyrebird is featured on the reverse side of the Australian 10 cent coin.

A group of Lyrebirds is called a musket.

Common Name: Varied Sittella
Scientific Name: *Daphoenositta chrysoptera*

Size: 4 – 4 ¼ inches (10-11cm)

Habitat: Australia; endemic to Australia (widespread in mainland Australia) and New Guinea. Found in eucalypt woodlands and forests throughout their range. They prefer rough-barked trees like stringybarks and ironbarks or mature trees with hollows or dead branches.

Status: Least Concern. **Global population**: Unknown. Varied sittellas may have declined in some areas following the clearing of habitat and removal of woodland.

Diet: Insects by gleaning on tree trunks or branches, moving downwards or along branches, searching for insects. They land at the top of a tree and work downwards, searching and poking into cracks and under things, chattering noisily.

Nesting: The Varied sittella's nest is a deep open cup, like a cone, of bark and spider web, decorated on the outside with long pieces of bark, camouflaged to look like the fork or branch where it is placed. This species usually breeds cooperatively, with the breeding pair having several helpers. They will sometimes also breed in single pairs. Only the breeding female incubates the eggs and broods the young. All help to feed the young and remove faecal sacs. Breeding season occurs June to April. 3 eggs are laid and incubation lasts 13 days.

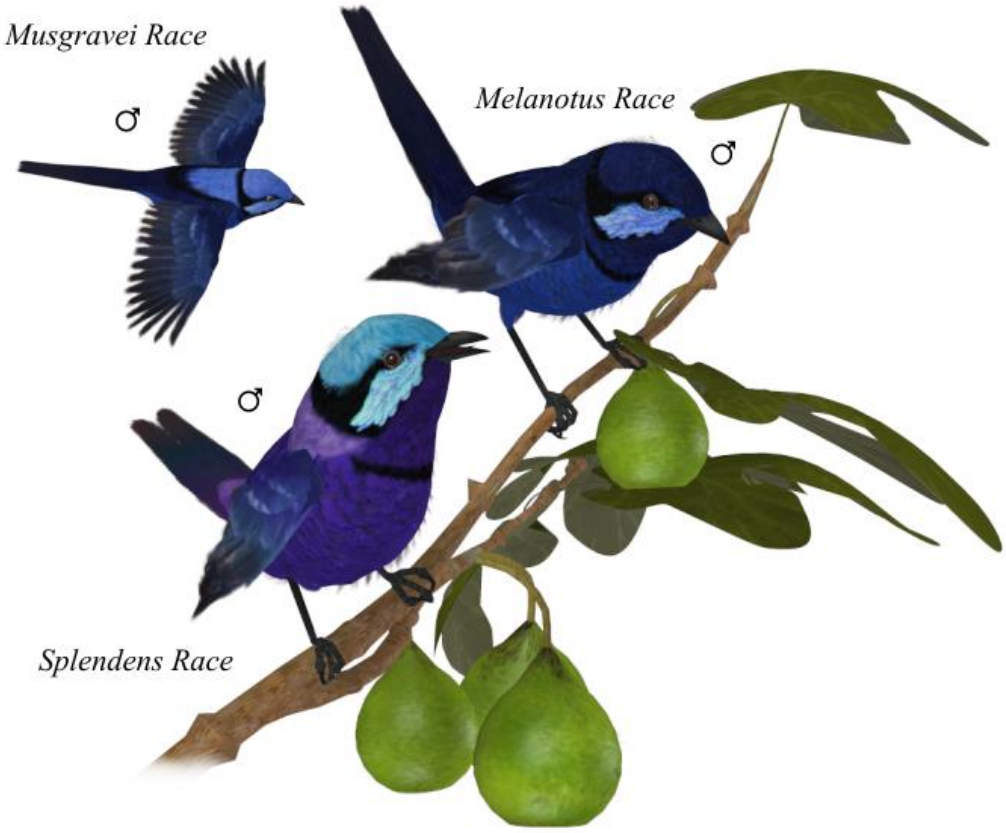
Cool Facts: The feet of the Varied Sittella are small but with very long toes for clinging onto branches. They move in spirals down trees, searching for food, and even hang below branches.

Common Name: Splendid Fairy-wren
Scientific Name: *Malurus splendens*

Size: 5 ½ inches (14 cm)

Habitat: Australia; found across much of the Australian continent from central-western New South Wales and southwestern Queensland over to coastal Western Australia. It inhabits typically dry and shrubby areas; mulga and mallee in drier parts of the country and forested areas in the southwest. The western subspecies *splendens* and eastern Black-backed Fairy-wren (subspecies *melanotus*) are largely sedentary, although the Turquoise Fairy-wren (subspecies *musgravei*) is thought to be partially nomadic. Forestry plantations of pine (*Pinus spp*.) and eucalypts are also unsuitable as they lack undergrowth.

Status: Least Concern. **Global population**: Unknown.



Unlike the eastern Superb Fairy-wren, the Splendid Fairy-wren has not adapted well to human occupation of the landscape and has disappeared from some urbanized areas.

Diet: Insects (mostly arthropods such as ants, grasshoppers, crickets, spiders and bugs) and supplements with seeds

Nesting: Exhibiting a high degree of sexual dimorphism, the male in breeding plumage is a small, long-tailed bird of predominantly bright blue and black coloration. Non-breeding males, females and juveniles are predominantly grey-brown in color; this gave the early impression that males were polygamous as all dull-colored birds were taken

for females. It comprises several similar all-blue and black subspecies that were originally considered separate species.

The Splendid Fairy-wren is notable for several peculiar behavioral characteristics; birds are socially monogamous and sexually promiscuous, meaning that although they form pairs between one male and one female, each partner will mate with other individuals and even assist in raising the young from such trysts. Male wrens pluck pink or purple petals and display them to females as part of a courtship display.

Several courtship displays by Splendid Fairy-wren males have been recorded; the 'Sea Horse Flight', so named for the similarity of movements to those by a seahorse, is an exaggerated undulating flight where the male, with his neck extended and his head feathers erect, flies and tilts his body from horizontal to vertical and by rapidly beating wings is able to descend slowly and spring upwards after alighting on the ground. The 'Face fan' display may be seen as a part of aggressive or sexual display behaviors; it involves the flaring of the blue ear tufts by erecting the feathers.

Another interesting habit of males of this and other fairy-wren species during the reproductive season is to pluck petals (in this species, predominantly pink and purple ones which contrast with their plumage) and show them to female fairy-wrens. Petals often form part of a courtship display and are presented to a female in the male fairy-wren's own or another territory. Outside the breeding season males may sometimes still show petals to females in other territories, presumably to promote themselves. It is notable that fairy-wrens are socially monogamous and sexually promiscuous: pairs will bond for life, but regularly mate with other individuals; a proportion of young will have been fathered by males from outside the group. Young are often raised not by the pair alone, but with other males who also mated with the pair's female assisting. Thus, petal-carrying might be a behavior that strengthens the pair-bond. Petal carrying might also be a way for extra males to gain matings with the female. In either case, the data does not strongly link petal-carrying and presenting to a copulation soon thereafter.

Breeding occurs from late August through to January, though heavy rain in August may delay this. The nest is built by the female; it is a round or domed structure made of loosely woven grasses and spider webs, with an entrance in one side close to the ground and well-concealed in thick and often thorny vegetation, such as Acacia pulchella or a species of Hakea. One or two broods may be laid during the breeding season. A clutch of two to four dull white eggs with reddish-brown splotches and spots, measuring 12 × 16 mm (½ × ⅝ in), are laid. Incubation takes about two weeks. The female incubates the eggs for 14 or 15 days; after hatching, nestlings are fed and their fecal sacs removed by all group members for 10–13 days, by which time they are fledged. Young birds remain in the family group as helpers for a year or more before moving to another group, usually an adjacent one, or assuming a dominant position in the original group. In this role they feed and care for subsequent broods

Cool Facts: Also known simply as the Splendid Wren or more colloquially in Western Australia as the Blue Wren.

Current taxonomy recognizes four subspecies: *M. s. splendens* in Western Australia, *M. s. musgravei* in central, *M. s. melanotus* in inland eastern Australia and *M. s. emmottorum* in southwestern Queensland. Initially, the three were considered separate species as they were described far from their borders with other subspecies. However, as the interior of Australia was explored, it became apparent there were areas of hybridization where subspecies overlapped. Thus in 1975, the first three forms below were reclassified as subspecies of *Malurus splendens.*

- ***M. s. splendens*****,** known as the Splendid- or Banded Fairy-wren, is found in much of central and southern Western Australia. This was the original form named by Quoy and Gaimard in 1830.
- ***M. s. melanotus*****,** known as the Black-backed Fairy-wren, was described by John Gould in 1841 as a separate species. It is found in the mallee country of South Australia (Sedan area north-east of Adelaide) through western Victoria, western New South Wales and into south western Queensland. It differs from the nominate subspecies in having a black back and whitish lower belly.
- ***M. s. musgravei*** was described in 1922 by amateur ornithologist Gregory Mathews as a separate species from the Lake Eyre Basin in central Australia. It is found in mulga and mallee country across much of South Australia and the southern Northern Territory. It has lighter blue or turquoise upperparts than the Splendid Fairy-wren, as well as a black rump. This is largely synonymous with what was known as *M. callainus* or the Turquoise Fairy-wren which had been collected by ornithologist Samuel White and named by John Gould in 1867. The original collection bearing the name *callainus* was deemed a hybrid between what is now called *musgravei* and *melanotus,* and hence *musgravei* was resurrected as the name for the Turquoise Fairy-wren.
- ***M. s. emmottorum*** was described from southwestern Queensland and given subspecific status in the 1999 review by Schodde and Mason. It was named after Angus Emmott, a farmer and amateur biologist in western Queensland.

Major nest predators include Australian Magpies, butcherbirds, Laughing Kookaburra currawongs, crows and ravens, shrike-thrushes as well as introduced mammals such as the Red Fox, domestic cats and the Black Rat. Like other species of fairy wrens, Splendid Fairy-wrens may use a 'Rodent-run' display to distract predators from nests with young birds. While doing this, the head, neck and tail of the bird are lowered, the wings are held out and the feathers are fluffed as the bird runs rapidly and voices a continuous alarm call.

Common Name: Mallee Emu-wren
Scientific Name: *Stipiturus mallee*

Size: 5 – 5 ¾ inches (13-14.5 cm); tail (8-9.5 cm)

Habitat: Australia; Endemic. It has a severely fragmented distribution in the Victorian and South Australian mallee regions. It occupies habitats containing hummock grassland, usually within low woodland dominated by mallee eucalypts. Eucalyptus and cypress pine. It also occurs in heath containing banksias or casuarinas. In Ngarkat, it can disperse at least 6 km into vegetation recovering from fire, 3-4 years after it has been burnt. Highest densities occur 8-10 years after fire, although it persists in vegetation 50 years old. Much apparently suitable habitat is unoccupied. Throughout its range it appears to be confined to relatively small discontinuous fragments of habitat

Status: Endangered.

Global population: 1,500-2000 with a decreasing trend. Past clearance for agriculture and livestock grazing has fragmented habitat, and the greatest current threat is large-scale wildfires within remnants, such as occurred in Billiatt Conservation Park. Recent declines in South Australia coincided with droughts and a sequence of extensive fires. This population may not be able to persist or reclaim its former distribution because it is surrounded by large areas of recently burnt heath. Following fires, mallee-heath requires 5-10 years of regeneration before it is suitable for the species. Relatively small changes in habitat quality could cause sudden local declines, and the loss of, or changes to peripheral habitat may affect core habitat. Mallee-heath is used in the east of this birds' range, and may mean that the strongholds of the species are at most risk from loss to single fire events.

This birds' habitat is now so fragmented that any single fire event could be catastrophic. The use of strategic fire-breaks has been unsuccessful in protecting subpopulations of this species. Drought also puts pressure on the species, especially in the west of its range, where populations may be thinly distributed as a result, and a long term drought could result in a crash in local populations. Habitat fragmentation has taken place within the area of Hattah-Kulkyne National Park and adjacent Crown land; the area is bisected by the Calder Highway and a railway line, and a swathe of habitat has been removed beneath power lines. Other developments threatening further fragmentation include plans submitted for an industrial toxic waste facility at Nowingi in an area of densely occupied habitat3, in a location which is key to the species's long-term survival, and the Mildura fire plan has proposed to burn a 250 m wide strip down the west side of the Calder Highway. If suitable habitat does not become available to replace current habitat that deteriorates through old age, as compounded by drought and fires, then numbers of this species have the potential to decline sharply within decades

Diet: Insects (mostly arthropods such as ants, grasshoppers, crickets, spiders and bugs) and supplements with seeds

Nesting: Emu-wrens breed in pairs, with the male defending a small territory with regular bursts of song. The female builds a oval-shaped dome nest with a round entrance at the side. It is made from and lined with grasses and placed near the ground in a grass tussock or dense shrubbery. The female incubates the eggs and both parents feed the young, which remain with them for up to two months after fledging.

Cool Facts: This bird is often confused with other wrens; the Southern Emu-wren has longer tail and is darker with more extensive streaking on crown. Fairy-wrens are larger, unstreaked, with non-filamentous tails. The Mallee Emu-wren's voice trills and twitters like *Malurus spp*., but higher-pitched. The emu-wrens are named for their six wispy, emu-like tail feathers.

It is very secretive and often cocks its' tail straight up. Look and listen for on calm days in dense spinifex Triodia.

Common Name: Weebill
Scientific Name: *Smicrornis brevirostris*

Size: 3 – 3 ½ inches (8-9 cm)

Habitat: Australia; found in woodlands and forests throughout mainland Australia. The Weebill inhabits almost any wooded area, with the exception of the wettest forests, but favors open eucalypt forests. It spends most of its time in the canopy, in pairs or small groups. The birds stay in the same area throughout the year.

Status: Least Concern.
Global population: Unknown.

Diet: Mostly insects and larvae

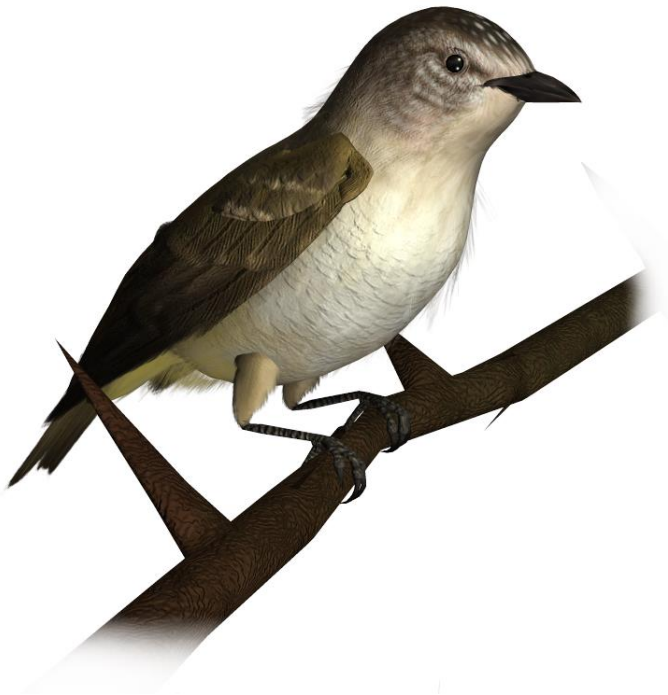
Nesting: Breeding season starts in July and May, with some variations throughout range. The Weebill's nest is a neatly woven dome, made from grasses and other fine vegetation. It has a narrow spout-like entrance towards the top. The interior of the nest is lined with feathers and soft vegetable matter. The female alone incubates the eggs, but both parents care for the young birds. 2 to 3 eggs are laid, incubating for 12 days.

Cool Facts: Weebills are some of Australia's smallest birds, with northern Australian Weebills even smaller than those in the south.

Common Name: Yellow-rumped Thornbill
Scientific Name: *Acanthiza chrysorrhoa*

Size: 4-5 inches (9.5-12 cm)

Habitat: Australia; wide distribution across western, southern and eastern Australia as well as Tasmania; it is absent from the north coast of Western Australia, parts of central Australia, northern Queensland and central and northern Northern Territory. The species inhabits a wide range of habitats, including open forest and woodland, grasslands, savannah as scrubland.



Status: Least Concern. **Global population**: Unknown.

Diet: Insectivorous; major prey items include ants, beetles, bugs and lerps. Other items eaten include spiders, flies and seeds. The species usually forages in small groups of between 3-12 individuals, and may join mixed species-flocks with other small insectivorous passerines such as the Speckled Warbler (*Chthonicola sagittatus*), Weebill (*Smicrornis brevirostris*), and other species of thornbill.

Nesting: Breeding takes place from July to December, with one, two or even more broods a year. Nesting usually occurs as a pair, but sometimes one to three helpers will assist the breeding pair. The nest is a messy dome-shaped structure made of dried grass and other vegetation hidden low down among dense foliage or shrubs, or sometimes in vines or mistletoe. Atop the dome is a cup-shaped depression which serves as a false nest, while the real nest is inside with a concealed entrance. Three or four white oval eggs sometimes marked with pale red-brown measure 18 x 13 mm. The female incubates the clutch, and the clutch takes around 16–18 days to hatch. On hatching both parents help feed the brood. The nestling period is around 19 days. The species is parasitized by the Shining Bronze-Cuckoo and the Fan-tailed Cuckoo. Many species of bird take eggs and chicks from the nest, including Red Wattlebirds, currawongs, Australian Magpies and ravens, and many honeyeaters will destroy their nests in order to steal nesting material. Ringing studies have found that the species can live for up to nine years.

Cool Facts: The Yellow-rumped Thornbill is the largest species of thornbill.

Common Name: White-fronted Honeyeater
Scientific Name: *Phylidonyris albifrons*

Size: 5 – 7 inches (13-18 cm)

Habitat: Australia; found throughout western New South Wales, western Victoria, South Australia and Western Australia, mainly in the arid and semi-arid zones. It may also be found at scattered sites in the Northern Territory and is a rare visitor to the western arid zone of Queensland. Typically found in arid and semi-arid shrublands and woodlands, especially mallee and acacia scrubs. May be found in semi-arid coastal areas, such as the Great Australian Bight. Is occasionally found in dry open forests and woodlands, and may be found along roadsides and occasionally in gardens.

Status: Least Concern. **Global population**: Unknown.

Diet: Nectar, but also on insects and sometimes honeydew. It forages mainly at flowers in trees and shrubs, and may be seen feeding in mixed flocks with other honeyeaters such as the Brown, Singing or Spiny-cheeked Honeyeaters.

Nesting: Breeding season: August to November. Lays One to three eggs, usually two
Incubation: 12 days Time in nest: 11 days

Cool Facts: While adult White-fronted Honeyeaters are hard to confuse with other species, the young may be confused with female or young Crescent Honeyeaters, P. pyrrhoptera. However, they tend to be darker, with a prominent dark 'bib' and more streaking on the underbody, and have very different calls.

In hot weather, adult White-fronted Honeyeaters may straddle nests to shade their young.

Common Name: Eastern Whipbird
Scientific Name: *Psophodes olivaceus*

Size: 10 ¼ - 11 ¾ inches (26-30 cm)

Habitat: Australia; range is from northern Queensland to Victoria along the coastal band of eastern Australia. Eastern Whipbirds live in wet habitats, including rainforest, eucalypt forest and dense scrub near watercourses, in dense vegetation near the ground.

Status: Least Concern. **Global population**: Unknown. In the north, the Eastern Whipbird's distribution has become patchy where its habitat has been cleared.

Diet: Insects and other small invertebrates, which are caught on the ground by bill. Feeding takes place alone, in pairs or in small family groups, recovering insects from leaf litter on the forest floor

Nesting: Young whip birds are generally duller, with a smaller crest. The white cheek patch is absent in very young birds, and increases in size as the birds mature.

Whipbirds are monogamous. A breeding pair of Eastern Whipbirds occupies a territory, which is defended year round, with the mates staying together for many years. Breeding occurs form late winter through spring; a loosely built bowl of twigs and sticks lined with softer material such as grasses, located in shrubs or trees less than 3-4 m (10-12 ft) above the ground. Several broods may be laid the an extended breeding season. A clutch of 2-3 eggs, pale blue with blackish splotches and spots, measuring 28 x 20 mm. Female incubate and brood the eggs and nestlings, though males help feed and take a more active role in looking after fledglings for 6 weeks after leaving the nest. Sometimes two broods are raised in a single season.

Cool Facts: These birds are secretive, but can be curious, and will be seen if the observer remains patient. The Eastern Whipbird is famous for its call which sounds like the crack of a whip. The call is actually made by two birds, the male beginning the call with a long whistle, and the female ending it with the whip crack sound. The sound is heard at the beginning of the theme song to "Skippy the Bush Kangaroo".

Common Name: Grey-crowned Babbler
Scientific Name: *Pomatostomus temporalis*

Size: 10 ½ - 11 ½ inches (25-29 cm)

Habitat: Australasia; Australia, Indonesia, and Papua New Guinea. The Grey-crowned Babbler is found in open forests and woodlands, favoring inland plains with an open shrub layer, little ground cover and plenty of fallen timber and leaf litter. May be seen along roadsides and around farms. In south-east Melbourne, small populations survive on golf courses.

Status: Least Concern to near threatened. **Global population**: Unknown. Grey-crowned Babbler populations have declined throughout their range as a result of land-clearing practices that leave habitats fragmented. When groups become isolated, numbers decline to a level where they cannot continue to successfully breed. Habitat degradation is also a factor in declines, with fuel-reduction burning, grazing, weed invasions and removal of timber decreasing leaf litter build-up, which then reduces the amount of invertebrate food available. Eastern populations are near threatened, while they are classified as endangered in Victoria and South Australia. It is locally extinct in the south-eastern region of South Australia. Overall populations have declined by 95% since European settlement.

Diet: Grey-crowned Babblers feed on insects and other invertebrates and sometimes eat seeds. They forage in groups of two to fifteen birds on the ground among leaf litter, around fallen trees and from the bark of shrubs and trees (they tend to use trees more than other babblers).

Nesting: Grey-crowned Babblers live and breed in co-operative territorial groups of two to fifteen birds (usually four to twelve). Groups normally consist of a primary breeding pair along with several non-breeding birds (sometimes groups may contain two

breeding pairs or two females that both breed). Most members of the group help to build nests, with the primary female contributing the most effort. Two types of nest are built: roost-nests (usually larger and used by the whole group) and brood-nests (for the breeding females), and often old nest sites are renovated and re-used from year to year. The large domed nests are placed in a tree fork 4 m - 7 m high and are made of thick sticks with projections that make a hood and landing platform for the entrance tunnel. The nest chamber is lined with soft grass, bark, wool and feathers. The brooding female (sometimes more than one) is fed by the other group members and all help to feed the nestlings. Larger groups tend to raise more young, and two broods are usually raised per season. Breeding season is July to February and usually 2-3 eggs are laid.

Cool Facts: The Babbler has several other common names such as the Yahoo, Grey-crowned Chatterer, Dog-bird, Barker, Barking bird and Happy-Jack. The Grey-crowned Babbler lacks the dark crown of other babblers and has a yellow rather than a dark eye.

The old nests of Grey-crowned Babblers are used by a variety of other birds: Blue-faced Honeyeaters sometimes nest on top of the dome. Yellow-rumped Thornbills may nest underneath and are even tolerated in active nests.

Two subspecies are recognized within Australia and New Guinea.

- ***Pomatostomus temporalis temporalis*** - This subspecies occurs within Australia in the states of Victoria, eastern Queensland (including Cape York), New South Wales and south-eastern South Australia It is a vagrant or accidental visitor to the Australian Capital Territory. It is also the subspecies believed to occur within New Guinea

- ***Pomoatostomus temporalis rubeculus*** - This subspecies occurs in Australia within the states of Western Australia, Northern Territory, western Queensland and a small area of northern South Australia.

The breast color is usually used as the distinguishing morphological character between the subspecies, with a creamy white breast grading to mid-grey in *P. t. temporalis* and a mid to deep rufous brown breast in *P. t. rubeculus*. Other differences relate to brow coloration, facial bands through the eye, tail length and overall size. A zone of intergradation occurs between the two subspecies in north-central Queensland.

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….my beta testers (Bea, FlintHawk, Kelvin, Jan, Nancy, Sandra and Walter) and Kat (QA) and Rhonda (my wife)

Species Accuracy and Reference Materials

Many birds of the same species do vary considerably in color. This package tries to emulate the colors and markings in the most commonly found variants.

The author-artist has tried to make these species as accurate to their real life counterparts as possible. With the use of one generic model to create dozens of unique bird species, some give and take is bound to occur. The texture maps were created in Painter with as much accuracy as possible. Photographic references from photographs from various Internet searches and several field guides were used.

Field Guide Sources:

Wikipedia
Birds in the Backyard http://birdsinbackyards.net
OZ Animals http://www.ozanimals.com
Jigger Juice: Plants of the Murray Mallee http://www.jiggerjuice.net/plants/index.html
FloraBase: Western Australian Flora http://florabase.calm.wa.gov.au/
WWF http://www.worldwildlife.org

Plant model resources:

Obj Format:
Greenworks/X-frog has some Australian plants available in their plant libraries; most notable is from their Oceania libraries. Many of their plants are also available through TurboSquid individually.

Vue:
Cornucopia has some resources; most notably is RealmArt's Australian Outback Terrain which has some Mallee eco-systems. Martin Frost has an excellent Mangrove eco-system set and Eucalyptus set.

Mangroves and eucalyptus trees are also available by searches on Cornucopia


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