Flinders Lofty Block

Photo ©SATC/Adam Bruzzone

Bunyeroo Valley, Flinders

The Flinders Lofty Block bioregion is located in southeast South Australia and includes the Flinders and Olary Ranges.

Climate varies from north to south. The northern section of the bioregion has a semi-arid and arid climate with hot dry summers and cool mild winters. The southern part of the bioregion has a Mediterranean climate with warm to hot summers and cool moist winters. Generally, the region receives between 250 to 650mm of rainfall per year, though areas in the higher parts of the Mt Lofty Ranges can receive over 1000mm per year. Most of the rainfall is in winter, which is more reliable in the south.

The land in the north of the bioregion is mainly used for grazing and nature conservation and the land in the south is used for growing cereal crops, grazing and urban development. Forestry and winemaking are significant land uses in the south of the region.

Biodiversity and habitat

This bioregion is mostly made up of mountain ranges and wide flat plains. Large areas in the south were cleared for agriculture in the early days of European settlement.

There are many different types of vegetation in this bioregion including tussock grasslands, chenopod and samphire shrublands, acacia forests and woodlands, *Callitris* forests and woodlands, eucalypt woodlands, hummock grasslands and mallee woodlands and shrublands.

Photo ©SATC/Adam Bruzzone

Wilpena Pound

Threatened plant species include the Bayonet Spider-orchid and White Beauty Spider-orchid. Threatened bird species include the Spotted Quail-thrush and Plains-wanderer. The Pygmy Bluetongue Lizard is an endangered reptile found in this region. Vulnerable mammals include the Southern Brown Bandicoot and Yellow-footed Rock-wallaby.

Threats

Threats to the Flinders Lofty Block bioregion and its dependent species include:

- problem weeds such as Ward's Weed, Onion Weed, Boxthorn, Wheel Cactus, Bridal Creeper, Veldt Grass and Gorse
- invasive animal species include feral goats, foxes, rabbits, wild dogs, feral cats and starlings.

Stirling in the Adelaide Hills receives around 1100mm rainfall per year making it one of the wettest place in South Australia.

Conservation

Nature reserves include Flinders Ranges, Gammon Ranges and Mt Remarkable National Park.

A number of properties in the bioregion that were used for sheep and cattle grazing are now used for conservation purposes. The Yellow-footed Rock-wallaby was in decline in the Flinders Ranges due to impact of goats and rabbits. Recently, Operation Bounceback has enabled populations of the Yellow-footed Rock-wallaby to recover.

You can help conserve the Flinders Lofty Block bioregion and its dependent species by:

- supporting efforts to conserve threatened species in your area by joining a local organisation such as a Landcare or catchment group, or a 'friends of' group, or by volunteering for Conservation Volunteers or Trees for Life
- protecting areas of native bushland in your area.

For further information

Public enquiries

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Eastwood: (08) 8273 9100
Gawler: (08) 8523 7700
Lobethal: (08) 8389 5900
Willunga: (08) 8550 3400

Education enquiries

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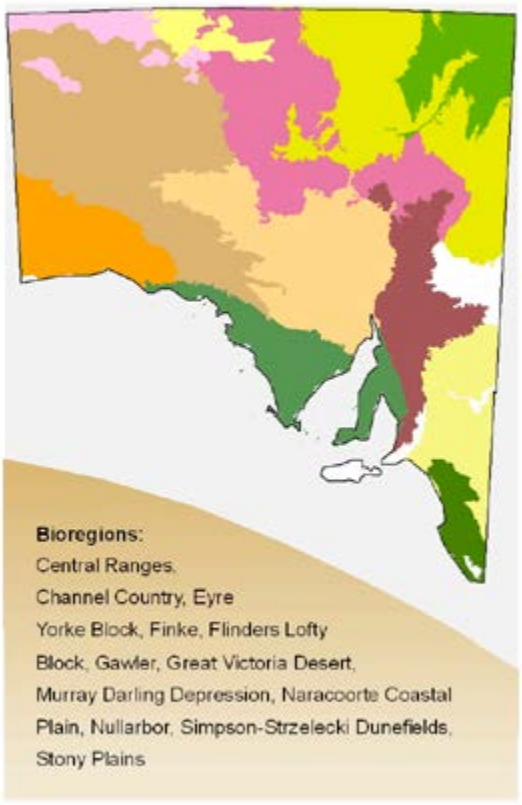
Southern Fleurieu: (08) 8551 0524

FIS: 92288

Australian Bustard

Ardeotis australis



Map courtesy of Mapping Unit, Customer and Commerical Services.

Map is not intended to indicate spatial distribution of the species, only the bioregions in which the species is found.

One of Australia's largest birds, the Australian Bustard is up to one metre tall with a wingspan of up to 2.3 metres! Heavy bodied, ground-dwelling birds, males (5-10 kilograms) are up to three times heavier than females (2-3 kilograms). An upright posture, long legs and a black cap of feathers on their heads make them easy to recognise. This bird has the distinction of being Australia's heaviest flying bird. When disturbed these birds walk away slowly (looking quite superior with their heads in the air!). They are strong in flight and sometimes move from one area to another.

Diet

The Australian Bustard is omnivorous, foraging on insects, young birds, lizards, mice, leaves, seeds and fruit. In the arid parts of their range, Australian Bustards are primarily nomadic, tracking rainfall and food sources opportunistically across the landscape.

Breeding

Australian Bustards breed once a year using what is called a 'lek' mating system. This means that when mating, each male uses a 'display site' to try and attract a female. Males put on a show by inflating a large throat sac and strutting around with their tails up making a loud, deep, roaring noise. Females then choose which male to mate with on the basis of their size and display. In the drier arid areas of SA they may not use the lek system, some being more solitary and even monogamous.

From September to November, eggs are laid in a hollow on the ground where the female has a good view of approaching threats while being well camouflaged. Females incubate one to two, rarely three, eggs for around 24 days. After mating males play no further part in raising the chicks.

Habitat

The Australian Bustard lives on dry plains, grasslands and open woodlands, and they favour tussock and hummock grasslands. Occasionally they are seen in modified habitat areas such as farmlands and golf courses.

Fire followers! Groups of Australian Bustards have been seen flocking to fires to eat animals flushed out or killed by them.

Threats

Past hunting reduced their populations and illegal hunting continues. Predation by cats and foxes, habitat degradation from overgrazing rabbits and stock, and habitat clearance and alteration are other major threats to the Australian Bustard. Secondary poisoning from rabbit baiting can also pose a threat to them. These threats have seen a large scale decline in their population in south-east Australia. They are largely now found in northern Australia and southern New Guinea.

Conservation

You can help the Australian Bustard by:

- keeping our wildlife wild! Bustards could become more vulnerable to illegal hunters if they are fed or tamed and if disturbed their nests could fail
- being a responsible pet owner – desex your pets, keep them inside at night and don't take them into national parks.

Photo by Mark Ziembicki — Australian Bustard

Photo by Bruce Doran — Australian Bustard

For further information

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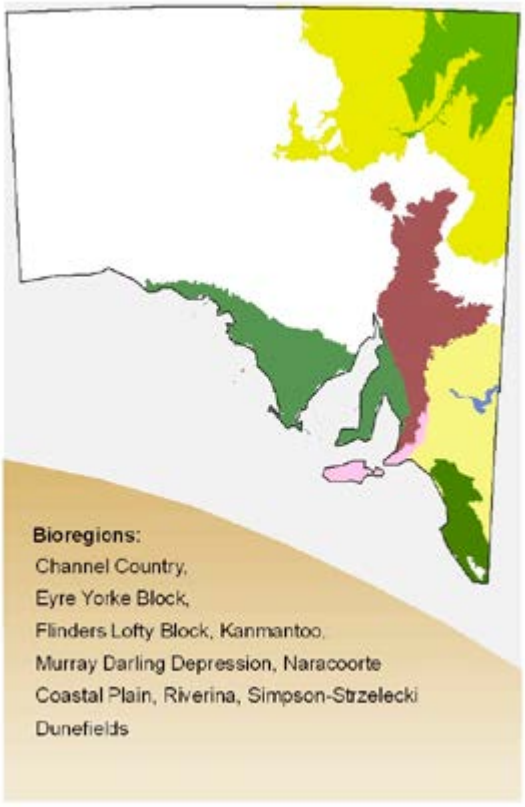
Bush Stone-curlew

Burhinus grallarius



Map courtesy of Mapping Unit, Customer and Commerical Services.

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Bush Stone-curlews are ground-dwelling birds; this means that they roost, feed and nest on the ground. Their big yellow eyes and long legs with knobbly knees allow them to be easily distinguished from other birds. They can live more than 20 years and grow to 50-60 cm tall.

Bush Stone-curlew are nocturnal, and are famous for the wailing sound they make at night. They are such secretive birds that sometimes this call is the only way to know that they are around.

During the day they rest crouching down, head outstretched. When disturbed they tend to freeze instead of flying away, which can make them especially vulnerable to predators. Historically they travelled in groups of 50–100 but it is now rare to see more than four birds together.

Diet

These birds eat insects, small frogs, lizards and snakes.

Breeding

Bush Stone-curlews nest from August to February and usually lay two eggs in a scrape (small bare patch) on the ground. These eggs are mottled brown and grey for camouflage and are incubated by both parents. Unfortunately, only 15 per cent of nesting attempts in the South East of SA are successful.

Habitat

Bush Stone-curlew prefer 'untidy' landscapes covered in fallen timber and debris. The mottled grey-brown colour of their feathers makes them well camouflaged amongst the woody debris of their habitat. These unique birds have disappeared from around 90 per cent of their former habitat on the South Australian mainland.

Threats

Foxes and cats are the Bush Stone-curlew's main predators. The clearance of open woodlands has led to the fragmentation and destruction of suitable habitat. The removal of timber makes them vulnerable to predation from feral animals. Other threats include eggs being trampled by stock and nest disturbance from pets and people.

Aboriginal People associated the curlews with ghosts because of the wailing cries they make at night!

Conservation

You can help protect the Bush Stone-curlew by:

- avoiding taking firewood from woodland environments; these are an important part of the curlew's habitat
- keeping pets inside at night and walk dogs on a lead in woody areas – cats and dogs can kill native birds like the curlew
- trying not to disturb Bush Stone-curlews if you come across them.

Photo by Dan Harley

Bush Stone-curlew

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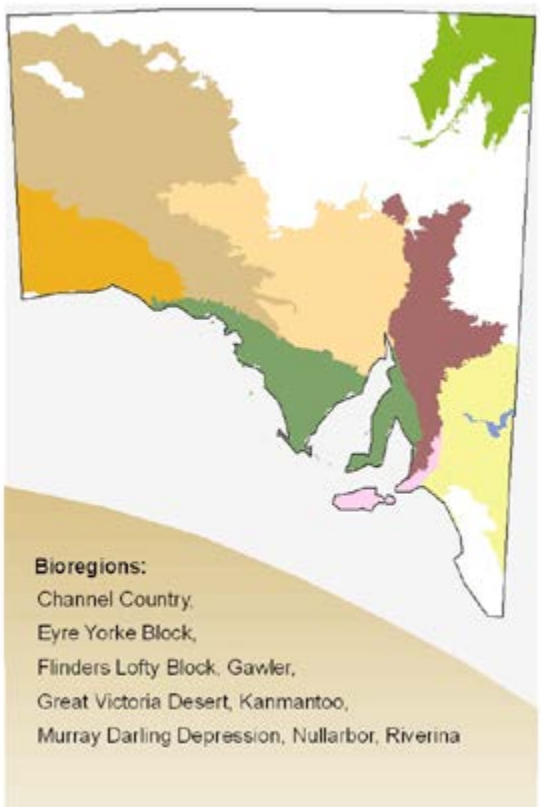
Carpet Python

Morelia spilota



Map courtesy of Mapping Unit, Customer and Commerical Services.

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Biodiversity

Carpet Pythons are semi-arboreal snakes (sometimes spending time in trees) which are non-venomous and popular as pets around the world. They are nocturnal, grow up to three metres long and can weigh up to 5kg. They are very strong and are often the largest predator in their ecological community. The skins of different individuals show many colour variations ranging from black with dark brown spots to a golden colour. Their patterns often help them to remain camouflaged in their habitat. Carpet Pythons feature in many creation stories from different groups of Aboriginal People.

Diet

Carpet Pythons are constrictors, meaning they kill their prey by suffocation. Their diet consists mainly of small mammals, bats, birds and lizards.

Breeding

Carpet Pythons are usually solitary snakes and only group together to breed. Females are oviparous (egg-laying) and lay 10–40 eggs at a time either in a tree hollow or a burrow deserted by another animal. They then coil around them and use muscular contractions to increase their body temperature and keep the eggs warm. Young are around 30 cm long at birth. They can live for up to 20 years and reach maturity at around three years of age.

Habitat

They are found in areas of Australia, Indonesia and New Guinea. Once widespread in south-east Australia, they have steadily declined in number. In the wild they are often associated with River Red Gum habitat, but can also be found in rocky areas and other habitats.

Carpet Pythons sometimes shelter in roof spaces and pump houses and provide a natural vermin control service as they eat rats and mice.

Threats

Carpet Pythons are taken from the wild for the pet trade and if not looked after properly many die in captivity. In the wild they are preyed upon by foxes and dogs. They are also threatened by habitat loss (e.g. loss of River Red Gums along the River Murray) and also by a reduction in their prey.

They have a highly sensitive heat-detecting organ on the scales of the lower jaw (Jacobsons or Vomeronasal organ). This gives them a thermal image of warm-blooded creatures in the dark.

Conservation

You can help the Carpet Python by:

- not disturbing them – if you see a Carpet Python in the wild, just look from a distance
- not killing snakes unnecessarily if you come across one in or around home – call someone to take it away for you
- visiting Cleland Wildlife Park to see and find out more about Carpet Pythons and other native animals.

Photo by Tony Robinson

Carpet Python

Photo by Tony Robinson

Carpet Python

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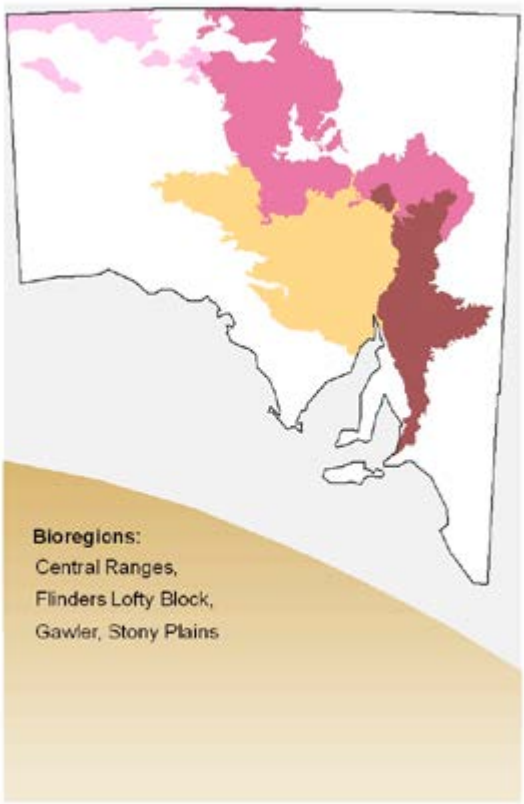
Chesnut-breasted Whiteface

Aphelocephala pectoralis



Map courtesy of Mapping Unit, Customer and Commerical Services.

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Chestnut-breasted Whitefaces are just 10cm long with a rounded, robust shape. These tiny birds are easy to identify thanks to the broad chestnut band across their breast that gives them their name. They have dark grey flight and tail feathers and white underparts.

Usually seen in pairs or small groups, they are sometimes mixed in with flocks of other small birds such as Banded *(A. nigricincta)* or Southern *(A. leucopsis)* Whitefaces, Wrens or Cinnamon Quail-thrushes *(Cinclosoma cinnamomeum)*. When disturbed they fly close to the ground to habitat such as low bushes or stony ground where they can use camouflage to escape predators.

The first Chestnut-breasted Whiteface was described in 1871 but the species was only rarely recorded in the following years. Relatively quiet birds, Chestnut-breasted Whitefaces have a soft, twittering call. Their numbers are thought to be generally stable. A survey undertaken in 1990 found around 6000 birds and another done in 1999 found a similar number. However, they are no longer found in some areas in which they were historically recorded and this is due to habitat degradation.

Diet

Chestnut-breasted Whitefaces eat seeds and insects on the ground.

Breeding

It wasn't until 1968 that ornithologists managed to find this secretive bird's nests and eggs. They build bulky, dome-shaped nests out of twigs in bushes (usually Low Bluebush). These nests have a side entrance and are lined with feathers. Clutches of two eggs are laid at a time.

Habitat

They live on elevated stony plains in the arid central regions of Australia. Scattered perennial shrubs such as Low Bluebush *(Maireana astrotricha)* provide essential cover.

Threats

Rabbits and stock grazing on shrubs, such as the Low Bluebush, on which this species depends, is a threat to the Chestnut-breasted Whitefaces' survival. Opal mining and exploration activities can also destroy or degrade habitat. Changed fire patterns can lead to less food and habitat areas being available to them.

A true local! The Chestnut-breasted Whiteface is one of only two bird species endemic to SA.

Conservation

You can help protect the Chestnut-breasted Whiteface by:

- grabbing a pair of binoculars, doing some birdwatching in your local area and finding out more about different species and why some are threatened
- joining a conservation group in your local area
- getting involved with revegetation projects.

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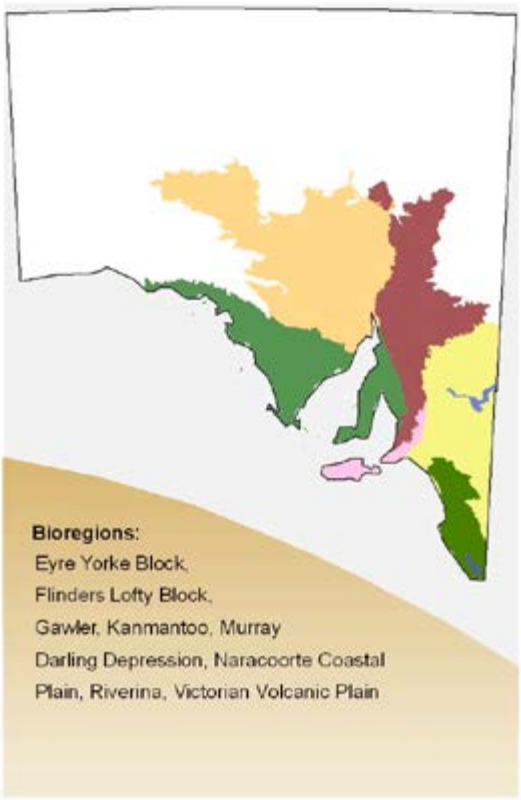
Common Brushtail Possum

Trichosurus vulpecula



Map courtesy of Mapping Unit, Customer and Commerical Services.

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Common Brushtail Possums are nocturnal marsupials. Silver grey in colour, Common Brushtail Possums have pale undersides and dark brown/black brushy tails. They are about the size of a cat and males are bigger than females. These animals live for 10-12 years in the wild. Usually solitary, they communicate with each other with hissing and growling/cough-like sounds, especially when mating or warning off intruders.

While rare and threatened in some parts of their native habitat in Australia, these possums are bothering our neighbours. Common Brushtail Possums were introduced to New Zealand in 1837 to establish a fur trade. They are now one of the most signficant feral pests in the country, as they damage the environment and the farming industry.

Diet

They are predominantly herbivorous and much of their diet consists of leaves, flowers and fruit, however they will occasionally eat insects, eggs and meat.

Breeding

Mature at one year of age, Common Brushtail Possums usually have one baby (a joey) at a time in autumn. There is also a smaller breeding season in spring. After birth, joeys spend around 120 days suckling in their mother's pouch. After this, they can be seen travelling on their mother's back and getting in and out of the pouch until they are fully weaned and independent.

Habitat

Common Brushtail Possums are found in Eucalyptus and Sheoak woodlands. As arboreal animals, they make their nests (also known as dens) in tree hollows or other dark confined spaces such as hollow logs, dense vegetation or cork crevices. Some have adapted to life in the suburbs and enjoy eating planted gardens. Some also make their dens in roof spaces. They are territorial animals and mark their home ranges with scent glands located under their chins, on their chests and at the base of their tails.

Threats

In South Australia, Common Brushtail Possums are becoming less common, especially in arid areas where drought conditions have reduced their food sources. They are only common in the Adelaide region and on Kangaroo Island. Habitat fragmentation and loss of tree hollows for nesting are also threats. Changed fire patterns and predation by foxes, dogs and cats are other problems as they are increasingly living in the same areas as these animals. Competition for food and relocation by humans are other problems they face.

Pruning services! When feeding on Mistletoe, the Brushtail Possums break off parts of the plant, having a similar effect to pruning. Mistletoe is a native parasite that can kill gum trees, and possums help keep it under control.

Conservation

You can help the Common Brushtail Possum by:

- conserving native vegetation on your property
- not relocating possums without advice and approval as they are very territorial and many of them die when relocated
- keeping trees with hollows in them even if they are dead
- putting up nest boxes on your property.

Photo by SATC, Richard Smyth

Common Brushtail Possum

For further information

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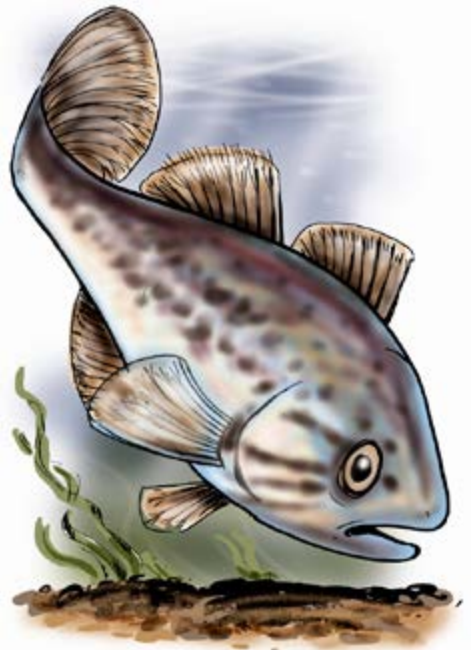
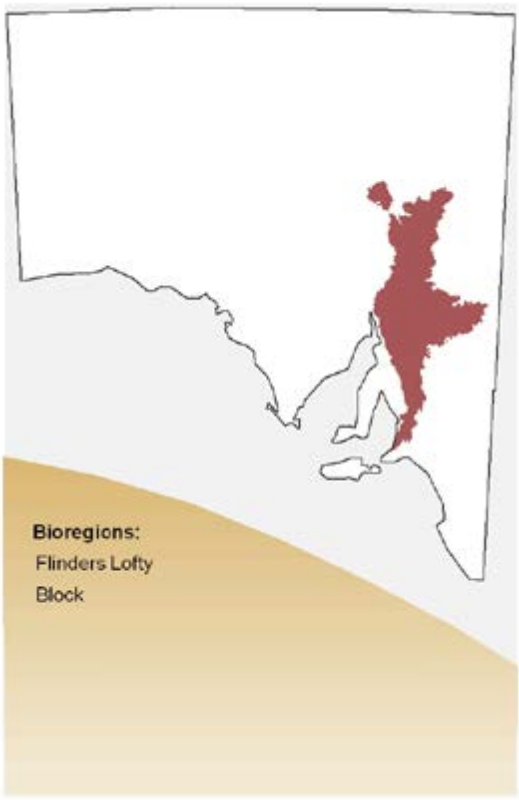
Flinders Ranges Purple-spotted Gudgeon

Mogurnda clivicola





Map courtesy of Mapping Unit, Customer and Commerical Services.

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Flinders Ranges Purple-spotted Gudgeons are robust freshwater fish that can grow up to 15cm long (but are usually five to eight cm). They have rounded heads and tails, small mouths, and dark to yellowish brown backs, fading to lighter brown/cream bellies. Blue and rust coloured spotting on their sides gives them their name.

Diet

As opportunistic predators, they eat whatever food is available in their habitat including freshwater invertebrates such as worms, mosquito fish, dragonfly as well as midge and mosquito larvae.

Breeding

Spawning usually occurs in spring and summer. After mating, females attach their transparent eggs to a hard surface and males take care of them. Eggs hatch in three to eight days at temperatures of 20 – 28°C. Newly hatched fish are about 4mm long and juveniles stay together in schools until they become mature at 6 to 7cm long. At this size they start to become territorial and behave like adults.

Habitat

The Flinders Ranges Purple-spotted Gudgeon is endemic to South Australia. They occur along a few kilometers of Balcanoona Creek in the Gammon Ranges National Park in the northeast Flinders Ranges in rocky stream habitat areas that are maintained by springs thought to come from local rock aquifers. In other areas of the Flinders Ranges they can be found in isolated water holes along rocky creeks. They can only move to new areas during flooding events. They prefer slow flowing to still water and need physical cover and suitable hard objects for spawning.

Threats

Threats to the Flinders Ranges Purple-spotted Gudgeon include loss of habitat through destruction, disturbance or modification. Only small fragmented populations exist, therefore any small changes, or natural chance events such as storms, leave each of them very vulnerable to extinction.

Competition with introduced species, such as Gambusia *(Gambusia holbrooki* – also known as Mosquitofish), commercial collection for aquariums and predation by introduced fish such as redfin are other threats. Cancer, possibly from increased UV as a result of climate change is also a problem.

After a female gudgeon lays her eggs on a hard surface the male guards them and fans them with his fins to keep them oxygenated!

Conservation

The Flinders Ranges Purple-spotted Gudgeon is listed as Vulnerable and is therefore a protected species. Management programs are in place, that aim to maintain and protect the habitat of this species.

You can help the Flinders Ranges Purple-spotted Gudgeon by:

- doing your bit to stop climate change by being wise with your energy use at home
- supporting our national parks – check the 'volunteer' section of www.environment.sa.gov.au to see if there are projects you can volunteer on in your local area.

Photo by Michael Hammer

Flinders Ranges Purple-spotted Gudgeon

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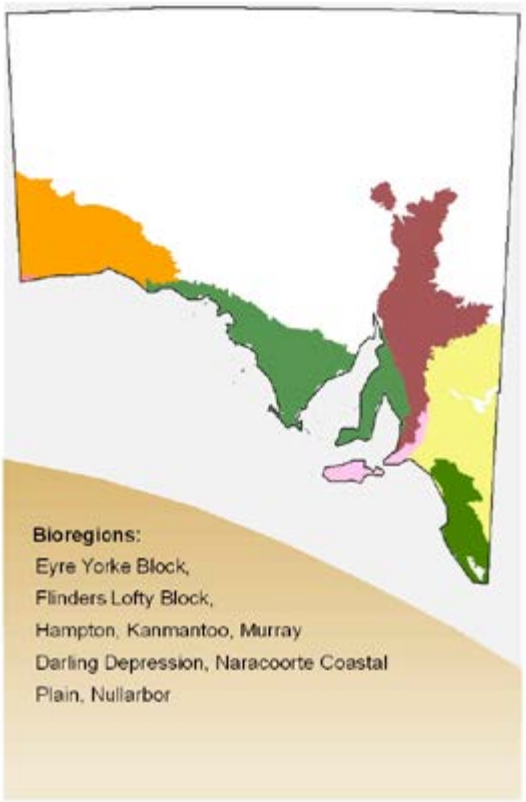
Heath Goanna

Varanus rosenbergi



Map courtesy of Mapping Unit, Customer and Commerical Services.

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Also known as Rosenberg's Goannas, Heath Goannas are powerful reptiles with strong limbs, sharp curved claws and long muscular tails. They reach up to 1.5 metres in length. Large curved teeth make it easier for them to hang onto their prey. Like all reptiles, Heath Goannas have limited ability to control their own body temperatures via their own metabolism and need to bask in the sun for at least half an hour each day before being active.

Diet

Their diet includes carrion, insects, birds, eggs, reptiles and small mammals. They sense prey by flicking their forked tongues and transferring the scent to sensory organs (Jacobson's organ). This organ is a common feature of many reptiles.

Breeding

Heath Goannas lay their eggs in active termite mounds. In mid to late summer the pregnant female will dig a tunnel into their chosen mound and lay 10–17 eggs. They then seal the nest and both the male and female guard the mound to ward of potential predators. Decaying material within the mound and the activity of the termites creates a warm, humid atmosphere, perfect for incubation. The eggs hatch in eight months after which the young slowly dig an escape tunnel. This can take them weeks, and they continue to use the mound as shelter for several months as they grow.

Habitat

Heath Goannas live in a variety of habitats from coastal and desert heaths to humid woodlands and sclerophyll forests. Kangaroo Island is an important refuge for Heath Goanna as they have become quite rare on the mainland. They are the largest land predator on the island. They find shelter in burrows, hollow logs and rock crevices at night. Several goannas might use the same burrow; they usually have connected tunnels and several exits.

Threats

Habitat loss and fragmentation is a major problem for these goannas. The removal of woody debris necessary for termite nesting can impact of their ability to nest. The juveniles especially are threatened by predation by cats, dogs and native predators. Fast moving vehicles, illegal hunting and collection, poisoning/ toxic pesticides, lack of recruitment, and fire are other problems.

Natural Pest Control! Rabbits were introduced to Kangaroo Island early last century and Heath Goannas are credited with eating them all. They are happy to burrow to find prey, and considering the damage rabbits have done to the mainland, KI is fortunate to have these reptiles.

Conservation

You can help the Heath Goanna by:

- being a responsible pet owner – desex your cats and dogs, keep them inside at night and don't take them into national parks
- not collecting fallen timber or destroying termite mounds if you live in the Heath Goanna's neighbourhood, as they need these to survive
- driving slowly if you are visiting Kangaroo Island as goannas may not be able to avoid fast cars.

For further information

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Mallee

Eucalyptus spp.

Map courtesy of Mapping Unit, Customer and Commerical Services.

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Mallee comes from an Aboriginal name for a group of eucalypts that grow two to nine metres high. They are multi-stemmed and grow from underground woody bases called lignotubers. Mallee is also the name for the vegetation communities in which Mallee eucalypts grow. These communities usually include several layers of vegetation from large shrubs to small grasses and ephemerals. Mallee support a wide range of biodiversity, including the Malleefowl.

Leaf litter is slow to decompose in Mallee areas because of the dry conditions, so there is often plenty of fuel for a fire. Mallee eucalypts have adapted to cope well with fire. They grow vigorously from dormant shoots under the bark of the branches, the trunks, or the lignotuber. This is called epicormic growth.

Lignotubers store water and nutrients so new branches can grow if they have been damaged or cut to the ground. This has been very annoying for farmers trying to cut them down. They are also very difficult to remove from the ground and used to break a lot of ploughs as they are solid and rock-like. Large-scale clearance started in SA around 1900 when the stump-jump plough was invented. Farmers then conquered the Mallee, but when the trees were gone there were problems with the soil becoming too salty and eroding away. It was realised too late that plant cover is very important for keeping the soil stable and stopping salt water from rising to the surface.

Habitat

Mallee eucalypts grow in the semi-arid parts of southern Australia, and have many adaptations that help them survive the hot, dry conditions. Like most eucalypts, they close the pores of their leaves (stomates) during the heat of the day so they lose less moisture through evaporation.

Threats

Being cleared for agriculture is the biggest threat to Mallees both historically and today. Drought caused by climatic change and too frequent and intense bushfires put pressure on populations of these trees. Their understorey is often grazed on by sheep, cattle and goats. Rabbits also graze on new shoots which can make it more difficult for them to grow. Salinity and habitat fragmentation are other problems Mallee plants face.

Musical Mallees! Didgeridoos are made from the stems of Mallee eucalypts that have been hollowed out by termites.

Conservation

You can help Mallee eucalypts by:

- preserving these trees on your property
- being waterwise at home and helping ease the strain on our limited water sources
- getting involved with revegetation projects like the Million Trees Project.

For further information

Public enquiries

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Eastwood: (08) 8273 9100
Gawler: (08) 8523 7700
Lobethal: (08) 8389 5900
Willunga: (08) 8550 3400

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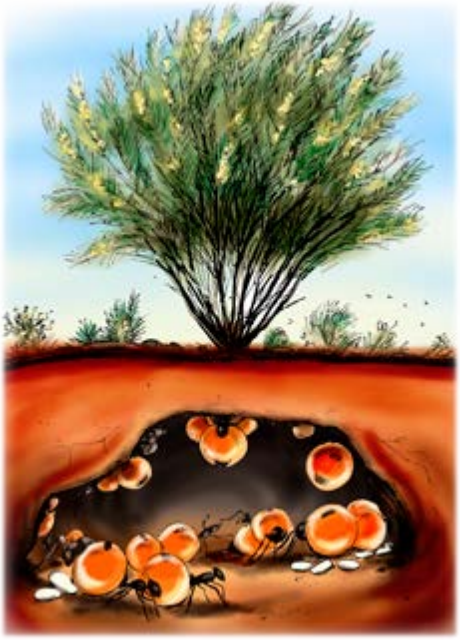
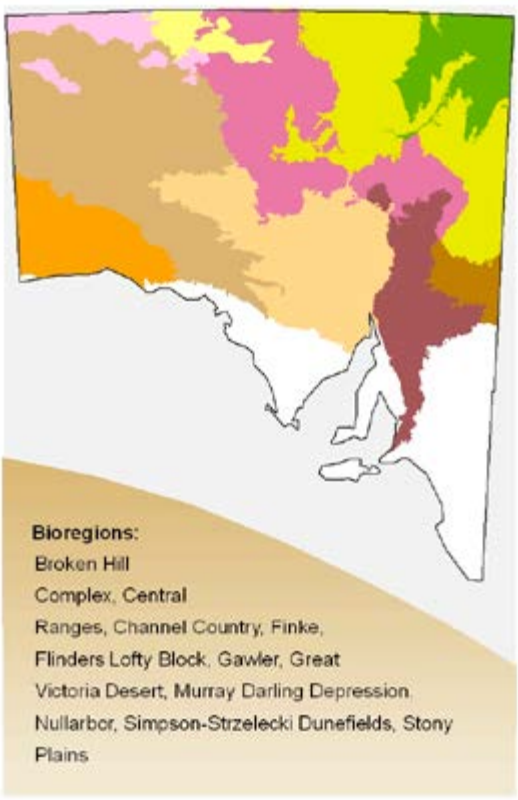
FIS: 92288

Mulga

Acacia anuera





Map courtesy of Mapping Unit, Customer and Commerical Services.

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Mulgas are single or multi-stemmed acacias. They are classified as a small tree or a large shrub and are the main species in many desert ecosystems, such as Mulga woodlands. Mulgas are also an important food source for stock, especially during droughts.

While most acacias have relatively short life spans, Mulgas are long lived. They can grow to a maximum height of 10 metres. Reduced rainfall or drought conditions can slow or temporarily stop the growth of Mulgas. For this reason, it sometimes takes a Mulga tree 100 years to become mature. It is believed they can live between 300-400 years.

Acacias do not have leaves in a botanical sense, but instead have phyllodes. These are slim, flattened leafstalks. Phyllodes are arranged to avoid full sun and channel rainwater to the roots.

Underground, Mulgas have a taproot which can help the plant access deeper moisture and store water and nutrients. Mulga seedlings which are just 10cm high may have taproots extending three metres into the ground.

Mulga wood is very hard and is popular for use as fence posts and in craftwork. Mulga also had a wide range of traditional uses for some groups of Aboriginal people. These included: food from the seeds, lerps and sap; tools from the wood; resin from the phyllodes; and medicines from the leaflets and twigs. The name 'Mulga' comes from the name one Aboriginal group used for the shields they made from its wood. Honey Ants (*Camponotus inflatus)* make their nests underground beneath Mulga trees. These ants are another popular traditional food as their abdomens are full of a sweet honey-like substance.

Reproduction

Mulgas produce bright yellow flowers at any time of year, usually following rain.

Habitat

Mulgas are common in arid to semi-arid areas of South Australia, New South Wales, Queensland, Western Australia and the Northern Territory.

Threats

The key threats to Mulga are introduced herbivores, such as rabbits and goats, some of which have established feral populations and led to the suppression of the regeneration of arid shrubs such as Mulga and thereby threatening their long-term survival. In some areas, seedlings are eaten and trampled on by rabbits and goats which can be devastating. It is unlikely that there was any successful Mulga regeneration between the 1880's and the 1950s due to the impact of the rabbit!

Mulga trees are also threatened mainly by past and present clearance for agriculture. Changed fire regimes can be another problem – acacias are less fire resistant than eucalyptus.

Climate change also creates a less suitable habitat.

Small insects called Red Mulga Lerp *(Austrotachardia acaciae)* live on the outer branches of Mulga trees. They exude a honey dew to protect themselves from animals. which can be sucked straight off the branch, or soaked in water to make a sweet drink!

Conservation

You can help the Mulga by:

- finding out more about the many ways Aboriginal people use Mulgas and telling your class about it
- getting involved with revegetation projects, like the Million Trees Program.

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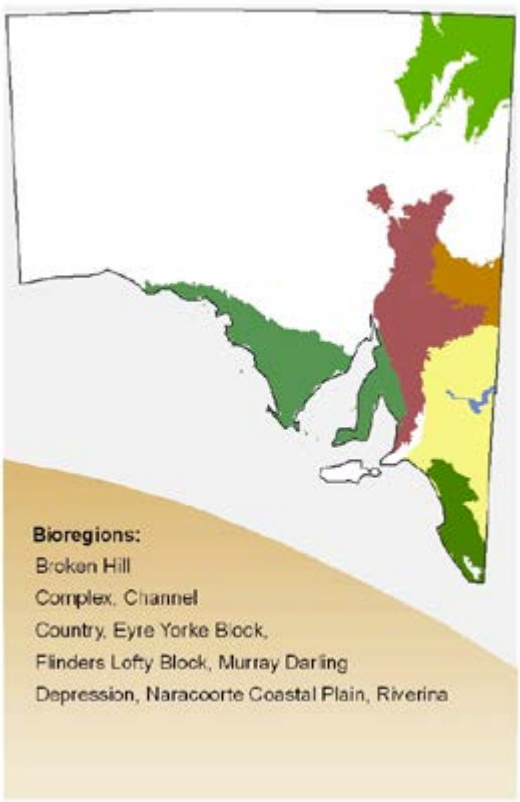
Plains-wanderer

Pedionomus torquatus



Map courtesy of Mapping Unit, Customer and Commerical Services.

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Plains-wanderers are small, long-legged birds. They have an upright alert posture and are about 18cm tall. Females are larger and more brightly coloured than the males. While they look similar to some quail species, Plains-wanderers can be distinguished by the distinctive patterns on their wings, as well as their slimmer necks and longer legs. They are the sole member of a genus of birds found only in eastern Australia.

When disturbed, Plains-wanderers usually run and, if they do fly, they leave their long yellow legs dangling. There are now possibly fewer than 8,000 Plains-wanderers left in the wild.

Diet

These birds are omnivorous and feed on a wide range of seeds, insects and spiders.

Breeding

Plains-wanderers nest in depressions known as scrapes that the female scratches out under bushes or grass tufts and are then lined with grass. They have three to four spotty eggs at one time, and chicks are usually independent after two months. Females lay their first clutch from late August to early November and may lay another in January if summer rain occurs (and ample food is available). The male Plains-wanderer does most of the work incubating the eggs and rearing the chicks, so the female is free to mate with another male.

Habitat

These birds are found in eastern Australia. As ground-dwelling birds, Plains-wanderers live on open plains with sparse lowland native grasses. They prefer areas of around half bare ground and half low, widely spaced plants, and do not require regular access to water as they obtain water from their food, dew and rain.

Threats

Loss and fragmentation of habitat is a major threat to the Plains-wanderer. Much of the lowland native grasslands in which they live have been cleared and used for growing crops or as pasture for stock.

Being ground-dwelling birds they are vulnerable to predation by cats, foxes and birds of prey. In drought years, when overgrazing of their habitat occurs, the population of Plains-wanderers may become more than halved.

The Plains-wanderer is thought to be an ancient bird, present in Australia for more than 60 million years. It may have been in Australia when it was a part of the Gondwanan supercontinent!

Conservation

Nation-wide surveys of the Plains-wanderers have been done and management actions, like reducing stock grazing in their habitat areas, are being developed.

You can help the Plains-wanderer by:

- being a responsible pet owner – desex your cats and dogs, keep them inside at night and don't take them into national parks
- protecting remnant areas of native bush in your area or on your land for native species like the Plains-wanderer
- being careful when bushwalking in spring – don't trample or disturb nests.

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Red-necked Stint

Calidris ruficollis

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Red-necked Stints are migratory wading birds. When migrating, they travel by the East Asian-Australasian flyway and flocks of thousands of these birds travel together. Their breeding plumage gives the Red-necked Stints their name. After breeding they moult, and throughout the rest of the year their plumage provides good camouflage for their habitat in Australia, with a grey back and white underneath.

The smallest of Australia's migratory birds, the Red-necked Stint weighs just 30 grams and is small enough to fit inside a wine glass. Red-necked Stints are sandpipers; they have short straight bills, short legs and are quite plump in shape. Because of their short legs they can only walk in shallow water, and prefer to forage without getting their legs wet.

Diet

These birds are omnivorous – they eat seeds, worms, insects, small vertebrates, plants in salt marshes, molluscs, and crustaceans. Once they arrive in South Australia these birds start fattening themselves up for the long journey north, and a healthy bird can increase its weight by 50 per cent in the months it spends here. Unlike humans they can instantly convert this fat to energy. Their favourite food at the Coorong is midge (chironomid) larvae, and they find these on the surface of saturated mudflats.

Breeding

Despite their small size they still manage to make the annual journey north to breed, which is a distance of approximately 15,000 km one way. They breed in eastern Siberia and western Alaska and visit Australia only in summer.

Habitat

When in South Australia they choose mudflats within estuarine wetlands, sand flats and inland salt lakes as their habitats.

Threats

The destruction and degradation of their wetland habitats is the greatest threat to Red-necked Stints. This can be caused by coastal development, changed water regimes, drought and pollution. Flocks of migrating birds rely on a series of three to four stopovers so they can rest and find food on the journey from their breeding sites to their 'wintering' sites. If any one of these places becomes unsafe or degraded, it can be disastrous for them. These birds are also sometimes the victims of hunting.

In its lifetime (approximately 20 years) the Red-necked Stint flies further than the distance between the Earth and the Moon!

Conservation

Australia has signed the migratory bird agreements with China and Japan to protect birds crossing international boundaries, and more international agreements are being developed.

you can help the Red-necked Stint by:

- being waterwise at home and helping save our Coorong
- Not polluting – anything washed down a stormwater drain goes straight out to sea
- checking out the book (and link) *Rusty Loses His Loop* and understanding the Murray Darling System and how vital it is for creatures like the Red-necked Stint.

Photo © SATC, Craig Ingramz

Red-necked Stint

Photo by Daniel Rogerts

Red-necked Stint

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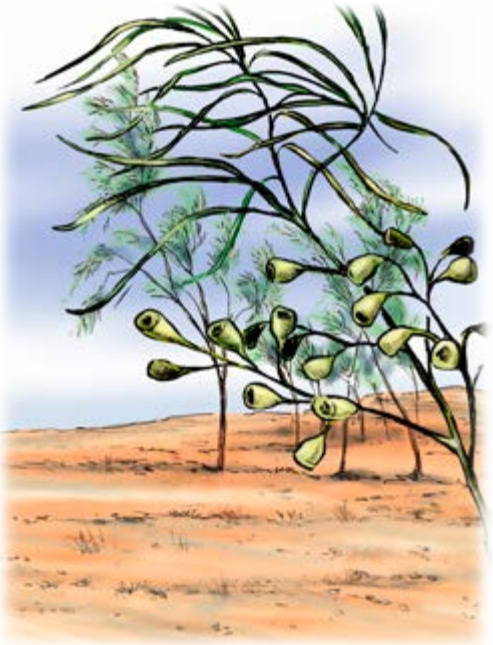
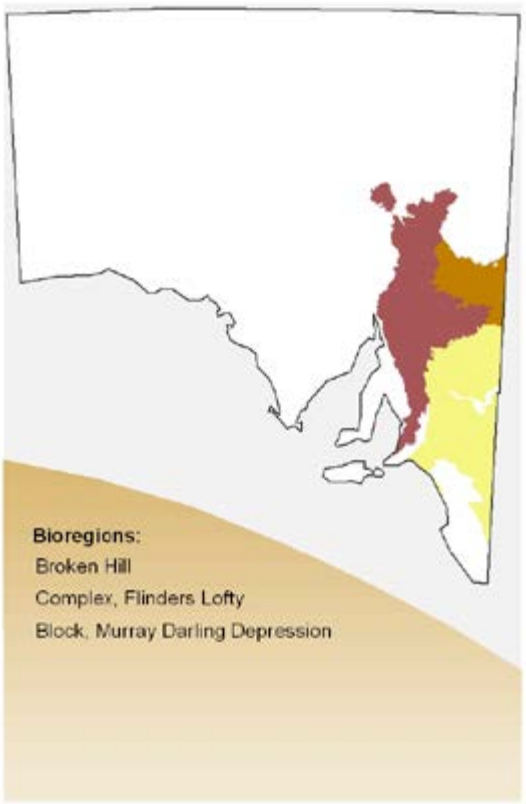
Slender Bell-fruit

Codonocarpus pyramidalis





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Slender Bell-fruits are shrubs or small trees that grow up to eight metres tall. They often have more than one stem, and grow either as scattered individuals or in a small group. They grow quickly but are short-lived, and mature trees often lean to one side. The timber is soft, and similar in texture to balsa wood.

Reproduction

After flowering from May to October, they produce a distinctive bell-shaped fruit. This fruit is segmented, with each segment containing one U-shaped seed approximately three mm long. The plants regenerate well after fire, which is a necessary process for germination. The Slender Bell-fruit plant is monoecious, meaning it has both male and female flowers on the same plant and is capable of self-pollination.

Habitat

Slender Bell-fruits are now found only in SA. They occur in the Flinders Ranges, Northern Lofty Ranges and eastern regions of SA. Though it was historically recorded in New South Wales it is now thought to be extinct there. It grows either as scattered individuals or in small localised strands along the crests and slopes of low hills and ridges, as well as along creeks.

Threats

As it forms a small and fragile component of the overall landscape, any pressure on recruitment can adversely affect its survival.

Seedling grazing by rabbits and feral goats can lead to low numbers of new plants surviving to maturity. Habitat loss, disturbance and modification through development and agriculture are other threats. Changed fire regimes, leading to less frequent fires (because there is less vegetation in the area now) can also threaten the survival of these plants, as can long droughts.

Poison plants! Slender Bell-fruit is also known as Camel Poison and has been known to occasionally kill horses and stock.

Conservation

Control of feral goats and rabbits is being attempted in the Flinders Ranges to help increase the survival of this and other native plants. Research has also been done into the particular conditions Slender Bell-fruit seeds need to germinate. It is a combination of seed aging, fire treatment (at the right time of year) and post-fire dormancy that can stimulate their germination. This discovery should help the plant's recovery as seedlings can be grown in a nursery to boost their numbers where necessary.

You can help the Slender Bell-fruit by:

- spreading the word and raising awareness of Slender Bell-fruit in your local community
- protecting native vegetation where it occurs.

For further information

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Slender-billed Thornbill (Western)

Acanthiza iredalei iredalei

Map courtesy of Mapping Unit, Customer and Commerical Services.

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The western subspecies of the Slender-billed Thornbill is a small bird, about 10cm in length with a wingspan of 14-15 centimetres. They only weigh 5-6 grams. Olive-grey/brown in colour, they have a black patch with white edges on their forehead. While they are usually seen in pairs or in small groups of up to 10 birds, they occasionally form flocks of up to 60 birds.

There are two other subspecies of Slender-billed Thornbills, but the western one is the most widespread. Both the eastern and the St Vincent Gulf subspecies also occur in South Australia. A reduction of grazing in the Nullarbor and other western areas of the state is allowing some of this bird's habitat to recover. It is estimated that around 100,000 individuals remain in the wild

Diet

They feed on insects, spiders, occasionally centipedes and the stems and leaves of some plants. Slender-billed Thornbills forage throughout the day, usually in shrubs and sometimes on the ground or by catching insects midair.

Breeding

Breeding occurs from July to October, usually following rainfall. Thornbills make dome-shaped nests in shrubs out of strips of bark and grass stuck together with cobwebs. They line them with other soft materials and they have an entrance in the side. The female lays a clutch of two to four eggs. When they hatch the chicks are fed by both parents, but more so by the female.

Habitat

Slender-billed Thornbills live in arid and semi-arid areas of southern Western Australia and south-western South Australia. Their preferred habitat includes shrublands, sometimes near mangroves, salt lakes, or salt flats. They usually choose chenopod shrublands dominated by Samphire (*Sarcocornia spp.*), Bluebush (*Maireana spp.*) or Saltbush (*Atriplex spp.*). Sometimes they have been seen in low heath on sand plains as well.

Threats

The impact of overgrazing by stock and rabbits on their habitat is the biggest threat to Slender-billed Thornbills. Changes to fire regimes that threaten their shrubland habitats are another problem for this bird. Mining and development activities may also be a threat to some of their habitat areas.

Puzzling extinction up north! The Slender-billed Thornbill is thought to be the only bird species to have become extinct in the Northern Territory since European settlement. No-one is quite sure why, as there is plenty of suitable habitat remaining!

Conservation

You can help the Slender-billed Thornbill (western) by:

- encouraging land managers to fence lower productivity land for conservation and land management purposes
- spreading the word – tell other people about the Slender-billed Thornbill.

For further information

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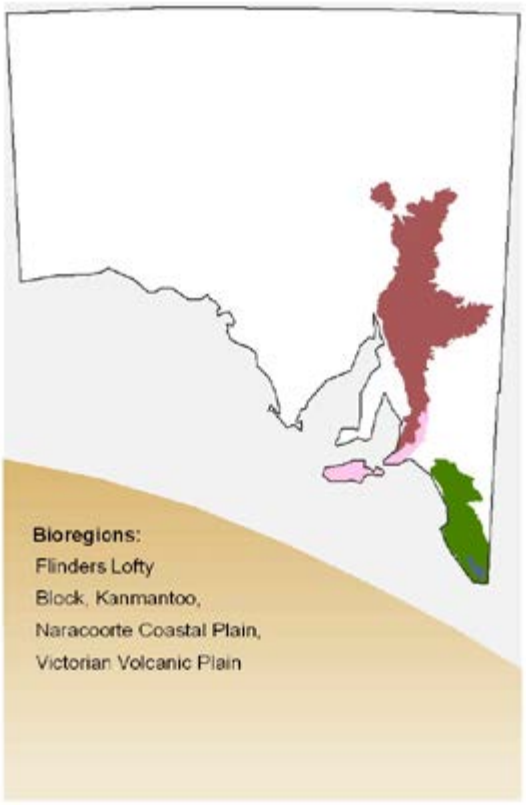
Southern Brown Bandicoot

Isoodon obesulus obesulus



Map courtesy of Mapping Unit, Customer and Commerical Services.

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Southern Brown Bandicoots are medium-sized marsupials with long snouts, small rounded ears and large rumps. They are solitary animals that live for two to three years.

Diet

Southern Brown Bandicoots are omnivorous and forage for food under leaf litter and, in the soil, by digging distinctive cone-shaped holes. They stay close to cover when they search for food and eat ants, insects and worms (both adults and larvae), fungi, fruits and other plant material. When vegetation becomes more mature and fully grown there may be fewer food resources available for the bandicoot, whereas after fire, there are abundant insects in the revegetation areas which provide food, and the new, diverse vegetation provides habitat. Therefore, in some habitats there is evidence that they prefer areas that are burnt from time to time.

Breeding

Breeding takes place from winter through to summer and females usually give birth from two to four young per litter. They can have several litters per breeding season, but less than half of their young survive to maturity.

Habitat

Southern Brown Bandicoots can be found in the Mount Lofty Ranges, Kangaroo Island and the South East of South Australia. This eastern subspecies is one of five subspecies of Southern Brown Bandicoot, two of which live in South Australia. The Southern Brown Bandicoot lives in dense scrubby habitats or areas with dense, low ground cover.

They sleep in nests made of grass and other plant material that may be mixed with earth. These can be very well hidden in dense vegetation or among debris. Dense understorey vegetation is vital to the bandicoots' survival as it protects them from predators.

Threats

Threats to the Southern Brown Bandicoot include: vegetation clearing, inappropriate fire regimes (too many fires are also harmful to their habitat) and predation by foxes and cats. Habitat loss and fragmentation leads to isolated populations which are more vulnerable to chance events and other threats.

Making do! Where their native habitat has been disturbed or destroyed, bandicoots sometimes use the dense cover of weedy blackberry thickets as a substitute.

Conservation

Regional and National Recovery Plans have been developed to maintain, protect and improve Southern Brown Bandicoot populations in Australia.

You can help the Southern Brown Bandicoot by:

- being a responsible pet owner – desex your cats and dogs, keep them inside at night and don't take them into national parks as dogs and cats can kill bandicoots. Keep dogs on a leash in areas where bandicoots live.
- getting involved with a conservation group near you
- educating your community about Southern Brown Bandicoots and other local species, and encourage councils and community groups to protect even small patches of native bush.

Photo by Kirstin Long

Southern Brown Bandicoot

Photo by Kirstin Long

Southern Brown Bandicoot

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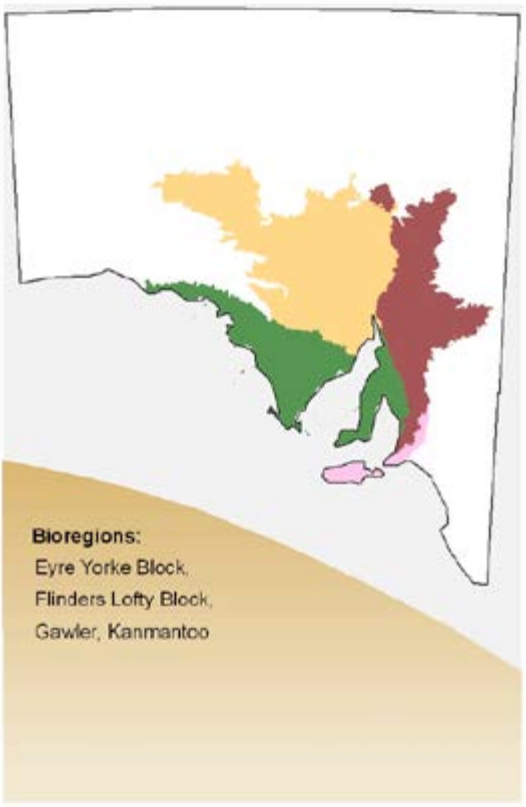
Waterhouse's Hairstreak

Jalmenus lithochroa



Map courtesy of Mapping Unit, Customer and Commerical Services.

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Waterhouse's Hairstreak belongs to a family of Australian butterflies that all have a special relationship with ants. Caterpillars are very vulnerable to predation from a range of birds, insects and other animals. As a defence they secrete a sweet substance that is attractive to certain ant species. The ants feed on this substance and protect the caterpillar from other predators. This is done either by attacking potential predators, or simply by crawling on the larvae (the ants do not taste good and make the caterpillar less appetising). These are called attendant ants, and northern populations of Waterhouse's Hairstreak larvae are attended by large meat ant species (*Iridomyrmex purpureus* and *I. viridiaeneus*).

Diet

Bramble Wattle *(Acacia victoriae)* is the most important larval food plant for the largest, northern population of Waterhouse's Hairstreak; while those in southern regions prefer Golden Wattle *(A. pycnantha).* The caterpillars are herbivores and eat the leaves and flower buds of the host plant and then complete their lifecycle on the same plant.

Breeding

Waterhouse's Hairstreak spends the winter months as eggs and hatch in spring. The butterflies emerge during the warmer months of the year from late September to April. In warm weather, they take around eight weeks to complete their lifecycle.

Habitat

Waterhouse's Hairstreaks are believed to be South Australia's only endemic butterfly. As a plains butterfly, this species lives in small colonies in areas of open shrub and woodland with a grassy understorey. Waterhouse's Hairstreak was once found in the Adelaide plains, but is now believed to be extinct in this area due to urban expansion since the 1960's. Bramble Wattle is still common in the north of the state, so the largest Waterhouse's Hairstreak populations are found in that area.

Threats

Urbanisation and land clearance for agriculture have greatly reduced the habitat of this butterfly. They are now restricted to small populations which makes them vulnerable to other threats. The loss of food and habitat plants through more frequent fires and drought is another problem, as well as poisoning from insecticides and pesticides.

Calming caterpillars? The substance that the larvae secrete is thought to contain a calming ingredient that stops the attendant ants from eating them!

Conservation

You can help the Waterhouse's Hairstreak by:

- finding out more about the lifecycle of butterflies and the amazing ways they change form
- planting their favourite acacias depending on where you are.
- find out more about them and participating in Butterfly Watch SA (http://www.samuseum.sa.gov.au/whatson/exhibitions/butterfly)

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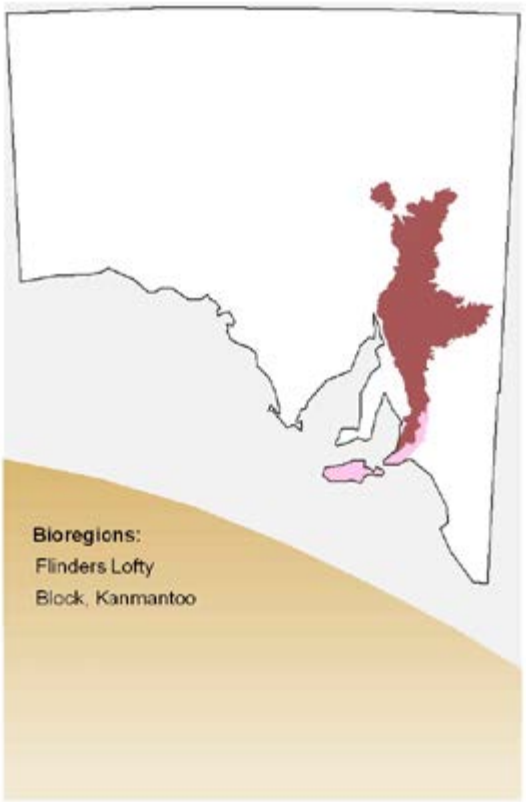
White Beauty Spider-orchid

Caladenia argocalla



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White Beauty Spider-orchids are perennial plants which are only present above the ground in winter and spring and are dormant from summer to autumn. They grow with an understorey of native herbs and grasses. After a single hairy leaf (12-20cm long) emerges in winter, it produces a single flower stem in spring with one or two flowers. Flowers have white petals (9-15cm long) with red, pointed tips which usually droop down. Petals and sepals are long and tapered.

Like many other orchid species, White Beauty Spider-orchids rely on underground tubers that provide plants with the nutrients and energy necessary for new growth.

After a survey in 2007, it was estimated that there are only around 4,500 White Beauty Spider-orchid plants in existence. Many of these are thought to be in decline, with the largest populations found in the Clare region. They have a north-south range of approximately 130 kilometres.

Reproduction

To reproduce they need to cross-pollinate with another plant, which is done with the help of male wasps. This orchid only attracts one particular species of wasp, and it does this by making the same pheromone that the female wasp gives off. They then form seeds when the flowers dry up from which new plants grow.

Habitat

A SA endemic, it grows in 15 known locations in grassy eucalypt woodlands from Clare to Harrogate. These woodlands usually include the South Australian Blue-Gum (*Eucalyptus leucoxylon*). These plants are quite specific in their habitat preferences. They usually grow in clay loam soils with high humus content on gentle hill slopes, often facing south.

Threats

The greatest threat to White Beauty Spider-orchids comes from weed invasion, especially from Topped Lavender (*Lavandula stoechas*), Cape Tulip (*Homeria flaccida*) and Bulbil Watsonia (*Watsonia bulbillifera*). Grazing by kangaroos, livestock, such as sheep and cattle, rabbits and hares also reduces their numbers. Spider-orchids also suffer from a lack of pollination and recruitment. Phytophthora can kill plants that provide habitat to this species, so it poses an indirect threat. Climate change, road and track management activities and illegal collection are other threats to this species.

Some Aboriginal groups in the South East of SA dig up and eat the tubers of different orchid species. These contain many nutrients and apparently taste quite sweet!

Conservation

A recovery project is underway in the Lofty Block region aimed at conserving White Beauty Spider-orchids as well as 11 other endangered orchids. This involves preserving current habitat and attempting to increase the populations of these orchids.

You can help the White Beauty Spider-orchid by:

- getting involved in weed eradication projects in your local area, which gives native plants a chance to grow
- keeping a look out for White Beauty Spider-orchids if you are in the Clare region. Report sightings to: DEWNR, Clare or Black Hill office
- cleaning your shoes whenever you see a Phytophthora cleaning station to stop this disease from spreading
- never digging up orchids from bushland.

For further information

Public enquiries

For more local information on any of the species in this resource please contact your nearest Natural Resource Centre office on:

Eastwood: (08) 8273 9100
Gawler: (08) 8523 7700
Lobethal: (08) 8389 5900
Willunga: (08) 8550 3400

Education enquiries

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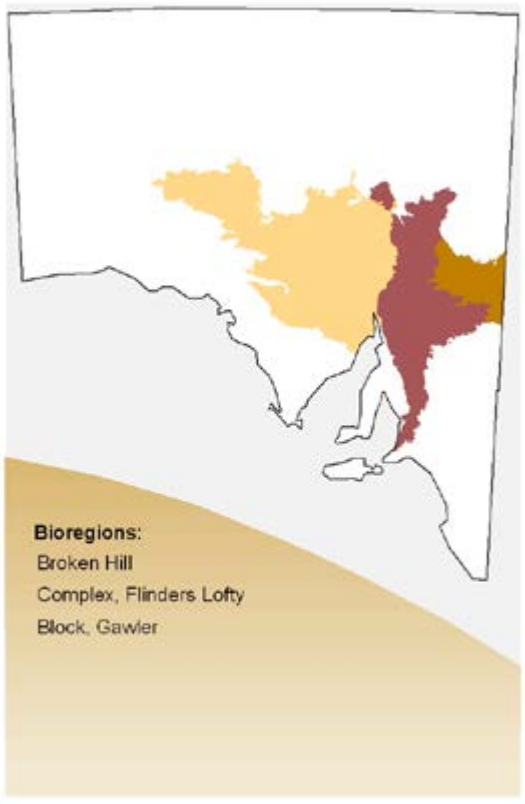
Photo by Joe Quarmby — White Beauty Spider-orchid

Photo by Doug Bickerton — White Beauty Spider-orchid

FIS: 92288

Yellow-footed Rock-wallaby

Petrogale xanthopus



Map courtesy of Mapping Unit, Customer and Commerical Services.

Map is not intended to indicate spatial distribution of the species, only the bioregions in which the species is found.

Yellow-footed Rock-wallabies are colourful marsupials with orange ears, white cheek stripes and distinctively striped brown/orange tails. They get their name from their bright yellow-orange feet, forearms and hind legs.

Yellow-footed Rock-wallabies are perfectly suited to the rocky highland areas in which they live. They have textured pads on their feet to stop them from slipping when hopping on rocks, powerful hind legs for jumping and long tails for balance. Aboriginal people of the Flinders Ranges used to hunt Yellow-footed Rock-wallabies; the meat was an important part of their diet, and they used the thick fur as blankets and cloaks. This animal is culturally significant to the Adnyamathanha people. The Yellow-footed Rock-wallaby is also the faunal emblem of the Adelaide Zoo and the Nature Conservation Society of SA.

Diet

Their diet consists mainly of grasses, herbs and bushes.

Breeding

Breeding can occur in any season, but severe droughts seem to stop them from reproducing successfully, probably because there is not enough food to support a new generation. Like all marsupials, females carry their young in a pouch until they are old enough to look after themselves.

Habitat

Once common in the Flinders, Olary and Gawler Ranges, these wallabies are now making a gradual comeback. They live in colonies (of up to 100) in rocky habitats, sheltering in cool caves in the heat of the summer days and feeding only nocturnally. In cooler months of the year they are most active in the mornings and evenings (crepuscular) and enjoy sitting in the sun on top of rock piles.

Threats

Yellow-footed Rock-wallabies were hunted for their coats in the 1800s which reduced their numbers. Threats now include competition for food with other herbivores, predation by feral animals, habitat loss and degradation, weed invasion and population fragmentation.

Big foot? Yellow-footed Rock-wallabies are, Macropods which means 'big feet'. All kangaroos, wallabies and their kin belong to this special group.

Conservation

Recovery programs such as the Bounceback project have been working with landholders and in National Parks in the Flinders Ranges, Gawler Ranges and Olary Hills to restore the habitat of these wallabies and reduce the threats to their survival. Their numbers have grown as a result!

You can help the Yellow-footed Rock-wallaby by:

- visiting the Yellow-footed Rock-wallabies at the Adelaide Zoo or Cleland and finding out more about them
- caring for National Parks that protect animals like the Yellow-footed Rock-wallabies
- being a responsible pet owner – never take your pets into National Parks.

For further information

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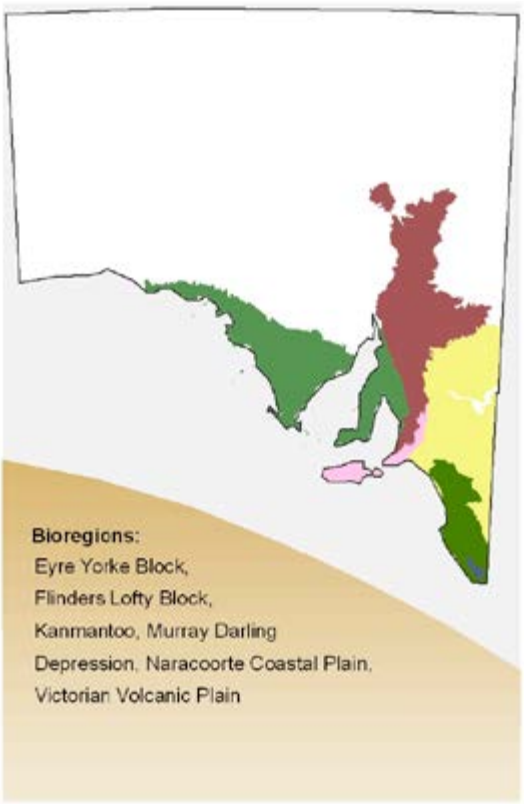
FIS: 92288

Yellow-tailed Black-Cockatoo

Calyptorhynchus funereus



Map courtesy of Mapping Unit, Customer and Commerical Services.

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Yellow-tailed Black-Cockatoos are easy to identify due to their large size and distinctive markings. They are the largest Australian cockatoo and are 55-65cm long. They are black with yellow patches and yellow panels in their tail feathers. These birds have a distinctive call that can be heard as they fly over the tree tops. They are known to gather in large flocks of up to one hundred.

Diet

Their diet is varied but consists mainly of seeds of native trees, particularly the native sheoaks (*Allocasuarina spp.*) but also *Eucalyptus, Acacia, Banksia, Xanthorrhea* and *Hakea* species. They also strip the bark from the trees to find tree-boring beetles and moth larvae. Yellow-tailed Black-Cockatoos have large, powerful bills for biting into the cones of pines and banksias. The upper part of the beak pierces the cone and hooks in while the lower part cuts through.

They have also adapted to feed on seeds of introduced Radiata (*Pinus radiata*) or Aleppo Pine (*Pinus halepensis*) often in commercial plantations because many of their native food sources have been cleared.

Breeding

Nests are made in large hollows in old trees. Females incubate the egg(s) and it takes four weeks for the hatchling to emerge. Males provide food while the females are incubating and rearing the chicks. Females usually lay two eggs, but almost always only feed one chick, so that only one chick survives. The nestling fledges in about three months but does not become independent until just before the next breeding season (around six months).

Habitat

Yellow-tailed Black-Cockatoos are found throughout south-eastern Australia, and are not listed as nationally threatened. The population on Eyre Peninsula, is considered critically endangered. This is because it is isolated from other mainland and island populations and has undergone dramatic decline since European settlement.

Threats

Loss of habitat (clearance of food and nesting trees), competition for nesting hollows with bees and other birds and animals and, predation (e.g. by Wedge-tailed Eagles) due to lack of cover, are the major threats to the Yellow-tailed Black-Cockatoo. Predation of eggs by Common Brushtail Possums *(Trichosurus vulpecula)* can also be a problem.

A distinctive local! Yellow-tailed Black-Cockatoos can be sighted in many Adelaide Hills conservation parks and visit the city parklands.

Conservation

Conservation of the wild population and its habitats, replanting of native food sources and habitat trees in this area, and a captive breeding program, are some of the positive actions being taken to help this population recover.

You can help the Yellow-tailed Black-Cockatoo by:

- keeping an eye and ear out if you go walking in the Adelaide Hills – you might see or hear a group of Yellow-tailed Black-Cockatoos flying around
- finding out about revegetation or other conservation programs in your local area
- helping out on community revegetation activities and projects
- making sure you save food and habitat trees for the Yellow-tailed Black-Cockatoos, and other threatened species, if you live on a property.

Photo by Jason Van Weenen

Yellow-tailed Black-cockatoo

For further information

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