GREEN ADELAIDE

Creature Features

Volume II

Government of South Australia

About this publication

Since 2013 Green Adelaide's Education team (previously called NRM Education) has produced a weekly digest distributed to teachers and other interested people subscribed to our email list. Most weeks we included a short creature feature that promoted a local plant, animal or fungus, usually connected to a season, environmental event or interesting date (for example Walk to School Day or Christmas).

Volume I is also available and it contains all the articles written up to the end of June 2020. This current volume brings together all of the articles written since July 2020.

As the articles were written to tie in with those seasons or events and they have been reproduced here with minimal edits, they may reference websites or other resources that are no longer available or to dates that have passed.

We hope you will find this resource useful and appreciate any comments. Visit our website for all contact details.

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Creatures by Common Name

We do our best to check the toxicity of native plants featured in our Weekly Digest but please ensure you check the Department for Education Outdoor Learning Environments Standard for plants that are potentially poisonous, dangerous or that should be treated with caution, along with other references to determine if the plants are appropriate for your needs and conditions.

Insects, spiders, worms and other invertebrates

(L) Common Grass-blue and (R) Native Lilac, a great food source for this butterfly (Photos: Kelly Arbon & Jeremy Gramp)

The blue jewels of the garden

As you fossick around your garden, particularly on a warm spring day, you may notice butterflies flitting about your plants and flowers or basking in the sun. These butterflies will often be the ones easy to spot due to their showy patterns, colours and size. However, if you look a little closer you may discover an array of other species because the Adelaide region is home to a diversity of butterflies both large and small.

Butterflies from the Lycaenidae family are a great example. Although they are on the smaller end of the size spectrum, they come in vivid and iridescent hues of blue, green, purple and, in a few instances, intense oranges, reds and yellows. These butterflies are therefore aptly referred to as blues, coppers and even jewels. Many of the Australian blue butterflies form a symbiotic relationship with ants. The caterpillars of some species can secrete fluids from a honey gland which are then collected by ants for food. It is thought that these caterpillars receive some form of protection from having ants attend them; from predators or from potential parasites, including wasps.

The most common blue butterfly in the Adelaide region is the Common Grass-blue (*Zizina labradus labradus*). Being small, it is often overlooked but can be spotted in almost any open area or suburban garden, particularly in spring and summer. To help attract this butterfly to your garden you should include local native pea-flowering groundcovers and bushes and native grasses which serve as great caterpillar food and general habitat. In South Australia, many species of blue are under threat, primarily from habitat loss.

We can all take action in assisting with the long-term survival of these fascinating species by creating butterfly habitat. This could be simply by including the right sort of native food and habitat plants for both the caterpillars and butterflies in your garden.

References:

- Attracting Butterflies to your Garden - Butterfly Conservation South Australia
- Lycaenidae - CSIRO

A dragonfly resting with its wings extended and (inset) a damselfly with wings folded (Photos: Steve Walker)

The unfolding story of dragonflies

Dragonflies are flying insects that are found close to freshwater habitats. There are around 16 species found here in South Australia. They lay their eggs in or close to water and hatch about three weeks later. The juvenile or nymph stage lives in water and may last from several months up to several years depending on the species. Along with damselflies, they make up the order Odonata. Dragonflies and damselflies are in different families and can easily be differentiated. Adult dragonflies cannot tuck their wings back on their body and juveniles have internal gills, moving water over them using flaps on their body. Damselflies, however, can fold their wings and the juveniles have external gill appendages at the end of their body, which look like three paddles.

Dragonflies are ambush predators, with the adults catching and eating other insects including mosquitoes, while the juveniles eat other aquatic insects, tadpoles, and even small fish. Juvenile dragonflies catch their prey with an extendable ladle-shaped mouth structure called a labium.

Dragonflies can fly backwards as well as forwards and have been tracked at speeds of over 50km/h. The juveniles move using jet propulsion and have strong legs to cling onto underwater habitat.

This month features World Water Monitoring Day (18 Sept) and World Rivers Day (30 Sept). Aquatic invertebrates such as dragonflies can be used as biological indicators of water quality and waterway health. Whilst water chemistry is important to measure, it only gives us a snapshot of the quality at that moment in time. The aquatic invertebrate community, richness of species and abundance of individuals gives a broader look at the water quality over days or even months.

If you would like to find out more about dragonflies and other aquatic creatures in your local area, why not have a go at catching and observing them with your students? We have a range of identification charts and teacher resources online, or you can borrow equipment and other materials from our loan library.

Reference:

- Critter catalogue: a guide to the aquatic invertebrates of South Australian inland waters.

Common Spotted Ladybird (inserts: [L] eggs laid amongst an aphid colony, [R] a larva moulting) (Photos: Jeremy Gramp)

Is it a bird, bug or beetle?

One of the most well-known and appreciated insects to be found in our gardens is the lady bird...or are they lady bugs, or maybe even lady beetles? Common names sure can be confusing. The name that you use for these creatures will be influenced by where you are from. For example, in the US they are bugs, in the UK birds. The 'lady' part of their name is thought to be derived from the Virgin Mary, as outlined in this article. Although most people in Australia call them ladybirds, from a scientific perspective they are definitely beetles. Interestingly beetles make up 25% of all the known animal species on earth.

Beetles are relatively easy to distinguish from other types of insects because their first pair of wings, called forewings, are hardened and thickened to form wing cases. These serve as a shield to protect their second pair of wings, their delicate flying wings.

To slightly confuse things, there are also a few species of true bugs that have part of their forewing thickened, however the easy way to distinguish these is to look at their mouth parts. True bugs have a piercing mouthpart designed for sucking, while beetles have chewing mouthparts.

We are all familiar with the characteristic red/orange ladybird with black spots, however not all ladybirds are like this. It is thought that there are about 500 different species in Australia, most of which are brown. Some are even quite hairy.

Most species are predatory, they are best known for eating aphids, however they also target a broad range of other insects. As such they are brilliant pest controllers in our gardens and for the agricultural industry.

It is not just the adults that are predators, the larval stage also gets in on the act. As such many ladybird species lay their eggs directly amongst aphid or scale colonies. That way the emerging larvae, which are often described as looking like mini crocodiles, have a ready food source. As they grow, they need to moult, usually going through four larval stages, before they complete metamorphosis into the adult.

Now is the prime time for ladybirds, so have a look around your school or home garden and see how many types you can find.

Pale and blind, these creatures have never seen the light of day – (Photo: Dr Danny Tang)

These creatures are not Bore-ing

Stygofauna are aquatic organisms that are specifically adapted to and spend their entire lives underground. For example, in caves, bores, aquifers and groundwater. Historically, not much attention has been given to the ecosystems and life in groundwater environments as they were thought to be uninteresting. But scientists have now discovered that these environments are diverse and many of the creatures found in groundwater systems are endemic to those regions or individual caves, which makes the research into these creatures and the protection of groundwater systems very important.

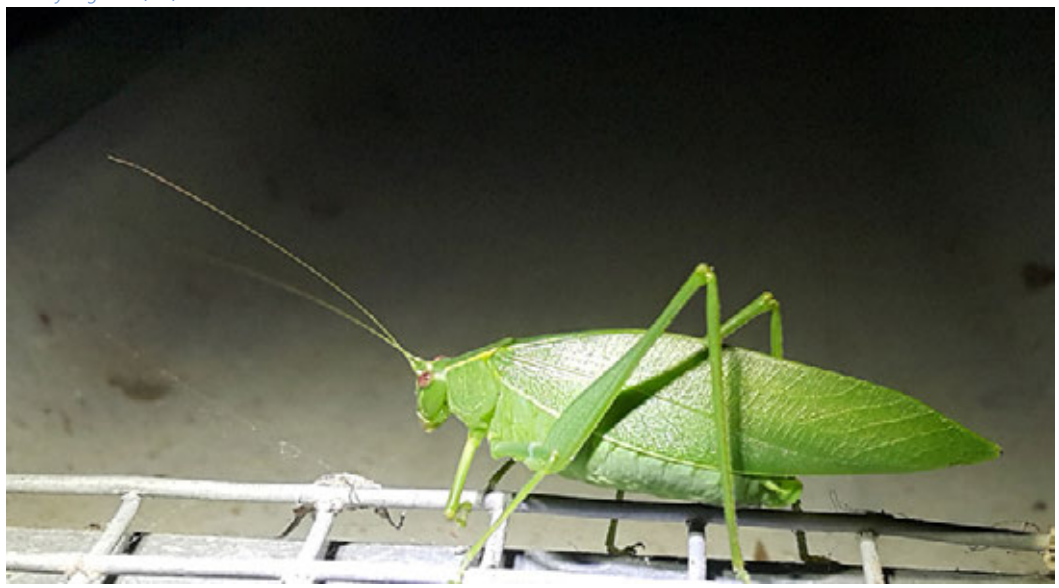
Stygofauna are typically small invertebrates, including crustaceans, beetles and worms, which are specially adapted to live in harsh conditions where there may be no light, no plants and sometimes low oxygen levels. Due to the low light, they are often very pale or translucent and usually blind. Stygofauna feed on plankton, bacteria and decaying plant matter that may filter down from ground level and are extremely energy efficient, which is an adaptation to their limited food supply.

Stygofauna are of interest because through research we are learning about the extent of their diversity and their importance in the ecosystem, which is not yet fully understood. Because many of the organisms are quite restricted in their distribution, with some having only been discovered in a single aquifer or cave, they are vulnerable to extinction. It is critical that this vulnerability is considered during environmental impact assessments, when applying for activities such as mining. Scientists collect stygofauna by lowering small cups into caves and groundwater bores, to sample the life that lives there.

If you would like to find out more about the aquatic invertebrates living above ground in your local area, why not have a go at catching and observing them with your students? We have a range of identification charts and teacher resources online, or you can borrow equipment and other materials from our loan library.

Reference:

- Subsurface groundwater ecosystems, Goonan, P et. al, EPA 2015



Common Garden Katydids closely resemble leaves (Photo: Steve Walker)

Who knows what Katydid?

Whilst on the face of it they may not appear anything special, Common Garden Katydids are extremely interesting insects. Closely related to locusts and grasshoppers, the katydid is a type of cricket in the family Tettigonioidea, which has evolved with an extreme camouflage, giving them a close resemblance to leaves. Their extremely long legs enable them to jump long distances, but they typically rely on their very effective camouflage and sluggish movements to avoid predators. Surprisingly, individuals in the nymph stages may be a brown, vibrant red-pink or bright yellow-green, which may seem at odds with the idea of blending in with their leafy surroundings, but can actually help when there are new shoots that are pink and brown on some plants.

The Common Garden Katydid is distributed throughout Australia and New Zealand and, as evident in its name, can be commonly found in foliage in our gardens. It occurs just about anywhere there are trees or shrubs, especially in well-established gardens and bushland. It is primarily a herbivore, feeding on young leaves, fruit, nectar, pollen, and flowers, but is also known to eat other insects, so it can be very beneficial in garden pest control. It is named katydid because many of them make a call that sounds like 'katy-did', although some call outside the range of human hearing. Weirdly, it has a set of 'eardrums' located in the front pair of legs, as well as additional eardrums along its thorax. Males attract females by rapidly rubbing a file that is on their left wing along a raised 'comb' on their right wing. Females lay large black eggs along the edges of leaves or branches. The eggs generally hatch in early summer.

Katydids have extremely long antenna, which often extended beyond the length of their bodies, so they are sometimes known as Long-horned Grasshoppers.

References:

- https://www.backyardbuddies.org.au/backyard-buddies/
- Zborowski, P. and Storey, R., 2003. A field guide to insects in Australia. 2nd ed. Chatswood, N.S.W.: New Holland Publishers.
- https://en.wikipedia.org/wiki/Caedicia_simplex

The Adelaide Firetail (Photo: © David Emery)

The Sounds of Summer

As we say goodbye to summer, we can hold onto the memories of those sweltering days, ice-cream in hand and the sound of buzzes and clicks filling the air. Some of these sounds belong to a group of insects called cicadas. Cicadas are described as the loudest insects in the world, with some reaching a deafening 120 decibels. The male cicadas often sing together to attract females and this clever chorus is also thought to deter predators by making individuals difficult to locate. Each species has its own distinctive call and is heard at different times during the summer months, with most diminishing by mid-February.

Over 200 species of cicada have been formally identified in Australia. However, scientists believe there could be up to 1,000. Species within the genus Yoyetta, commonly referred to as Firetails and Ambertails, are found within the Adelaide region. *Yoyetta aaede*, the Adelaide Firetail, can be found in the upper branches of eucalypt trees and has distinguishing orange colouration on the sides of its lower body, or tergum.

Their unusual life history is equally as unusual as their appearance. Many species lay their eggs in the bark of a tree and once the nymph cicadas hatch, they fall and tunnel themselves into the ground. It is here the cicada nymph will spend the majority of its life; several years depending on the species.

They are not hibernating below ground, but are quite actively feeding on plant roots. When the time is right, particularly after rain, they emerge to complete their lifecycle. This includes a moulting process which has described as a scene from a horror movie. The nymph freezes in place and then a split appears lengthways down its back from which a new head emerges before the cicada completely leaves its old nymphal skin behind. Click here for a short video.

They really are quite remarkable creatures that make up a part of our urban biodiversity and so much can be learnt from them; from sound engineering through to lifecycles and adaptations.

Be sure to check out Green Adelaide Education resources to discover different ways to learn in and from nature.

A common earthworm in the food garden at St Michaels College Beverley (Photo: Sam Ryan)

Global worming

Few people know that there are around 1000 species of earthworm native to Australia, in addition to another 80 species that have been introduced. Earthworms are famously associated with soil health, and well-known for their ability to improve the nutrient availability and structure of soil.

There is significant variety in Australian earthworms, with some reaching enormous sizes. A number of native species grow over 1m long, while some Karmai, also known as Giant Gippsland earthworms (*Megascolides australis*), have been recorded topping 3m.

Adelaide's native species of earthworms tend to be most abundant in undisturbed sites containing native vegetation, though some also appear in pasture and gardens. All earthworms prefer minimal soil disturbance and compaction, as well as moist soil with organic matter on the surface. In bushland this takes the form of leaf litter, and in garden situations can be various kinds of mulch.

The earthworm most people are familiar with is commonly found in compost piles or manure heaps. This is the Tiger Worm or Red Wriggler (*Eisenia fetida*) and is originally from the Northern Hemisphere. This worm is particularly well adapted to feasting on abundant organic matter, while another worm, the Common Earthworm (*Lumbricus terrestris*) is more likely to be found while digging or on the surface of the soil.

Regardless of the type of worm you find, they are some of the most important decomposers both in and outside of bins. See our factsheet for more information on setting up and maintaining a successful worm farm or compost bin.

Left: The metallic green thorax of a Homalictus bee. Right: Collecting pollen from a Wahlenbergia flower. (Photos Jeremy Gramp)

Two bee or not two bee?

Did you realise that Thursday last week was World Bee Day? It is not surprising if you didn't know, because it was only a few years ago that the United Nations declared 20 May as World Bee Day. The main purpose of the day is to spread awareness about the significance of bees and other pollinators. This gives us a perfect opportunity to highlight one group of local native bees - the Homalictus bees.

There are about 40 species of *Homalictus* bees living in Australia, occurring in every state and territory. Although they are relatively small, ranging from 5 - 8 mm in length, they are quite identifiable. That is because they come in an amazing array of colours, often a metallic green or blue with a dark brown abdomen. Other colours include coppery red through to gold.

They forage on a wide variety of native flowers, but focus on shallow flowers because they are a 'short-tongued bee'. They collect and carry pollen on soft and unusually long hairs under their abdomen, as well on their hind legs.

They are ground nesting bees, with females digging deep burrows using their jaws. Some species of *Homalictus* bees are solitary with each bee digging her own nest, whereas others are communal, sharing a single burrow where they lay their eggs. This behaviour should not to be confused with social bees, like the European Honey Bee, which has a single queen laying all of the eggs until she is too old to do so.

Coming into winter is of course not the ideal time to be searching for these native bees in your garden,but it is definitely a great time to be planting local native plants to provide food for them.

This document **provides a great source of information outlining relevant bee-attracting plants. As the weather eventually warms up make sure to get out in your garden to see if you can find any** *Homalictus* **bees.**

References:

- https://www.aussiebee.com.au/homalictus.html
- http://www.boic.org.au/files/Homalictus%20bee%20.pdf

Turritopsis spp. at Rapid Bay Jetty, South Australia (Photo: Alex Lea)

Forever young

The Immortal Jellyfish (*Turritopsis dohrnii*) is a tiny translucent jellyfish that is able to reverse its life cycle, transforming from an adult (a medusa) back into a polyp – like a butterfly turning back into a caterpillar! The process is called transdifferentiation and is extremely rare. In fact, their immortality was discovered over 100 years after they were first recorded by scientists.

If a medusa of this species is physically damaged, faces starvation or environmental stress, it shrinks in on itself by reabsorbing its tentacles, sinks to the seafloor and then develops into a new polyp. The new polyp is genetically identical to the original jellyfish and this life cycle reversal can be repeated, meaning these jellyfish may never die of old age. Of course, despite the ability to regenerate, it is not always possible to cheat death. Jellyfish are prey for other marine creatures such as fish and turtles, and polyps are preyed upon by sea slugs and crustaceans.

Adult medusas are bell-shaped, jelly-thin and their large stomach is bright red in colour. They are tiny, only about the size of the nail on your little finger, which makes it easy for them to spread through the oceans of the world via the ballast tanks of cargo ships or polyps attached to the hulls. Next time you're out for a snorkel, keep an eye out for these tiny incredible jellies.

Note: *Turritopsis* jellyfish can be found all over the world and differentiating between species is difficult. *Turritopsis rubra* is found in Australian waters but it is currently unclear whether this species is able to regenerate as observed in *T. dohrnii*.

If you're interested in our local coastal and marine environments and associated resources please click here and be sure to visit South Australia's marine and coastal website hub, The Rockpool.

References:

- https://www.abc.net.au/radionational/programs/greatmomentsinscience/the-strange-life-of-the-immortal-jellyfish-dr-karl-kruszelnicki/7666380
- Video of an Immortal Jellyfish at Rapid Bay, South Australia.

Australian Admirals (Photo: Jeremy Gramp) have caterpillars that feed on nettles (inset: Amy Blaylock)

Caterpillars admirably battle nettles or mimic them

Would you consider keeping a patch of nettles in your garden to support local butterflies?

The caterpillars of the Australian Admiral butterfly (*Vanessa itea*) rely on the soft parts of nettle plants for their food. Urban development, weed competition, and clearing of native vegetation around waterways and moist gullies means native nettles like *Urtica incisa* or Smooth-nettle (*Parietaria debilis*), are not commonly found around Adelaide now. Australian Admiral caterpillars are happy to eat the introduced Stinging Nettle of which there are reasonable populations in Adelaide.

Usually we like to avoid nettles, as their bristles can inject chemicals into our skin which results in a painful, burning sensation. Some caterpillars use the same adaptation to protect themselves, so look at but don't touch bristly or hairy-looking caterpillars on your wattles, gums, grasses and sennas. Several species of moth caterpillars also have urticating bristles that either inject venom or create mechanical irritation.

If you're interested in our local butterflies, you might like to download our butterfly identification chart. Our native plant identification chart can help you find species to add to your garden to support native butterflies and their caterpillars.

References:

- Butterfly Conservation SA
- eFlora of South Australia
- Department of Medical Entomology, University of Sydney
- Caterpillars, moths and their plants of southern Australia. 2019. Butterfly Conservation SA

A Two-tailed Spider waits patiently to catch its next meal (Photo: Steve Walker)

What has two tails and eight legs?

Difficult to see because of their bark-like camouflage, Two-tailed Spiders are small to medium-sized flat spiders which live on tree trunks. Fifty-five species, representing two genera, have been recorded throughout Australia. Another 150 or so species are known outside of Australia in the tropics and subtropics.

In reality they don't really have two tails, but their long spinnerets, the silk-spinning organs, may be as long as their abdomen so giving that illusion. Despite having these huge spinnerets, unlike most spiders they do not produce a large web. Instead, Two-tailed Spiders lay lines of thin thread across the bark. The spider then sits and waits, using its camouflage to hide in plain sight. When a thread is triggered by an insect or other prey item, the spider moves into action, rushing over and ambushing the unsuspecting prey, immobilising it with more silk. The spider is then free to feed on its meal when ready.

As well as the two 'tails', these spiders are characterised by particularly long sprawling legs, which give them the super speed to run across the tree trunks. Interestingly, their third pair of legs is much shorter than the others. What do you think the benefit of that particular adaptation might be?

Females grow to a maximum body size of about 2cm, with the males being a bit smaller (up to about 8mm body length). Of course, once you add in the legs and spinnerets their overall size increases significantly.

If you would like to see some of these incredible spiders in action, try visiting Tuttangga in the South Parklands (between Greenhill Road, Hutt Road, Fullarton Road and South Terrace). If you look very carefully, you should be able to see them hunting on the trunks of the Eucalypts, day or night.

The Western Dusky-blue is a small butterfly with a purple sheen on its wings (Photo: Rob Wallace)

Living with a Snotty-gobble parasite

The Western Dusky-blue, *Candalides hyacinthinus*, is a small butterfly with bright purple upper wings, edged with brown-grey and white. Underneath they are grey-brown and spotted with rings. The wingspan is up to 30 mm.

It lives mainly in eucalypt woodlands in the Mt Lofty Ranges around Adelaide where it is uncommon because the plant it relies on, Coarse Dodder-laurel, is usually removed by gardeners.

Coarse Dodder-laurel, *Cassytha melantha*, also known as Snotty-gobble, is a hemi-parasitic plant that gets nutrition from its host plant but also photosynthesises. Dodder-laurel doesn't have leaves so photosynthesis is through its green stems. It will strangle the host if fire isn't periodically used as a management tool in bushland, but killing the host does help open up the understorey to light. Dodder-laurel is spread by birds that eat the fruit and defecate the seed onto other plants. Western Dusky-blue caterpillars feed on the buds, flowers, fruits and soft stems of this plant.

One way you could help to provide suitable habitat for the butterfly is to collect seed of the Coarse Dodder-laurel and smear it on the stems of gum trees in your garden. You may have to remove the Coarse Dodder-laurel by pulling it off the host plant from time to time, so it doesn't suffocate it.

References:

- Museums Victoria
- Attracting Butterflies to your Garden

Check your pond samples for leaves and sticks that walk; they might contain caddisfly larvae (Photo: Bob Henricks)

Making a case for caddisfly

Caddisflies (*Tricoptera*) make up a diverse group of insects with terrestrial adults that fly and a larval stage that lives in freshwater. Nine families are found in South Australia. The diets of caddisfly larvae vary; some individuals scrape algae off rocks and others are predators which eat other invertebrates. They are commonly found in both flowing streams and temporary pools and are large enough to see without a microscope; varying in size between 1.5mm and 4mm.

Caddisfly larvae crawl along the bottom of a water body they are living in as they are not great swimmers. Several families construct elaborate cases to protect themselves from predators. The cases are made from silk produced from a gland next to their mouthparts and then covered and reinforced with various materials including sand, small twigs and bits of leaves.

Caddisfly larvae breathe through gills along their abdomens. Larvae that live in cases wriggle their bodies inside the case to draw oxygenated water in around them and over the gills. In water with low oxygen content, they must do a lot of wriggling.

When looking for invertebrates in your local pond or stream, carefully look for moving sticks and leaves to check if there are caddisfly larvae.

To find out more about local aquatic invertebrates, check out our aquatic macroinvertebrates identification chart.

References:

- Critter catalogue
- www.mdfrc.org.au/bugguide/display.asp?type=3&class=17&subclass=&Order=8&couplet=0
- www.researchgate.net/publication/271834854_Identification_keys_to_Australian_Families_and_Genera_of_caddis-fly_larvae_Trichoptera

The distinctive markings which give rise to its common name (Photo: Jeremy Gramp)

Check your toilet for spider friends…

Spring is often a time we like to embrace the environment by heading out for a nature walk or by working outside in the garden. On your outdoor adventures you are likely to see many small creatures also being active. One of these could be the Redback Spider (*Latrodectus hasselti*).

Redback Spiders can often be found in dry, sheltered places, such as garden sheds, garages, under logs, in junk-piles or even under toilet seats. November 19 is the United Nations World Toilet Day, so this is your reminder to check around your toilet for any spider friends that you may not want to share the seat with.

If you do see a Redback Spider, it is most likely to be a female. They are usually about 1cm long (approximately 2.5 times the body length of the male) and the red stripes on their backs are a lot bigger and brighter than those on males. After mating, the female can store sperm and use it over several batches of eggs for up to two years. Another difference between the male and female Redback Spiders is that the males do not produce a web. Instead, they wait for prey on the edge of the female's web. Redback Spider webs can capture insects and even small lizards. Large females have also been known to steal prey from other spiders' webs.

If you are bitten by a female Redback, be sure to seek medical help right away as the bite can cause illness or, very rarely, death. The good news is that antivenom can be administered and, because they have small jaws, the bite is often ineffective. Common symptoms of the venom are sweating, nausea, weakness and pain. There have been no reported deaths since the antivenom was released.

To find out more about another creature with many legs, check out our Ant identification chart.

References:

- https://www.australiangeographic.com.au/topics/wildlife/2012/08/australian-spiders-the-10-most-dangerous/
- https://australian.museum/learn/animals/spiders/redback-spider/

The unusual Mole Cricket (Photo: Jeremy Gramp)

Should you dig in? It's just not cricket.

Next Sunday is the United Nations World Soil Day. It is held annually on 5 December as a means to focus attention on the importance of healthy soil and to advocate for the sustainable management of soil resources.

There are many creatures in our local environment that help to improve the health of our soils, one such animal is the Mole Cricket. There are in fact a few different species of Mole Cricket that can be found in Adelaide, some are local natives while others are introduced from overseas. All of them however do an excellent job of aerating our soils.

Mole Crickets are strange-looking animals, often described as being built from the parts of a number of other animals. They have large shovel-like fore legs, beady eyes and a soft abdomen that looks very similar to the 'normal' crickets that most people are familiar with. Mole Crickets are brown in colour and can grow to about 5cm in length.

They use their strong fore legs to construct tunnels, spending most of the time underground. Although you may not have seen a Mole Cricket you will most likely have heard one. On wet nights the characteristic cricket sounds that you hear, especially at dusk, are Mole Crickets. If you stomp on the ground the chirping stops.

Although both the males and females call, it is the males that make the incredibly loud sound hoping to attract females. They rub their fore wings together to make the noise, using their tunnels to amplify their calls. They do this by sitting in the entrance of their burrow with their head poking inwards and sticking their abdomen out.

They are most active during the summer months, so the next time you are out at dusk have a listen for the Mole Crickets in your area.

A Jewel Spider constructs its web to catch a meal (Photo: Steve Walker)

Christmas jewels

The Australian Jewel Spider (*Austracantha minax*) is a perfectly named orb-weaving spider that is mostly encountered in summer months and therefore sometimes known as the Christmas Spider. It is the only species in the genus *Austracantha*, which is derived from Latin words meaning 'southern thorn'. The species name *minax* means 'projecting', so its scientific name describes the six spines projecting from its abdomen.

They are small spiders, with the larger females only growing to about 12mm, but their distinctive shiny black, white, yellow and orange bodies make them easy to identify, and give them the appearance of jewels decorating the shrubs and trees in which they construct their webs.

Jewel Spiders have some interesting web-building behaviours: They are social spiders, frequently building communal webs that lace together and blanket the vegetation. Unlike many spiders, the Jewel Spider does not deconstruct the web each day and it spends most of its time sitting on the web rather than retreating into a hide off to one side. The spider also adds white silk tufts along the web and support lines, which may help to increase the visibility of the web to larger animals and prevent them accidentally colliding with and damaging the web. Other than these tufts, the web is almost invisible.

Why are they seen predominantly near Christmas and not at other times of the year? Jewel Spiders have a short lifespan. Once reaching adulthood they only live a few months. However, the spiderlings spend the winter inside egg sacs, which the females attach to vegetation near the web, emerging in autumn. They are smaller and less colourful than the adults but will eventually undertake the final moult into adulthood during spring.

As we're approaching Christmas, why not see if you can find any of these little jewels in your garden?

Adult Ant Lion Lacewing on Keeled Hakea (Hakea carinata) (Photo: Rob Wallace)

A lion that wears lace

Unknown to many of us there are strange creatures living at the bottom of mini volcanoes in our gardens, parks and local bushland. These insects are Ant Lion Lacewings.

Their larvae, known as Ant Lions, build conical traps in the soil in sheltered, dry places in crumbly, loose soil that often has a sandy texture. They feed on prey that falls to the bottom of the trap where the buried Ant Lion is waiting for its meal. When the prey falls in, the loose sandy sides of the trap prevent it from escaping. The Ant Lion larvae also flick sand at the struggling prey, which includes ants, spiders and other small invertebrates. Most Ant Lions have tubular mouth parts to suck the body fluids out of their prey. The larvae have an oval or disc shaped abdomen. Many have two large spiked pincers at the front for grabbing prey.

Ant Lion Lacewings are part of an ancient and diverse order of insects called Neuroptera. The wingless Ant Lion larvae are ugly ducklings in comparison to their attractive winged adult Lacewing form which is not unlike a dragonfly to look at.

Most adult Lacewings are carnivorous, but some feed on plants or nectar. They are nocturnal.

Lacewings lay their eggs on vegetation or in sand. The eggs are stalked and either laid singly or in groups. Some are patterned. Many Lacewings emit a smell when handled which is probably a defensive mechanism.

Next time you go down to the bottom of your garden keep an eye out for little volcanoes and the myriad of other invertebrates we have in the Green Adelaide area.

To find out more about other local invertebrate species, check out our resources on the Green Adelaide website.

References:

- Smith, J. 2016. Wildlife of Greater Adelaide. Axiom
- Australian Museum: Lacewings and Antlions: Order Neuroptera

Fiddler Beetle (Photo: Sophie Rogers)

A not-so-musical fiddler

This 2 to 2.5cm long 'bug', *Chlorobapta frontalis*, is famously called the Fiddler Beetle because the distinct markings on its back resemble f-holes on a violin. It is a beautiful beetle, being black with vivid aqua, green and yellow markings. In the photo you can also see that their hind legs have spines along them.

These beetles can be found in open forests, woodlands, golf courses, urban parks and gardens in Australia, but are less common in Adelaide, so it's a real treat when you find one. They are also known as Scarabs or flower chafers, of which there are many species with flattened bodies.

The adults emerge from the soil in early summer to feed on nectar and pollen. This means that they are a pollinator and help spread pollen from flower to flower.

Female Fiddler Beetles lay their eggs in hollow Eucalypts where the larvae hatch and grow. Once the eggs hatch, the larvae feed on dead and decaying wood.

Reference:

- Smith, J. 2016. Wildlife of Greater Adelaide. Axiom

Growing, growing, gone - three stages of the Chequered Swallowtail butterfly (Photos: Amy Blaylock)

Now you see me, now you don't

A large black and cream butterfly floated past my kitchen window onto the scurf pea bush (*Cullen australasicum*). It settled on a leaf for a few seconds, then moved onto the next, and the next, and then it was gone.

As the biggest butterfly I'd ever seen in my garden, I hopped online and identified it as a Chequered Swallowtail (*Papilio demoleus*), wingspan to 75mm, whose caterpillars feed on *Cullen*.

The next day I went out and checked where it had landed and found a pale egg about 1mm in diameter on the underside of each leaf it had visited. A few days later I noticed tiny black and yellow caterpillars busily feeding. These steadily grew larger but remained in plain sight, their colour a warning of toxicity or a clever mimic of bird poo.

Just over a week later I took the top right photo of one sitting on a leaf. Imagine my surprise when I walked past the bush that afternoon and found it had changed colour to a light green! This marked the transformation from the fourth to the fifth instar or stage.

The next day I couldn't find it all; it had likely moved elsewhere on the plant to form its chrysalis, green and ingeniously leaf-shaped. In a few weeks or even months, it will emerge as an adult and seek out more scurf peas, either here in Adelaide or further north.

To identify some common butterfly species in your garden, check out our Butterflies of the Adelaide region identification chart or find a plant that's perfect for their caterpillars in this Adelaide garden guide.

References:

- Butterfly Conservation SA - Butterfly Identification Chart no. 3
- Butterfly Conservation SA – Chequered Swallowtail
- Coffs Harbour Butterfly House

Orange Potter Wasps on a Twiggy Daisy Bush during mating season (Photo: Amy Blaylock)

Calm potter is a calculated caterpillar killer

Imagine you're a caterpillar, feeding away on a leaf, when suddenly you're grabbed by an Orange Potter Wasp (*Delta latreillei*). Injected with paralysing venom, you're flown to a nest carefully constructed under the eaves of a house. All around you lie other motionless caterpillars. The female wasp lays eggs in amongst you, then seals the nest shut with fresh mud. In the darkness, as the eggs develop into larvae, you know the worst is yet to come. While this everyday event is a horror story for hapless caterpillars, Orange Potter Wasps are not aggressive to humans, and females will only use their sting if they are handled.

Their foraging of caterpillars reduces the pressure on our favourite garden plants without the use of pesticides, and we're not the only ones who can benefit. A study published by Matthews and Matthews in 2018 tracked 12 nests in the Northern Territory and found that chrysidid wasps sneak into the open nest and lay their own eggs while the female is out foraging. Luckily the Orange Potter female does regular inspections before sealing up the nest, giving her the chance to destroy intruder eggs and larvae, and replace escaped prey that were not fully paralysed. These large orange and black wasps with their skinny 'waists' are common around Australia and are solitary except during the mating season. They are great pollinators because they feed on nectar and pollen in our gardens and forests, so please don't destroy their nests.

If you're interested in the diversity of pollinators of our native orchids (including wasps), check out our Native Orchids of the Adelaide Hills ID chart.

References:

- Orange-tailed Potter Wasp - iNaturalist Australia
- Great photos of a potter wasp larder - Ausemade
- Nesting biology of an Australian potter wasp - Researchgate
- Mud Wasps - Backyard Buddies
- Slender mud-dauber wasps - Western Australian Museum

The Southern Blue Ringed Octopus will show its true colours when disturbed (Photo: Alex Lea)

Tiny but oh so deadly!

The Southern Blue Ringed Octopus (*Hapalochlaena maculosa*) is small compared to other octopuses but is the largest of the four known Blue Ringed Octopus species.

At just 20 cm from arm to arm, and usually a dull yellow brown colour, they hide away easily on the bottom of our oceans. They typically hide under rocks and in crevices along our rocky reefs, including in rock pools.

Blue Ringed Octopuses are typically very passive and would rather hide and escape undetected if disturbed. However, when provoked they will flash iridescent blue rings across their body. An octopus typically has 60 rings.

These octopuses eat lobsters, crabs, small shellfish such as prawns, and sometimes small fish. They kill their prey using a very toxic venom. They can inject their venom through their beaks which paralyse their prey and often kill it. They can also spray their venom into the water, which will immobilise the prey as it swims through the venom. The octopus then catches the prey to eat it.

Blue Ringed Octopus venom is fatal to humans and there is no known antivenom. Most people are bitten by a Blue Ringed Octopus after standing on them by mistake in shallow water. These octopuses will only bite if threatened, so if you see one when looking in rockpools, wish the octopus a 'Good Day" and leave it well alone.

If you're interested in our marine environment, you might like to look at The Rockpool, a hub of marine resources, or download our Beachcombing ID chart for the next time you are at the beach.

References:

- https://en.wikipedia.org/wiki/Southern_blue-ringed_octopus
- https://reeflifesurvey.com/species/hapalochlaena-maculosa/

Chequered Copper butterfly and (inset) it's host plant, the Native Sorrel (Photos: John Slaney/Brent Miller)

A rare butterfly's relationship with ants

If you see a butterfly that has orange in the centre with dark brown borders or you catch a glimpse of the whitish underside of some wings with small brown and orange spots, you may have spotted a species of the Lycaenidae family. The Chequered Copper butterfly (*Lucia limbaria*) resides in urban Adelaide, the Mt Lofty, Flinders Ranges and Southeast Regions. It's preferred habitat of open grasslands is under threat due to introduced grass species and land clearing, so this butterfly has become rare.

Though small, with a wingspan of just 2.5cm, the Chequered Copper lays 2 to 20 eggs on the leafy underside of the Native Sorrel (*Oxalis perennans*) hostplant. This plant has been specifically chosen by the butterfly as it provides food for the caterpillar, which hatches in 13 days.

The tiny 3mm caterpillar is immediately found by ants (small black *Iridomyrmex*) and taken to live in their nest. Protecting the Chequered Copper caterpillar is important to the ants because they feed from the caterpillar's nectary glands. The ants herd the caterpillars from the nest and push and pull them onto the upper parts of the stems of the Native Sorrel with more foliage. If the caterpillar gets tangled in a web, the ants will free it. In return, the ants are rewarded with a supply of honey dew which they collect from the rear of the caterpillar.

You can help this threatened butterfly species by growing a patch of Native Sorrel in your garden. Planting native grasses with open spaces around the plants will encourage ants to your patch. Here are 6 steps to make your garden butterfly-friendly. If you're interested in our local native butterflies, you might like to download our Butterfly ID Chart.

Reference:

- Attracting Butterflies To Your Garden | Butterfly Conservation SA Inc
- https://www.flickr.com/photos/52748818@N07/5135320426/
- https://www.flickr.com/photos/foliosus/5129254007

An assortment of Adelaide spider burrow entrances (Photos: Amy Blaylock)

Digging the underground scene

If you take a wander around Adelaide's forests, grasslands or urban gardens, you're likely to have stepped on and over spider burrows. You might have noticed small holes in the ground which on closer inspection are silk-lined burrows, with or without leaves, twigs and grass stems woven into the entrance. It is likely you missed those with a trapdoor, which camouflages the burrow and it's resident spider. Burrow-building spiders around Adelaide include wolf spiders, mouse spiders and the group of spiders known as trapdoor spiders.

All burrow types provide protection to spiders and their eggs from weather events and predators, such as birds, reptiles, bandicoots, insects and other spiders. For wolf spiders they are a daytime shelter which they leave at night to go hunting, whereas trapdoors and some mouse spiders will ambush their prey from within their burrow.

Spider burrows are elaborate constructions that can include side chambers, escape tunnels and blocking devices. With burrows reaching up to half a metre deep, and spiders needing to widen their burrows and trapdoors as they grow, the work is never ending! But a 2011 American study of wolf spiders meticulously calculated the energy cost of building a burrow and found the benefits of having a burrow far outweigh the effort.

Next time you go for a walk, take the opportunity to look down and wonder at the engineering feats that lie beneath our feet.

References:

- https://australian.museum/learn/animals/spiders/
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3281395/

A Sand Wasp in an area with soil suitable for digging a nest (Photo: Rob Wallace)

A wasp that wouldn't hurt a fly, or would it?

If you are on a track or in a sandy or gravelly area and see several insects flying low and buzzing around an area on the ground, there's a fair chance they could be Sand Wasps. Sand Wasps (*Bembix* species) are common throughout Australia in urban areas, woodlands, heath and forests. They are a medium-sized wasp with black and yellow on their thorax and black and white wavy or broken striping on their abdomen. Their legs are yellow with darker colouring at the joints.

Sand Wasps feed on flower nectar but catch flies on the wing, which they paralyse with their venom mid-air and take back to their nest as food for their hatching larvae, which are meat eaters. The females use their legs, which have spines on, to dig a shallow hole as a nest where they lay their eggs and store the paralysed flies for the hatching larvae.

While flying they make a buzzing noise not unlike a fly. They are solitary, but females excavate their burrows near each other in suitable soil for burrowing, making a loose colony. This attracts parasitizing flies and wasps, but sometimes the Sand Wasps prey on these parasites.

Their sting is painful; however, they rarely sting people unless their nest is disturbed.

To find out more about other local invertebrate species, check out our resources at https://www.greenadelaide.sa.gov.au/get-involved/for-teachers/teacher-resources

References:

- https://australian.museum/learn/animals/insects/sand-wasps/
- https://www.jungledragon.com/specie/22521/yellow_sand_wasp.html

Saint Vincent's Nudibranch: a local example of the extraordinary adaptations of sea slugs (Photo: Vivien Matson-Larkin)

Naked, super-powered sea slugs

Named for the visibility of their organs outside of their bodies, nudibranchs (naked sea slugs) also display an array of colours and patterns. As if surviving with external lungs and stomachs is not already amazing enough, they can also absorb the defensive stings of sea anemones and the solar-powers of algae. Some sea slugs can even drop their own bodies and survive just as a head! No doubt, they would be an awesome aquatic comic book hero with these evolved superpowers. Pictured above, the Saint Vincent's nudibranch (*Hypselodoris saintvincentia*) is found in the rocky reefs of Port Noarlunga and nearby areas. In the Dorid group, these nudibranchs are well known for their colours, and the retractable and colourful cluster of feathery gills on their backs. Loved by divers, you can understand why nudibranchs are referred to as the butterflies of the ocean. The Aeolids, cousins to the Dorids, carry tentacle-like structures on their backs called cerata. Cerata act as a lung stomach from which they both breathe and digest food. When they eat things with stinging cells, like anemones, they will transport these cells into their cerata to use defensively, like swinging stinging swords. The Sacoglossan group of sea slugs has the means to harness the power of plants. They harvest the chloroplast cells in algae to photosynthesise and can go a long time without eating. This is known as kleptoplasty. If this wasn't bizarre enough, how about the fact they can drop their bodies in a defensive move like a lizard dropping its tail? This was first observed in a Japanese lab in 2021. How does the head survive without essential organs such as the heart, lung or stomach? The theory is that these sap-sucking body-dropping slugs have the energy to regrow because of their kleptoplasty superpower. Nudibranchs' bizarre, alien-like adaptations are considered responses to the dynamic, harsh world underwater. Sea slugs can be found in inter-tidal zones as well as deep in the ocean and their short life-span and specific food requirements also makes them great bio-indicators. They're being studied to monitor the influence of human impacts, including climate change. Which of these amazing super-powered sea slugs can be found in our coastal waters?

To look at some jaw-dropping pictures and to get involved in contributing to the science on sea slugs visit Sea slugs of South Australia and Sea Slug Census.

Reference: Sea slugs of the Port River South Australia

Colonial ascidians underwater and as you may see them washed up on the beach (Photos: Alex Lea and Jeremy Gramp)

A colony that siphons together stays together

If you are walking along the beach, you may find these creatures washed up on a high tide or after a storm. Colonial Ascidians, are also known as 'sea squirts' due to them expelling water from their siphons when removed from the water. With their texture and holes, they look a bit like a sponge, but these marine invertebrates are individual creatures that live together in one jelly-like mass. Individuals are called Zooids and they grow physically attached together. They can be found living encrusted on rocks, sea grass, kelp and on structures such as jetty pylons. Colonial ascidians grow at faster rates than solitary ascidians and can keep growing if part of them is eaten by a predator, meaning they can keep covering a large area.

Ascidians typically have a tough outer casing that may feel leathery to touch; they can be many different colours including purple, yellow, orange and pink. Some of them are even transparent. Colonial ascidians often have attractive daisy chain like patterns across their surface and around the many siphon holes in the surface.

Ascidians are filter feeders that move water through their bodies between two siphons catching plankton in small projections (cilia). They reproduce by broadcasting larvae into the water column that then find suitable substrates to settle on and anchor to.

Scientists find sea squirts fascinating to study because they have the most basic form of a nervous system and show an evolutionary step towards developing a central nervous system. In fact, despite being classed as invertebrates because they have no backbone, they are part of the phylum Chordata, which includes vertebrates such as birds, reptiles and mammals.

Have a look next time you are walking along the beach for washed up sea squirts. Ascidians and other common items found along our beaches can be found on our Beachcombing chart. Find the beachcombing and other ID charts on the Green Adelaide website.

Green Lacewings have exceptionally long antennae (Photo: Jeremy Gramp)

On lacewing and a preyer

The Green Lacewing (*Mallada signatus*) is a flying insect with long antennae and prominent eyes found in most parts of Australia, including our urban backyards across Adelaide. They have two pairs of delicate transparent lace-like wings, much longer than their body. Green Lacewings feed on honeydew, nectar and pollen. They tend to be more active at night than the Brown Lacewing, which is active during the day.

Green Lacewings only live for about four weeks. They lay white, globular eggs that are suspended on silk stalks for protection. After hatching, the larvae undergo three moults over a fortnight before pupating inside a silken cocoon. Adults emerge nine days later and will start laying eggs after seven days.

Green Lacewing larvae have large piercing mandibles for capturing prey. These useful predators feast on common garden pests including mites, caterpillars, aphids and thrips. They are sometimes called 'junk bugs' because they impale the carcasses of their deceased prey on small spines on their back for camouflage.

Local research has discovered that Green Lacewings are commonly found on Christmas Bush, Prickly Tea-tree and Wallaby Grass during spring and summer. Some wine and food producers are increasingly using these plants to attract and support healthy populations of lacewings to protect their crops from common pests.

Do you have a home or school food garden? Why not experiment with these native plants to increase your beneficial bug workforce?

References:

- https://australian.museum/learn/animals/insects/lacewings-and-antlions-order-neuroptera/
- https://cdn.environment.sa.gov.au/landscape/docs/hf/96554-LSA-HF-Key-predator-of-vineyard-pests-document-FIN-V3-web.pdf
- https://pir.sa.gov.au/research/services/reports_and_newsletters/pestfacts_newsletter/pestfacts_map

Garden Orb-weaver in its web at night (Photo: Rob Wallace)

Night Weaving

Garden Orb-weaving spiders, also known as Orb-weavers, are a large group of spiders with over a hundred species in Australia. The Australian Garden Orb-weaver (*Eriophora transmarina*) is one of the most common species of Orb-weavers in Australia. It is found commonly throughout southern and eastern Australia and less commonly in northern and central Australia.

It is a spider with a large abdomen and varies in shape, size and colour from off white through to black, with or without striping on the legs. The body and legs are covered in scattered hairs. The male is 15 to 17 mm in length and the female, 20 to 25 mm.

Garden Orb-weavers spin their wheel-shaped web at night, in an open area between and attached to trees or shrubs to trap flying insects. They hang upside down in the centre of the web waiting for prey, which they sense through vibrations in the web. The Garden Orb-weaver quickly runs to cover its prey in silken thread with its shorter middle legs, before biting and injecting its deadly venom. Once the insect has died the Garden Orb-weaver takes it back to the centre of the web to devour. They dismantle their webs each morning. If a spider is disturbed it will drop to the ground and play dead. Their main predators are honeyeaters.

Females lay eggs in summer through to autumn. Young spiderlings hatch out from autumn on and disperse by ballooning out of trees and bushes in the breeze.

While the Garden Orb-weaver's poison is deadly to insects, it rarely bites humans and the venom usually causes little or no pain. Occasionally it can cause swelling, numbness and other issues. If this happens see a doctor.

References:

- Garden Orb-weaving Spiders: Australian Museum
- Australian garden orb weaver spider: Wikipedia

A Blue-banded Bee enters its burrow (Photo: Jenny Thynne)

Wasp the problem? Don't bee afraid!

It's common for children and adults alike to be a little apprehensive about finding a bee or wasp nest in their backyard or school grounds, but what many people don't realise is that our native bees and wasps are much less likely to sting than their European counterparts. In fact, they are vital to the health of our natural environment. That's why we should all be encouraging these important pollinators, rather than trying to get rid of them. We have around 2000 species of native bee in Australia and most of them are solitary; meaning they live and travel alone and the females often leave once their eggs are laid, so their offspring have to fend for themselves. Some species lay their eggs in the holes in tree branches or trunks made by borer insects. The bees use resin from the tree to seal the eggs in so they are protected against natural predators. These are the species you can attract by creating a bee hotel. Check out the Green Adelaide website to find out how.

However, up to 70% of native bees (and many species of wasp) actually nest in burrows in the ground. They need some open soil and will drill into the earth to create protective tunnels underground. They create a series of cells at the bottom of the burrow, then deposit a ball of pollen mixed with a small amount of nectar before laying their eggs. When the young bees hatch, they feed on the pollen ball before digging their way out of the burrow and getting ready to mate and lay their own eggs the following spring. Each species has different nesting habits, with some nesting together in groups of a dozen or more; while others are solitary with the females inhabiting a burrow all to themselves. Likewise, the depth of burrows ranges from a few centimetres to over a metre. Often there will be a noticeable cone or mound of earth above the nest, but sometimes they will be harder to spot and simply consist of a series of small holes in the ground. So next time you notice these holes, spare a thought for all the life going on just below the ground.

References:

- Native Bee Buzz - Fact Sheets - Gardening Australia
- Wasp photos and ID - aussiebee.com.au
- Burrowing bees - Bush Heritage Australia
- Can you beelieve?! Our guide to native bees – CSIROscope

Sponge crabs are camouflaged from predators by carrying colourful sponges on their backs (Photo: Fiona McQueen)

Who can be crabby with an invisibility cloak?

Most crabs use their hard shells and pincers for protection, but Sponge Crabs take a different approach, preferring to use a sponge as an invisibility cloak. The Dromiidae Sponge Crab family is characterised by having adapted to carrying sponges or ascidians to help camouflage themselves from predators. Their last two pairs of legs hold the sponge in place and the crab uses its pincers to trim the sponge to the correct size and shape.

Carrying the sponge creates a disguise from predators in multiple ways; predators are unable to both see and smell the crab because the chemicals that the sponge produces provides further camouflage for the crab. Many of the sponges produce chemicals that make them taste extremely unpleasant, so even if a predator was to try to eat the crab it would be put off by the taste.

Some species of Sponge Crabs are very selective about the sponges they use for their cloaks, but others will use a variety of materials, including ascidians. The sponges and ascidians on their backs remain living but it is not known if they receive any benefit from the interaction.

Like most crabs, Sponge Crabs are omnivores, feeding on plants and small animals like shrimp. They live in crevices and caves and can be found on reefs around the coast of Adelaide.

Find our beachcombing ID chart and other ID charts on the Green Adelaide website.

Brown-winged Villa Bee Fly resting on a leaf (Photo: Rob Wallace)

Is it a bee or a fly? No, it's a bee fly with a hairy jacket

If you are wandering about your garden and see a bee-like creature that doesn't quite look like a European Bee, it could be one of two types of fly. The first, which is introduced and has a dark brown and orange striped body with the top two stripes being joined in the middle, is a Drone Fly.

The second is the native Brown-winged Villa Bee Fly. They are about the same size as a bee and have a rounded striped abdomen. The stripes are dark and blackish, alternating with grey and light brown, all made up of dense hair. The wings, which sit open at 45 degrees when they are resting, are heavily veined and transparent with a browny tinge. You will see them on flowers, dead leaves on the ground or often on rocks in the sun. They can often be seen in warmer weather on tracks in bushland.

While they are not uncommon there isn't a great deal of information on our local native species. It is in the genus *Villa* and belongs in the bee-fly family (Bombyliidae). There are about 270 species of *Villa* worldwide, being present on every continent except Antarctica. Many species are important pollinators of flowers, having a long proboscis to feed on nectar and pollen. Our local species does not have a long proboscis but does feed on flowers.

Typically, bee flies are from 5 to 17 mm in length and have rounded heads with large, rounded eyes. The local Villa Bee Fly has red brown eyes. Typically, the larvae are parasitic on bees, wasps and other insects in the ground.

So next time you are out in your garden or local bushland, keep an eye out for the bee that isn't.

References:

- Queensland University, Christine Lambkin. Bee Flies
- Villa (fly): Wikipedia
- The Humble Bee Fly (Family Bombyliidae —Order Diptera) - John Lenagan

Slaters roll into a ball as a defence mechanism (Photo: Andy Reago & Chrissy McClarren; inset: Katya)

The roly-poly crustacean: a superb composter

What are these bugs even called? Well, they might look like an insect, but with 7 pairs of legs they are not. They are actually crustaceans - related to crabs, prawns and lobsters. They have lots of common names, including slaters, roly-polies, pill bugs and wood Lice. Slaters are recognisable from their oval-shaped flat segmented body and can be 7 to 20 mm in length. There are Australian native slaters, but the most commonly encountered slaters were introduced from Europe and are now found all over Australia. The Common Slater, *Porcellio scaber*, is a dull grey colour and the Pill Bug, *Armadillidium vulgare*, is dark brown to black. Two unusual features of these species are their breathing with gills and using specialised navigation equipment called 'uropods' to get around.

Slaters hatch from eggs laid in the female's pouch and are born with just 6 pairs of legs and 6 body segments. They moult their exoskeleton many times as they grow larger, eventually developing a seventh body segment and another pair of legs. In the moulting process, they are vulnerable, with half their exoskeleton falling off and then the other half a few days later. Their defence mechanism is to roll into a ball, with their armoured bodies protecting their undersides from exposure. Head out to your garden and lift up a pot plant or a rock and you might be lucky to find some of these curious slaters underneath. You'll find them hiding there because they like moist, damp conditions. They are great for your garden and with their favourite snack being decaying organic matter; they really are superb composters, returning nutrients to the soil helps keep your plants healthy. If slaters do start getting a bit too keen on your young seedlings, you can distract them with traps made from half an orange or punnets of potato peelings. See how many of these superb composters you can find in your garden this weekend.

References:

- Slaters: Backyard Buddies
- Terrestrial Isopods: Armadillidium vulgare and Porcellio scaber

A male Scorpionfly waiting for prey to wander by (Photo: Rob Wallace)

Wine, dine and romance...well maybe not the wine

Scorpionflies are insects in the order Mecoptera. Their two pairs of wings distinguish them from the true flies (order Diptera), which have one wing pair. They are a relatively ancient order that undergoes complete metamorphosis. Their first stage, hatching from cubed shaped eggs dropped in moist soil by the female, is as a larva. Larvae feed on dead invertebrates in the soil. They then pupate in the soil before emerging as the adult form pictured.

Scorpionflies get their name from some species which curl their abdomen forward over their body and vaguely resemble scorpions. Their other common name, Hanging Fly, is probably more appropriate, as the males hang on stems of plants by their front legs waiting to catch passing invertebrate prey with their long dangling hind legs, which are strong and have opposing claws at the last joint.

Scorpionflies are between 20 and 30 mm in length, have long legs, wings folded back on their body and are coloured black and orange through to brown. They have long chewing mouth parts and could easily be mistaken for a wasp at first glance.

Males attract females by offering up prey they have caught, which is consumed by the female as they mate. As well as eating invertebrates they feed on pollen, nectar and fruit.

While they aren't common in the Adelaide area, keep an eye out for the Scorpionfly (*Harpobittacus australis*), pictured above, as these colourful creatures can be found hanging on bushes in your garden or local bushland waiting for prey.

References:

- Harpobittacus australis Museums Victoria Collection
- Scorpion Flies, Hanging Flies - Order Mecoptera
- Wildlife of Greater Adelaide, James ID Smith.

A Caper White Butterfly drinking nectar from a Gaunt Riceflower (Photo: Rob Wallace)

Taking flight - from egg to butterfly

Have you spotted the Caper White Butterflies in your school or backyard? Are you curious about how these creatures grow and develop from an egg?

View this stunning series of photographs of the full life cycle of the Caper White, from the egg laying to the new butterfly emerging from the chrysalis.

Helen Wilmore provided these amazing photos on the Butterfly Conservation SA website, which has information about Adelaide's butterflies and how to attract them to your garden.

The Caper White Butterfly is a migrant species, usually visiting Adelaide from October to December, travelling from central and eastern Australia.

It lays its eggs on *Capparis* species, which are part of the Caper family. The caterpillars also feed on native and exotic plants belonging to the caper family.

Green Adelaide has a Butterfly ID chart you can download. When printed the butterflies are shown life size.

A Black and White Sedge-skipper (Photo: Matt Endacott)

Fussy eaters living on a saw-edge

When it comes to fussy eaters, the Black and White Sedge-skipper, *Antipodia atralba*, is right up there. The caterpillars of this species prefer the Desert Saw-sedge, *Gahnia lanigera*. Specifically, they like the fresh shoots. They will also eat other Saw-sedges.

Obviously, the size of the butterfly population corresponds to the number of Desert Saw-sedges with fresh shoots available for the caterpillars to munch on. What makes this a problem is that there isn't a lot of Saw-sedge on Adelaide's coast any more. It's also very hard to propagate for use in revegetation, so improving habitat for these skippers is difficult.

The Black and White Sedge-skipper population in Adelaide is stable, but, because of its reliance on the Desert Saw-sedge primarily, and other local Saw-sedges, we need to grow more of these species.

Green Adelaide has been on the lookout for these butterflies, recording where they're living and the sizes of their local populations. We're also looking after the small patches of Desert Saw-sedge found on our coast and working out how best to grow more of this tricky plant.

You can help by learning how to transform your garden into a wonderland for butterflies or get involved in a larger-scale habitat project along the coast with one of the dedicated and passionate volunteer groups. Find out more about volunteer groups on this map.

The Australasian Brown Sea Cucumber has leathery skin (Photo: Jacqui Geux)

Earthworms of the seabed

At first glance, the humble Sea Cucumber (class Holothuroidea) seems to have lot in common with the tasty vegetable - the Cucumber (*Cucumis sativus*). They share a common name and cylindrical shape. Both can grow up to 25 cm long. Neither has a face or eyes, and humans eat them both raw and pickled. However, don't be fooled, that's where the similarities end.

Sea Cucumbers are soft and squishy invertebrates and live on the ocean floor. There are over 1000 species across the world with a number found in shallow South Australian reefs and sediment, like the Australasian Brown Sea Cucumber (*Australostichopus mollis*). Unlike its colourful cousins, this local Sea Cucumber's leathery skin ranges from dark brown, to mottled, to pale yellow.

Sea Cucumbers are part of the phylum Echinodermata, which includes Sea Stars, Sea Urchins, Feather Stars and Brittle Stars. These animals have amazing regenerative properties, which is important for those Sea Cucumbers that shoot out their inner organs at predators to scare them off. This defensive move is called auto-evisceration and is luckily followed by rapid regeneration of the ejected body parts!

Sea Cucumbers are important for ocean ecology because of their scavenging abilities. They cruise along the sea floor using their tube feet and contracting their fleshy bodies. They ingest material, distribute nutrients and help to remove excess organic matter. They are the ocean's natural recyclers - think 'the earthworms of the seabed'.

They make up a highly profitable industry too, representing a multi-billion-dollar international trade. The Sea Cucumber's extensive use in Asia for culinary and health reasons has had Flinders University researchers examining its application as a marine bioproduct in pharmaceuticals and cosmetics, and the potential of farming them in SA. However, with such an important role in marine ecology, it will be essential that any commercial farming is done responsibly and sustainably.

Next time you're out snorkelling consider taking this Underwater Guide to plants and animals in South Australia to help you identify what you discover. Maybe it will be a humble Sea Cucumber!

Wandering Anemone looks like an underwater ball of baked beans (Photo: Alex Lea)

The wandering ball of beans

This spherical curiosity that at first appears to be a ball of baked beans is in fact an anemone. Often found in shallow reef areas or seagrass meadows, Wandering Anemones (*Phlyctenactis tuberculosa*) can be seen along our coasts or occasionally washed up on our beaches after storms. They are also known as Swimming Anemones, but they cannot actively swim, they simply allow ocean currents and surges to move them, like an underwater tumbleweed.

Whilst most anemones prefer to anchor themselves to a rock or reef, these anemones prefer to wander. They have a basal plate that they use to attach themselves to the substrate, but then creep or let the ocean currents move them to other locations in search of better prey. During the day they will mostly take shelter, however they can be found at night when they will move themselves higher, on rocks or kelp fronds, to find a better location to catch prey floating past. They have tentacles which extend to catch and sting their plankton prey.

These anemones grow up to 15 cm across and are covered in air filled sacs called vesicles. The vesicles allow the anemone to float and move along in the water column. During stormy weather they may become washed up on our beaches because they cannot swim against or anchor against strong currents or waves. They range in colour from red or brown to blueish.

Keep an eye out for this curious creature next time you are walking on the beach or snorkelling at one of the many great snorkelling locations along our coast. These animals do sting, so if you see them whilst snorkelling or washed up on shore, do not handle them.

Have a look at our website for ID charts and activities for other creatures you can find whilst beach combing.

Caught! Southern Calamari can be harvested with minimal impacts on the environment (Photo: Linda Allery)

Sustainable fishing is ex-squid-site

Recreational fishing is a popular pastime on metropolitan and coastal waters and latest surveys show the number of anglers is on the rise. Fishing is more than just a popular leisure activity, it's also an important aspect of social, cultural and economic life. It has been estimated that around one-third of global fish stocks are overfished (a fish stock is a fish population in a given location). The good news is that Australian anglers have access to information and guidance on how to be responsible fishers, and our water are home to a wide range of sustainable seafood. Popular and sustainable is the Southern Calamari squid.

Often caught from jetties and piers, Southern Calamari inhabit estuarine and shallow near-shore coastal waters over reefs, sand and seagrass beds. Easily identifiable by their diamond-shaped fins, their varied colour patterns enable them to disguise well in the surrounding environment. They are speedy and efficient hunters using jet propulsion – filling their body cavity with water and quickly expelling it out of the siphon – to catch fast fish and shrimp. Most recreational fishers will be aware of the squid's defence mechanism and many will have been 'inked' at some point. A nuisance to anglers, the expulsion of ink when threatened or disturbed acts as a decoy so the squid can quickly escape.

Southern Calamari is a fast-growing, short-lived species that reproduces quickly and produces a high number of offspring. They're most commonly caught with a squid jig, which is a low impact, highly targeted fishing method with minimal impacts on marine habitats and other species, making it a more sustainable option for the future of our ocean ecosystems.

To find out more about South Australia's coastal and marine environments, check out The Rockpool.

References:

- https://australian.museum/learn/animals/molluscs/southern-calamari-squid-sepioteuthis-australis-quoy-gaimard-1832/
- https://goodfish.org.au/species/southern-calamari/

Lagoon Saltbush, Atriplex suberecta (Photo: Naomi Findlay) is one of Saltbush Blue Butterfly's (inset: Jean Hort) host plants

Saltbush benefit: attract blue butterflies

You might just catch the Saltbush Blue Butterfly (*Theclinesthes serpentata serpentata*) soaking up the last of the Autumn sunshine throughout May. If you miss it, never fear, make sure to keep your eyes out for it to reappear in Spring in locations where its salty host plants are found.

So, what are these salty host plants? Well, these butterflies ensure the survival of their young by only laying their pale green eggs on the plants the caterpillar will feed on. For the Saltbush Blue Butterfly (also commonly known as the Chequered Blue), its favoured host plants are the saltbushes. The caterpillars are only 1cm long, coloured pale green with tiny white spots to blend in with the saltbush leaves. They feed on the flowers, buds and soft green parts of the saltbush host plants.

There are a number of saltbush species – look out for low greyish white to green shrubs with small spear-shaped leaves. Saltbushes have many interesting names: Coast Saltbush, Marsh Saltbush, Old Man Saltbush, Climbing Saltbush, Marsh Saltbush, Berry Saltbush and Climbing Saltbush, to name a few.

The Saltbush Blue Butterfly is easily attracted to urban gardens and this is the perfect time of year to plant native tubestock to attract them. Be sure to plant some of the saltbush species mentioned or head to your local native plant nurseries and ask for a plant that is a member of either the *Atriplex* or *Rhagodia* genera. Here are a few simple steps you can take to make your garden butterfly friendly.

This butterfly species is stunning, with its wings open it shows off its metallic blue central area with broad brown margins edged with white crescents. It also has an incredible underside camouflage – irregular white blotching and brown lines - that blends into the saltbush vegetation when its wings are resting closed. It's tiny, with just a 2cm wingspan. Don't blink or you might miss it fluttering by!

The Salt Bush Blue is common in Greater Adelaide and can be found throughout Southern Australia. To find out more about other local butterfly species, check out our Butterflies of the Adelaide Region identification chart.

Spider wasps aren't aggressive and are unlikely to sting humans unless provoked (Photo: Rob Wallace)

A spider's worst nightmare

Despite their fearsome reputation, spider wasps are important members of our environment. They control spiders, aphids and other pest insects and are notable pollinators of native plants.

There are many species of spider wasp found in Australia - the most commonly encountered being the Orange Spider Wasp (*Cryptocheilus bicolor*). This is a black wasp, ranging in size from 5 to 35mm, with orange head, wings and legs, and orange bands around its abdomen.

Spider wasps are solitary and non-aggressive, yet have one of the most powerful stings among Australia's venomous insects. The venom is used to paralyse large spiders.

It is the females that you are most likely to see and hear, preparing nest chambers for their larvae. After finding a suitable spider she will sting and paralyse it before flying or dragging it back to the chamber. She will then lay her egg on the spider's body and seal the chamber shut. Once the larva hatches, it will feed inside the spider's body, before pupating in a thin silky cocoon.

Most adult spider wasps feed on nectar, especially the females, who need the energy to lay fertile eggs. They are normally actively feeding during summer months.

You can help spider wasps and other beneficial insects by having a chemical-free garden with native plants that flower at different times throughout the year.

References:

- https://australian.museum/learn/animals/insects/spider-wasps/
- https://www.dpi.nsw.gov.au/biosecurity/plant/bees-and-wasps/spider-wasp
- Wildlife of Greater Adelaide (Book) by James ID Smith 2016

Decorator Crabs adorn their carapaces to avoid detection (Photo: Alex Lea)

Strike a pose

Decorator Crabs are found in the temperate waters of the Great Southern Reef of Australia. Several species belonging to the genus *Naxia* boast an array of colourful dress ups using the latest styles in camouflage. Camouflage is an approach to avoid detection from predation and the Decorator Crabs use three different approaches to adorn their carapaces, or shells. The generalists will attach anything from their rocky intertidal environment that is readily available. If the crab shifts locale, it simply attaches something that is available there, allowing it to avoid detection as it melds into the background. The second style is to decorate with things the crab is likely to eat. For example, the local Golden Decorator Crab (*Naxia aurita*) covers its yellow-brown shell with seaweed, sponges, algae and bryozoans (aquatic invertebrates). It makes for a quick snack while on the move! The third camo-approach sees crabs using their adornments as a warning, by means of a technique called aposematism. They attach venomous sponges or anemones when styling it up. By forming a symbiotic relationship with these poisonous creatures, the crab gains extra security and signals to predators to keep away. In turn, these deceptive crabs keep up a fresh supply of water while on the move, from which the sponges or anemones filter their food. Some of these scavengers will keep their costumes for life. Even after moulting their shells, some Decorator Crabs will remove and re-stick their bits and bobs onto their new shell assuming they still blend into the same environment. Or they will find new embellishments. No two crabs look alike; ensuring that each one dons a unique style across the seasons that is representative of where they live. Decorator Crabs are crafty and use a snip, stick and hook method. They keep their chelipeds (legs with claws) free from the fancy dress and use these claws to snip materials in the latest style of where they're hanging out. They chew those bits of plant or invertebrate and coat it with a secretion from a special gland. The secretion hardens in saltwater and sticks to the crab's body. On its carapace are setae, tiny hooks or bristle-like structures, that act as Velcro. Decorator crabs don't only use camouflage, they are also good at striking a pose and staying very still to avoid detection.

Use the Beachcomber's Guide to explore your local marine environment. Investigate ocean sustainability with your class at the local Marine Discovery Centre, and with resources on the Rock Pool, Marine Stewardship Council and Cool Australia websites.

A By-the-wind Sailor washed ashore (Photo: Robin Wilson, Museums Victoria)

Sailing the seven seas

Sailor by name and sailor by nature, the By-the-wind Sailor (*Velella velella*) is commonly found floating on the surface of the world's oceans. As the name suggests, these jellyfish have a stiff transparent triangular vane projecting vertically from their body (called a float) that acts as a sail. The sail runs diagonally across the top of the float, which catches the wind, powering their movement along ocean currents, just like a sail boat. Being at the mercy of the winds means these small ocean travellers are often found washed up in large numbers, sometimes hundreds or thousands of them, after stormy weather.

Their strikingly deep blue floats often cause a case of mistaken identity when spotted in the water or washed up on the beach. Many people confuse the non-venomous By-the-wind Sailors for the more widely known (and venomous) Bluebottle Jellyfish. An easy way to tell them apart is to look for that characteristic sail-like structure which is absent from the Bluebottle, which instead has a distinctive air-filled float and long tentacles. Whilst Bluebottles are not generally found in SA, it's best not to touch jellyfish.

Did you know? The direction of the sail along the float determines which way the By-the-wind Sailor will travel. If the sail runs north-west to south-east along the float it will drift left of the wind direction, if the sail runs south-west to north-east it will drift right of the wind direction. Each batch of young includes some individuals that are 'right-sailed' and that are 'left-sailed', ensuring that they don't all disperse in the same direction at the same time!

To find out more about our local coastal and marine environments, check out South Australia's marine and coastal website hub, the Rock Pool.

References:

- https://collections.museumsvictoria.com.au/species/8685
- https://www.wildlifetrusts.org/wildlife-explorer/marine/colonial-creatures/wind-sailor

The male Ringed Xenica is distinguished by the prominent diagonal silvery band through the centre of the upper wing (Photo: John Tan).

Scaled to perfection

Did you know butterflies' spots occur in virtually the same location in all individuals in a species? This elegantly patterned orange butterfly, the Ringed Xenica (*Geitoneura acantha ocrea*), has eye spots at the top and bottom of the wing. The size of these eye spots is perfectly scaled to the size of the butterfly's wing at all stages of development – this is called allometry. Even within its increasingly small range, the Ringed Xenica is uncommonly seen, camouflaging well in dappled light, leaf litter, plant debris and with the ground. The underside of the wings is a paler version of the top and this camouflage protects them from predators. Now is a good time of year to plant native grasses which are the host species of the Ringed Xenica. The Slender Tussock Grass (*Poa tenera*) grows to half a metre high, with somewhat blue leaves and many flowers on its tall spikelets. It's very hardy and most happy growing in sandy soil. You could also plant another Poa, the Matted Tussock Grass, or try something different with Kangaroo Grass or Weeping Rice Grass. You can find these plants at your local native plant nurseries and then take a few simple steps to make your garden butterfly friendly. The Ringed Xenica favours green, fine, soft native grasses. Their preferred habitat is damp gullies or sheltered woodlands so they are restricted to the southern Mount Lofty Ranges. The butterflies fly around from November to March and the 4cm males perch on the ground in sunny spots waiting for females to emerge. The slightly larger female (4.5cm) lays her eggs on the native grasses and after 2 to 8 weeks the caterpillar emerges and grows to 3cm. It has a really unique appearance – a small brown head attached to a bright green body, and the head and tail both have a pair of horns. The chrysalis is hard to spot but if you look closely, you may see one. They are green or a pink-brown colour, with darker brown markings and yellow spots.

To find out more about other local butterfly species, check out our Butterflies of the Adelaide Region identification chart.

References:

- Attracting Butterflies to your Garden (Book) by Hunt, Grund, Keane & Forrest 2016.
- Palmer, R., McKenna, K.Z. and Nijhout, H.F., 2019. Morphological murals: the scaling.

Australian Emperor on a Bitterleaf Wattle (Photo: Rob Wallace)

Dragonflies are a good symbol for you and the environment

The Australian Emperor (*Hemianax papuensis*) is a dragonfly common throughout Australia, which can be identified by the yellow and black markings along its tail. It is a large dragonfly, with a body length up to 70mm and a wingspan up to 11mm. It is easiest to spot flying around near still water bodies in the warmer summer months.

Part of its lifecycle is aquatic, with females laying their eggs, hundreds at a time, in or near still water. The eggs hatch into nymphs which swim in the water from 2 months to 2 years, depending on conditions. Once the adult emerges, it flies into the sky and lives for around 6 to 8 weeks. Males are very territorial and protective of females, attacking attack rival dragonflies.

Dragonflies love eating mosquitoes, midges and flies. They hunt fairly slowly, patrolling up and down areas, but with short bursts of high speed. Dragonflies are one of the fastest flying insects on the planet. They can fly sideways and backwards, hover and glide, and can move their front and hind wings independently.

You may have heard of damselflies and wondered what the difference is between those and dragonflies. Unlike dragonflies, damselflies can fold their wings behind them, in line with their bodies. Dragonfly wings, however, are fixed at 90 degrees to the body.

In many beliefs and cultures, dragonflies have long been considered a symbol of good luck and prosperity.

Reference:

- https://natureglenelg.org.au/damselflies-and-dragonflies-are-hitting-the-skies-over-wetlands-this-spring/

A Reed Bee gathering nectar and pollen from a Silver Banksia (Photo: Rob Wallace)

Is it a fly, a wasp? No, it's a Reed Bee!

If you've ever tried to identify a local native bee, you may have struggled, unless they are one of the more obvious species like the Blue-banded Bee. Even telling a bee from a wasp or fly, especially if it's a Bee Fly, can be difficult for the novice. Here are some tips that might help in telling bees, wasps and flies apart:

Flies have large and bulgy eyes, they have one pair of wings held out at 45 degrees, are generally fat and stout, and their antennae are straight, short and located between the eyes. Their waist isn't obvious, and their legs are thin.

Wasps have two pairs of wings which are long and thin, their eyes are kidney shaped, their waist is long and narrow, and their thin legs often dangle.

Bees have two pairs of wings that are shorter than their bodies, their eyes are oval, their body shape is an hourglass with a segmented waist, and their hindlegs are broad.

One of our local native bees is the Reed Bee, which belongs to the genus *Exoneura*. Reed Bees are only found in Australia, in the temperate regions of the south-west and south-east. Reed Bees are black with a red-brown or black, wedge-shaped abdomen, often with a cream marking on their otherwise black face. They are 5 to 8 millimetres long, are semi social and active in winter. They nest in the pithy stems of plants and feed on nectar and pollen. Once eggs are laid, the female often guards the entrance to the nest with her abdomen or face blocking the entrance. Some species of Reed Bee cooperate, sharing a nest, foraging and doing guard duties. One sub genus, *Inquilina*, is socially parasitic, laying eggs in the nest of other Reed Bees and letting the host raise their young.

References:

- Amato, B. How to Identify South Australian Native Bees. University of SA.
- Australian Museum. Reed Bees.
- Houston, T. (2019) A Guide to Native Bees of Australia, CSIRO.

Green hard coral seen at Port Noarlunga Reef (Photo: Alex Lea)

These corals are hardy

Corals are typically associated with tropical reefs and seen when snorkelling on holidays in warmer climates. However, we have corals here in South Australia, as part of the Great Southern Reef.

Whilst not as vibrant and visually striking as their tropical counterparts, they are still important for our reef system. The handful of hard coral species found here in our waters are slow growing, they form flat disc-like structures attached to the rocky surface or grow hugging the substrate below. Many species in cooler waters, such as those around Adelaide, are particularly interesting to scientists as they are adapted for our environment. They can survive in low light levels and withstand a variety of water temperatures, whereas tropical corals are very reliant on steady water temperatures and survive in shallow waters where there is more light.

Hard corals are so called because they have a hard, calcium-based skeleton that holds the soft gelatinous coral polyps. Coral polyps are animals, related to sea urchins and anemones. One hard coral contains hundreds of individual coral polyps living together sharing nutrients. Inside each coral polyp are tiny algae, called zooxanthellae, living symbiotically and providing the coral with energy, whilst receiving shelter and the compounds they need to photosynthesise.

Corals feed at night using tentacles they extend out and catch plankton in the water close by. During the day they use energy photosynthesised by the zooxanthellae. These tiny algae also provide the colour to the corals that we see. When the coral is stressed, such as when it becomes too warm in the water, the coral will eject the algae from its tissues, exposing the pale white skeleton below. Once the stress has passed the coral polyp may take the algae back into its tissues, but if it is stressed for too long, it will run out of energy and die.

The hard coral skeletons can be found washed up on the beaches and can be identified by the imprint of the cup the coral polyp lived in.

If you want to identify other marine organisms washed up on our beaches have a look at our beachcombing ID chart and bingo game.

Empty Anemone Cone Shells (Photo: Rob Wallace)

Beware of this venomous sea shell!

You're walking along the beach and you spot an interesting shell – it's cylindrical, slender, has a spire and the white shell is overlaid with a beautiful chocolate or chestnut pattern. You may be curious so you bend down to pick up the cone shell. If the shell is empty it's harmless but please don't risk it! If the shell is inhabited you may have just disturbed a dangerous predator, the Anemone Cone Shell (*Conus anemone*), a species of sea snail 2 to 9cm long.

The Anemone Cone Shell shouldn't be handled because it's capable of stinging humans and can be fatal. If you are stung, please seek immediate medical attention.

Nothing delivers venom quite like this predatory mollusc's harpoon. The Anemone Cone Shell releases barbed darts into a sack to be coated with venom, before moving up into the shell's snout to stab its prey. The venom spouts out a hollow tooth in the end of the harpoon and immobilises the victim. The cone shell has two venoms and can remarkably switch between them in response to predatory or threatening stimuli. This is an incredible adaptation to enable the slow Anemone Cone to feed on worms, small fish, snails and other cone shells.

Cone shells are found on beaches all around the South Australian coast. They are most likely to inhabit reefs and get washed up on adjacent beaches. Also look out for them in inter-tidal environments and on the ocean's sandy bottom. This species is endemic to Australia and found in SA, NSW, WA, Tasmania and Victoria.

To find out about safe creatures to find on the beach, check out our beachcombing ID chart.

References:

- National Parks and Wildlife Beach Explorer's Guide
- Australian Museum - Cone Shells
- Nature Communications Journal - Evolution of separate predation- and defence-evoked venoms in carnivorous cone snails

A Cuckoo Wasp looking for a host nest to lay its egg in (Photo: Rob Wallace)

A jewel, a parasitoid, and a cuckoo wasp

Cuckoo wasps are quite beautiful, with either iridescent green, blue or purple over most or all of their bodies. Their bodies are uniformly pitted and have a metallic appearance. They belong to the Chrysidini tribe within the Chrysididae family, which has over 3000 species worldwide. In Australia there are four genera of cuckoo wasp, containing a number of species.

It is believed that female cuckoo wasps can't sting, but there have been cases of painful stings from larger species, so be wary. Some species mimic chemical odours of their hosts.

They lay a single egg in the nest of other solitary wasps or bees. Their larvae hatch out and feed on the host eggs, larvae or stored food which is usually paralysed spiders and caterpillars. As such the larvae of the cuckoo wasp are known as larval or brood parasitoids, or kleptoparasites. If attacked by an adult host bee or wasp, they have a thick integument or outer protective layer, and can curl into a defensive ball tucking in their legs to protect themselves.

Cuckoo Wasps can be seen hovering around or perching near the nest of their intended host as in the photo.

References:

- Smith, J. Wildlife of Greater Adelaide
- Western Australian Museum: Cuckoo Wasps
- Wikipedia: Cuckoo Wasp

A female Golden-browed Resin Bee cutting a phyllode from a Round-leaf Wattle (Photo: Rob Wallace)

Golden-browed, leaf chewing, resin queens

The Golden-browed Resin Bee (sometimes called the Red-eyed Resin Bee), *Megachile aurifrons*, is one of our largest native bees and common across southern Australia. Females are around 12mm long and males are slightly smaller. They are named for their golden hairy brow on their face. Females have striking red eyes and males have milky red eyes. Their abdomen is striped black and white.

Golden-browed Resin Bees belong to the leafcutter family. Unlike other leafcutters, they chew leaves as they are cutting them and soften them into a pulp or resin, which they take back to their nests to seal the entrance after laying eggs. They also use dried out bits of leaf to camouflage the sealed areas.

Golden-browed Resin Bees happily nest in bee hotels and their nest seals are easily identified by the green smooth closure, often speckled with drier bits of leaf. They lay their eggs through summer, leaving pollen in the chamber for the hatched larvae to feed on. They get pollen from plants in the *Fabaceae* (Peas) and *Myrtaceae* (Eucalypts, tea trees, bottlebrushes) families, but have also been seen on Mount Lofty Daisy (*Ixodia achillaeoides*) flowers. They have been observed cutting leaves/phyllodes for resin from Large-leaf Bush Pea (*Pultenaea daphnoides*) and Round-leaf Wattle (*Acacia acinacea*).

If Golden-browed Resin Bees decide to lay eggs in your bee hotel, you might find several females at once laying eggs in separate chambers. They will use quite large diameter holes up to around 13 mms across. Males also help with sealing the chambers. They work tirelessly throughout the day.

Reference:

- Houston, T. 2018. A Guide to Native Bees of Australia. CSIRO Publishing

Marbled Scorpions are nocturnal hunters, coming out at night to hunt termites and other invertebrates (photo: ©Reiner Richter)

I may sting, but I have a point

Armed with a tank-like body, a pair of pincers at the front and a venomous stinger at the end of its curled tail, the scorpion is an easily distinguished critter. But did you know despite having between six and twelve eyes, scorpions have poor eyesight? Yes, that's right, they feel their way around using sensory hair-like setae on their body, pincers and legs, and pectines, sensory organs on the underside of the body. The setae and pectines are extremely sensitive to textures, vibrations and scents, helping the scorpion find its way around and locate its prey.

Scorpions are Arachnids, closely related to spiders and ticks, with the Marbled Scorpion (*Lychas marmoreus*) being the most commonly encountered scorpion species in Australia as it lives in more urban areas. It is a small, slender species with colour variations from a yellowish-brown to dark grey, mottled with light brown patches on its body, legs and tail, producing the marbled pattern that gives it its common name. Marbled Scorpions can be found across Australia usually under tree bark, leaf litter or on the ground under rocks. Being urban dwellers, they are sometimes found in people's houses.

Growing to about 40mm in length, this amazing scorpion eats small insects including termites, making them great pest controllers in the garden. So, if you find one in the house, don't kill it; collect it carefully and relocate it to a safe spot in the garden.

Remember Australian scorpions can give a painful sting. To avoid being stung don't leave things laying around on the floor in the house or garage, and wear good gloves and shoes when working in the garden.

References:

- Atlas of Living Australia
- Australian Museum – Scorpions
- Australian Museum – Marbled Scorpion

Elephant Snail with black mantle covering most of the shell (Photo: MAVRIC Staff, Museums Victoria)

The enigmatic Elephant Snail

Tucked away in the intertidal zone, under rocks or in crevices, a curious black mollusc called *Scutus antipodes* (commonly known as an Elephant Snail or boat shell), emerges at night searching for a seaweed feast. Growing to around 13cm, the white shell is often covered by the snails' large black body, known as the mantle.

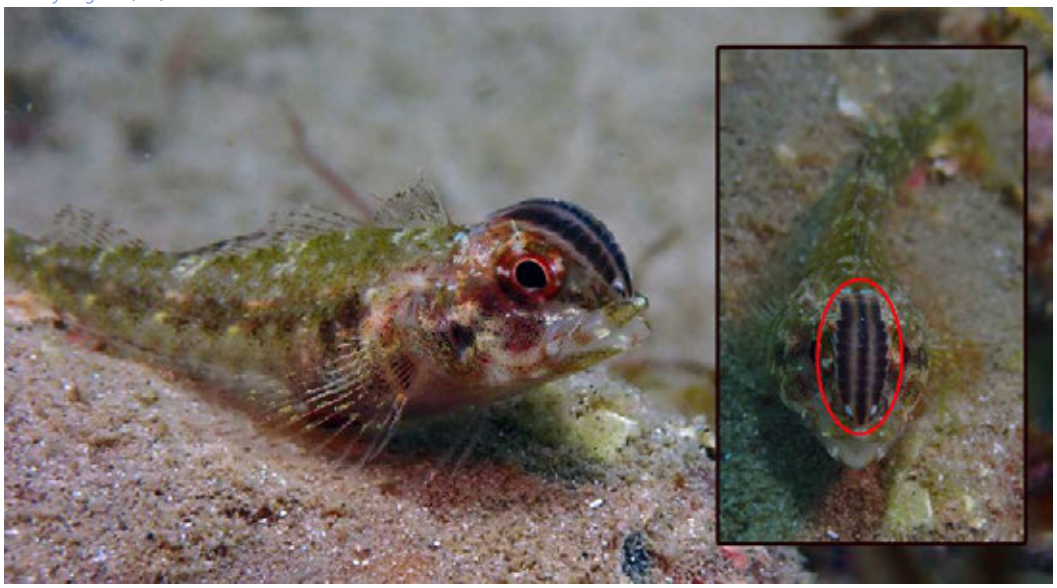
Evidence of the importance of *Scutus* as a sustainable food source for Aboriginal and Torres Strait Islander peoples has been found in studies of middens around Australia. Occurring in most Australian coastal waters, the black flesh was cut away to eat the muscular foot (mantle).

Aboriginal and Torres Strait Islander peoples of Australia hold a deep cultural connection with shellfish and Sea Country. Shellfish have been an important source of food, trade and culture to First Nations peoples around the globe for thousands of years. Archaeological evidence suggests that pre colonial shellfish ecosystems were not 'wild', but rather a cultivated resource successfully managed by First Nations peoples.

To find out more about our local coastal and marine environments, check out South Australia's marine and coastal website hub, The Rockpool.

References:

- https://cdn.environment.sa.gov.au/marineparks/docs/underwater-guide-plants-animals.pdf
- https://australian.museum/learn/animals/molluscs/elephant-snail/
- https://collections.museumsvictoria.com.au/species/8734
- https://www.publish.csiro.au/MF/pdf/MF23193



This fish is wearing its parasite as a hat (Photos: Dan Easton)

These hitchhikers are hooked on fish

If you go snorkelling in local waters you may see these small hitchhikers attached to fish. Members of the *Cymothoidea* family of isopods look similar to slaters found in the garden and are related to other crustaceans including crabs, lobsters and prawns. There are more than 380 species in the *Cymothoidea* family across the world, found in both marine and freshwater habitats, the most common genera found in South Australia are *Nerocila* and *Creniola*. These genera of parasites are not fussy about their fish hosts and have been seen to attach to a variety of fish species, including Leafy Seadragons. They may attach for a short time before falling off and finding a new host or may attach for several years. These creatures are known as ectoparasites (external parasites), attaching to the outside of host fish on their skin, fins or gills. They gain nearly all their food and transport from their host; they are not well adapted for swimming so hanging on to their chosen host is important for survival. With 10 legs and toughened plates along their body, these streamlined robust creatures are designed to hold on as the fish swims. They are adapted to attach to their hosts with their front appendages having a specially adapted curved needle end to hook into the skin of their host. They feed on the blood, skin and sometimes muscle of the fish. The impact to their host can range from mild discomfort to severe damage. Some fish may have more than one parasite at a time. The irritation from having these parasites can reduce the fish's fitness making them more susceptible to predation. Parasites have been observed close to the eyes of fish, which can also impair the fish's vision and ability to see predators coming. Parasites like these isopods can become a problem for fish in aquaculture systems, causing stress and reducing the health of the fish.

If you see a Leafy Seadragon or other fish with a parasitic isopod attached, do not try to catch the animal to remove the parasite. Fish do have some methods to remove parasites, such as visiting cleaning stations where other fish or shrimp nibble away the parasites on their skin.

References:

- https://media.australian.museum/media/Uploads/Journals/17680/174_complete.pdf
- https://bmcecolevol.biomedcentral.com/articles/10.1186/s12862-019-1533-x
- https://pdf.sciencedirectassets.com/282894/

Despite parasitising the nest of Blue-banded Bees, the Chequered Cuckoo Bee is an important pollinator (Photo: Michael Keogh)

Cheeky Chequered Cuckoo Bee – valuable or a nuisance?

The 1-1.4 cm long Chequered Cuckoo Bee (*Thyreus caeruleopunctatus*) is a parasitic native bee. You can find this blue and black bee in urban areas, forests and woodlands. These bees get their name from the cuckoo bird because of their similar habit in borrowing others' nests.

The Chequered Cuckoo Bee cleverly lays its eggs in another species' nest (usually the Blue-Banded Bee which it shares similar colours with). Before laying her egg in the brood cell, the Chequered Cuckoo Bee will watch and find the perfect timing to be able to sneak in without being detected. Once the egg is laid, the cell is sealed up by the female Blue-Banded Bee. The Chequered Cuckoo Bee will most likely hatch first and eat all the nectar and pollen provided as food, then pupate and emerge as an adult. This leaves the Blue-Banded Bee baby with no food, resulting in death.

Before we decide if this bee is valuable or a nuisance, it's important to know that the Chequered Cuckoo Bee species' vulnerability is high as it is unable to make its own nest and relies on others. So when its host's habitat is destroyed, it has nowhere to go (known as co-extinction). One way that all native bees can be protected on a budget is by providing multiple bee hotels. Different bees need different nests, so it's great to provide as many bee hotels as possible in a garden. Bee hotels provide homes for bees and your garden gets pollinated in return.

Why should we care about these parasitic creatures? Supporting native bees is important because they pollinate some native and fruiting plants better than European honeybees. Blue-banded Bees do this by vibrating the pollen at a higher frequency resulting in better fertilisation. So, is the Chequered Cuckoo Bee valuable or a nuisance? I think they are valuable for our ecosystem if we can do our part.

This Creature Feature was written by Layla-Elizabeth Lilly, GAP Year Placement at City of Marion's Environmental Sustainability Team

Assassin Bug on Winged Ixodia waiting for prey (Photo: Rob Wallace)

Beware, there may be an assassin behind you!

You may not be aware of it, but there are assassins waiting out there around every corner in the bush.

Assassin Bugs are common throughout the greater Adelaide area, including the Mount Lofty Ranges. They are insects belonging to the *Reduviidae* family in the Hemiptera order (true bugs) which also includes aphids, cicadas and bed bugs. There are more than 300 species of Assassin Bugs in Australia.

They have been given their name as they often approach prey (other invertebrates) from behind, stabbing them with their long mouth parts and injecting an organ-dissolving enzyme. This allows the Assassin Bug to feed on its prey's fluid innards, sucking them up through their hollow proboscis. While they are not aggressive, they may inflict a painful bite on humans if threatened, injecting the same enzyme. The symptoms are intense burning sensations followed by a lump that may last for days.

Assassin Bugs grow up to 30 mm long. They are variable in colour, but adults are often dark, while nymphs are orange and black. They have elongated heads and a curved proboscis. Nymphs have 5 instars or stages of growth. They can live for about 13 months and lay between 40 and 80 eggs, which take about two weeks to hatch.

So next time you are in your garden or the bush, watch out for that lurking assassin.

References:

- Assassin Bug. Australian Insects
- Assassin Bugs. Queensland Museum
- Smith, J.I.D. 2016. Wildlife of Greater Adelaide. Axiom
- Wikipedia – Hemiptera

Fishes

Southern Blue Devil in front of its spot on the reef (Photo: Chelsea Haebich)

Hey there, Mr Grumpy Gills!

The Southern Blue Devil (*Paraplesiops meleagris*) is a grumpy looking blue coloured fish found from Port Phillip Bay in Victoria to Exmouth in WA. Here in South Australia, Southern Blue Devils are commonly found at Seacliff Reef and Second Valley.

They typically have bright blue spots all over their body, which can range in colour from a grey/brown to a dark deep blue. They have large pectoral and anal fins. The blue spots and markings are unique to each fish, so can be used to identify individuals.

Southern Blue Devils live in caves and under ledges on our rocky reefs, and once they have found a suitable spot to live, will live there for the long term, not venturing far from home.

These fish are long-lived; it is very common for them to live for more than 40 years, with the oldest one being 59 years old. With World Fisheries Day on 21 November, it is important to remember how important our marine life is and how long-lived some of these creatures are.

Whilst the Southern Blue Devil is not a fish that is caught for eating, its long life makes it an important indicator of reef and ecosystem health. Next time you are snorkelling or diving in the sea enjoying our marine life see if you can spot one of these under a ledge.

If you are interested in learning more about our local marine life, dive into the Rockpool; a great coastal and marine hub with lots of resources. For land-based beachcombing, have a look at our ID chart to identify common items found on the beach.

Reference:

- https://fishesofaustralia.net.au/home/species/3245

A Harlequin Fish sits and waits to ambush its next meal (Photo: Anthony Brady)

Celebrate our colourful ocean life!

This week we celebrate World Ocean Day (8 June). Oceans cover more than 70% of the Earth's surface and are responsible for creating more than half of the oxygen we breath and absorbing more carbon dioxide than the rainforests. They circulate water from the equator to the poles and have a big impact on regulating our climate.

Marine parks help to protect these ecosystems and their wildlife, keeping our oceans healthy and functioning. Large fish, such as the Harlequin Fish (*Orthos dentex*) which live along the shallow rocky reefs from South Australia to Western Australia, benefit from this protection. These fish are thought to be site attached, meaning once they find a home they will live in that area for the rest of their life. This makes them vulnerable to fishing and damage to their habitat, so marine protected areas provide safety from these threats.

Harlequin Fish are ambush predators that will sit and wait to catch other smaller fish and crustaceans. Their large teeth can be seen even when their mouths are closed. They grow up to 86cm long and can live more than 40 years. Harlequin Fish are very colourful fish which come in many variations of colour, from brown/red to pink and orange. They have yellow or green spots along their sides, and juveniles and females have blue spots on the underside.

Why not visit our local beaches and take along our beachcombing chart to see what else you find, or dive into the Rockpool, a great coastal and marine online hub?

A Purple Spotted Gudgeon in a breeding tank (Photo: Jeremy Gramp)

Endangered fish to make a splash

The Purple Spotted Gudgeon (*Mogurnda adspersa*) very nearly became extinct. It hadn't been seen in South Australia since the 1970s, but in 2004 it was rediscovered at a single wetland on the River Murray.

Since then, numbers have increased through a captive breeding program and its introduction to several sites, including Urrbrae Wetland. It will be introduced into Oaklands Wetlands in 2021.

It is a striking, but small fish, around 6-12cm with brown spots and iridescent purple patches along its sides. It is a carnivore, feasting on aquatic macroinvertebrates, small fish, tadpoles and yabbies.

Studies have found Purple Spotted Gudgeons do best in slow-flowing streams and wetlands, and are most often found in areas with clear water. This means they are unlikely to occur in areas with high populations of predatory European Carp and Redfin, as these fish stir up the sediment, making it difficult for the Purple Spotted Gudgeons to find food and lay their eggs.

Given Purple Spotted Gudgeons rely on aquatic macroinvertebrates as a food source, you might like to investigate the abundance and diversity of aquatic macroinvertebrates in a wetland near you as part of an investigation with your class. Green Adelaide Education has lots of resources, such as teacher packs for multiple year levels, as well as ID charts and loan macroinvertebrate testing kits.

Water resources and wetlands is one of seven key priorities of Green Adelaide.

These small prickly fish would rather swim away and hide than balloon up (Photo: Alex Lea)

Around the globefish for World Fisheries Day

Globefish or Slender-spined Porcupine fish (*Diodon nicthemerus*) are shy, medium-sized fish with large eyes, dark stripes on the back and sides, a white belly and long yellow or white spines. They are one of the smaller species of porcupine fish in the world, growing to a maximum of 30cm. They can be found along our rocky reefs, preferring to hide under ledges and in rocky crevices.

Globefish feed on benthic (bottom-swelling) invertebrates including small crustaceans and molluscs. They have a small mouth with teeth fused together to form a beak to crush up shells.

They are commonly called porcupine fish because of the 5 cm long spines along their body that are used to deter predators. When stressed or defending themselves, they will rapidly inflate themselves to become spherical. Inflating themselves makes the spines stick out, so it is very difficult for predators to attack them. This defensive mechanism is a last resort because it is stressful to do and very difficult for them to swim when they are inflated. They would much rather swim away into a crevice or hole and hide. Next time you are snorkelling, keep an eye out for these delightful fish.

If you're interested in our marine environment, you might like to look at The Rockpool, a hub of marine resources, or download our Beachcombing ID chart for next time you are at the beach.

References:

- https://fishesofaustralia.net.au/home/species/921
- https://en.wikipedia.org/wiki/Slender-spined_porcupine_fish
- https://seaworld.org/animals/facts/bony-fish/pufferfish-porcupinefish/

A school of Silver Drummer off the coast of Adelaide (photo: Jeremy Gramp)

What's the beat on the Silver Drummer?

One of our local fish species, found in the south-eastern Indian Ocean and the south-western Pacific Ocean off Australia and New Zealand, is the Silver Drummer. Its distribution in Australia is from Shark Bay in Western Australia, along the southern coast and around to Fraser Island in Queensland.

It is mainly found around shallow reefs exposed to rough seas and in tidal channels of large estuaries to a depth of 30 metres. These fish can be found as solitary individuals, in small groups or sometimes in large schools, particularly in Western Australia.

It is a powerful fish, with a robust oval-shaped body, growing to about 80 cm in length and weighing up to 12 kg. It is silvery grey, with the top half of the body being slightly darker and a black outer section of the tail. Another distinguishing feature is a dark horizontal stripe from the corner of the mouth.

Silver Drummers are herbivores, feeding on algae. Their preferences are for red or brown algae such as Common Kelp.

If you are interested in seeing Silver Drummer, some of the hot spots in our region include Port Noarlunga Reef and Snapper Point at Aldinga Beach, but they are likely to be found at any of the local rocky reefs.

Having said that it's probably a little too cold at the moment for most people to be snorkelling, but when the weather eventually warms up make sure you keep an eye out for Silver Drummer as you explore our nearshore reefs.

References:

- Atlas of Living Australia - Kyphosus sydneyanus Silver Drummer
- Fishes of Australia's Southern Coast. (2008). Martin F. Gomon, Dianne J. Bray and Rudie Herman Kuiter

Wobbegongs are camouflaged with a pattern across their rough skin (Photo: Rick Stuart-Smith / Reef Life Survey)

That shaggy carpet looks like a shark!

Wobbegongs are one of the many sharks we find in South Australian waters. There are actually four species of Wobbegong found in South Australia, and these sharks from the Orectolobidae family are also known as Carpet Sharks because they are commonly found lounging on the sea floor, under ledges and in crevices on our reefs.

However, you may not spot them because they are really good at hiding, have camouflage patterns across their rough skin to help them blend in with their surroundings, and are nocturnal; coming out to feed on fish and shellfish at night.

Wobbegongs have poor eyesight and use tasselled barbels around their mouths to help them find food. It makes them look like they have a shaggy moustache!

Whilst these sharks, which can grow to over 1.5m long, are not typically aggressive and you can swim past them at a distance with no problems, there have been occurrences of people being bitten by these sharks. Especially people catching lobsters and other shellfish, as they are inquisitive creatures. They are also extremely flexible and some of the only sharks that can bend all the way round to bite their own tail, which some people find out the hard way.

These attractive sharks are important in our marine ecosystem and should be admired from a safe distance. Keep an eye out when you are next out snorkelling.

Check out our Beachcombing ID chart and other ID charts for all your nature explorations around our beaches and on land. They can be found on the Green Adelaide website.

Weedy Seadragons have leaf like appendages along their bodies (Photo: Katie Lee Osborne)

Dragons, but weedy ones

Weedy Seadragons are part of the Syngnathidae family, which includes seahorses, pipefish and the Leafy Seadragon. They are relatively small, growing to a maximum length of about 35 cm, and they have a long, slender body with a small head and a long snout.

Compared to the Leafy Seadragon, which is only found here in South Australia (and a few isolated spots in Western Australia), Weedy Seadragons are more widespread; being found from Geraldton in Western Australia across to Port Stephens in New South Wales and down to Tasmania.

Their name is derived from the long, thin, leaf-like appendages that run along their bodies and fins, which resemble sea weeds. These appendages provide excellent camouflage, allowing them to blend in with the surrounding seaweed, making them difficult to spot in the wild. They have a slow and undulating swimming style, which adds to their camouflage and helps them avoid predators.

Weedy Seadragons feed on small crustaceans and plankton. They are most often found in shallow waters near the coast but have been found in deeper waters near offshore reefs. They are a solitary species, usually only found on their own or in a pair.

In addition to their unique appearance, Weedy Seadragons are known for their unusual method of reproduction. Unlike most fish, which lay eggs on a firm surface like a rock or macroalgae, Weedy Seadragons are oviparous, meaning that the male carries the eggs in a specialized pouch on his tail until they hatch.

The main threat to Weedy Seadragons is habitat loss due to human activities. Additionally, they are collected for aquariums.

To help protect these amazing creatures, they have been given protection and collection of these creatures is only allowed with a permit, and conservation efforts are underway to protect their habitats and ensure their survival.

A Smooth Stingray swimming close to the sandy sea floor (Photo: John Turnbull)

Gentle, with a sting in the tail

A large dark shadow in coastal waters may frighten some, but you needn't be scared of this gentle giant. The Smooth Stingray is the largest of the Australian stingray species, reaching up to 2.5m from wing tip to tip, and weighing over 350kg.

Curious and playful with swimmers and divers, Smooth Stingrays can be seen swimming gracefully through the water by moving their fins in a wave-like motion. They are also commonly found feeding or resting, buried in sand or mudflats of warm, shallow water. Having their mouth on the underside of their body is perfect for feeding along the sea floor. Their flat grinding teeth enable them to crush the crabs, molluscs, fish and squid which make up their diet.

Stingrays often get an unfairly bad rap thanks to the sharp, finely serrated venomous barb along the tail. In a defensive move, stingrays have been observed raising their tail above their back like a scorpion. So, while stings are rare, a stingray should never be threatened or cornered. If a stingray does accidentally sting you, pour hot water over the sting to ease the pain and follow first aid advice.

A good way to safely encourage stingrays to move away is to do the stingray shuffle. Simply keep your feet firmly on the ground and slide them slowly through the sand as you walk.

Did you know? Stingrays have been around since before the dinosaurs!

To find out more about our local coastal and marine environments, check out South Australia's marine and coastal website hub, The Rockpool.

References:

- www.environment.sa.gov.au/goodliving/posts/2016/12/safe-near-stingrays
- https://australian.museum/learn/animals/fishes/smooth-stingray-dasyatis-brevicaudata-hutton-1875/
- https://www.aqwa.com.au/wp-content/uploads/2020/11/AQWA-Fact-Sheet-Smooth-stingray.pdf

Southern Eagle rays can be commonly sighted in our shallows, resting and feeding for crabs (Photo: Chloe Williams)

Soar like an Eagle Ray

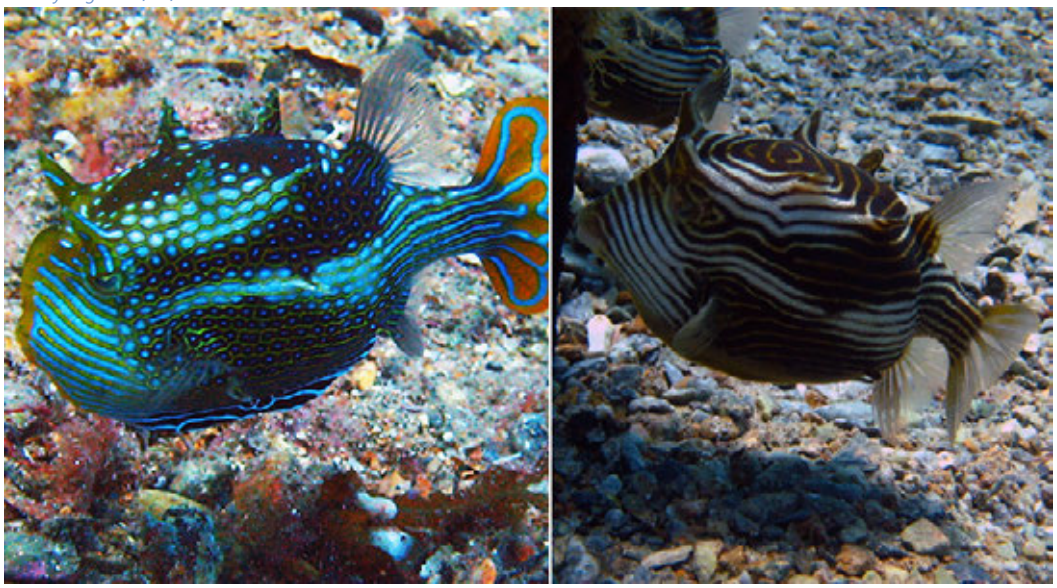
The Southern Eagle Ray (*Myliobatis australis*) is a graceful ray commonly seen around the coastal waters of Adelaide. It is in the same class (Chondrichthyes) as other sharks and rays, which have skeletons made of flexible cartilage rather than bone.

The Southern Eagle Ray has a diamond-shaped body, broad pectoral fins resembling wings, and a slender tail. The tail contains a venomous spine that can cause a painful sting, using it as a self-defence mechanism. They vary in colour from yellowish to a dark brown with a pattern of blue spots or bars on the upper surface. Eagle rays are viviparous, which means they give birth to live young, the average number of young in a litter is 6 but they can have as many as 15!

Southern Eagle Rays prefer shallow, sandy or seagrass habitats, and they may be seen around Adelaide's shoreline. They forage in the sand, feeding primarily on Hermit and Blue Swimmer Crabs. Other food in their diet includes small fish and molluscs. Eagle rays do not have any teeth but instead crush and grind up their food between hard plates in their mouths.

They have a duck-billed appearance, with a snout that allows them to dig through the sand to find their prey and to create a pit in which to rest. You may see these circular footprints in the sand if you are snorkelling.

Behind their eyes are two openings called spiracles that allow them to draw oxygenated water across their gills from above, useful for when they are resting on the bottom.



Ornate Cowfish (male on left, female on right) (Photos: Alex Lea)

Don't have a cow, it's just a fish!

If you have been snorkelling in our local waters over the summer you may have seen a striped boxy fish cruising over the sand and wondered what it was. These charismatic creatures are called cowfish. There are two species of cowfish seen in South Australian waters, Ornate Cowfish and Shaw's Cowfish. Both species are only found in Southern Australian waters around the Great Southern Reef, with the Ornate Cowfish being the more commonly seen species around our coast.

Cowfish are related to boxfish and are similar in that they have thickened hard scales across their body creating a hardened protective covering. Their hardened scales extend into horn like appendages on their dorsal surface, giving the appearance of horns, hence the name cowfish. Their hard covering means they are of no interest to fishermen and are a challenging meal for other fish. The lack of predators makes them quite bold and happy to be seen out in the open as they cruise across seagrass beds and sand, which is great for snorkellers.

They are typically seen in pairs; the males and females can be differentiated by their colouring. Although the actual pattern varies between species, males with yellow and blue diagonal lines and spots across their bodies, while the females are more plain with orange-brown stripes on a white body.

Cowfish are carnivorous, eating small invertebrates. Their hunting technique involves blowing into the sand to expose creatures living under the surface. They can commonly be seen puffing their way across the sand to discover their next meal.

References:

- https://fishesofaustralia.net.au/home/species/834
- https://reeflifesurvey.com/species/aracana-ornata/
- https://cdn.environment.sa.gov.au/marineparks/docs/underwater-guide-plants-animals.pdf

A rare short-finned eel sighting

There's something fishy about that eel

Did you know eels are fish?

Here in South Australia, a rare species of eel is making a comeback after being spotted only a handful of times over the past 10-15 years.

We're talking about the Short-finned Eel (*Anguilla australis*).

The Short-finned Eel lives in freshwater for approximately 10-20 years before making its way to the sea, where it travels around 3000km to the Coral Sea to spawn. Larger females, over 1m in length, have been found to produce more than 3 million eggs. Once the eggs hatch, the eel larvae, known as leptocephali because of their leaf-like flat shape, make their way back to freshwater, carried by a series of currents. Around the time they make it to the Continental Shelf they metamorphose into their better-known tubular shape but remain opaque until they obtain pigment. They are known as Glass Eels during this phase. Subsequent migrations and determination will see the eels escalate obstacles, slithering on moist ground where required, to make their way to the upper reaches of river systems.

A stealthy nocturnal hunter, this omnivorous eel will feed predominantly on crustaceans, fish, molluscs, insects, frogs, and aquatic plants, but can go without food for up to 10 months.

As mentioned, Short-finned Eels can grow to more than 1 metre in length and they weigh around 3kg. They have a silver to yellow appearance.

Preferring still, low velocity water the eel has been spotted in the River Torrens and the Onkaparinga River, in a wide variety of habitats. So next time you're out appreciating these beautiful rivers, keep an eye out for the Short-finned Eel.

To learn more about other fish species as well as freshwater and marine environments check out our resources including factsheets, teacher packs and more on the Green Adelaide website.

Amphibians

Bulky and strong, the Eastern Banjo Frog is distinguishable by the large oval gland on the dorsal surface of the tibia (Photo: Steve Walker)

Was that a Pobblebonk or three?

The Eastern Banjo Frog, also known as the Bullfrog, Pobblebonk or 'bonking' frog, due to the loud 'bonk' call that the male frog makes during breeding season, could be fooling you!

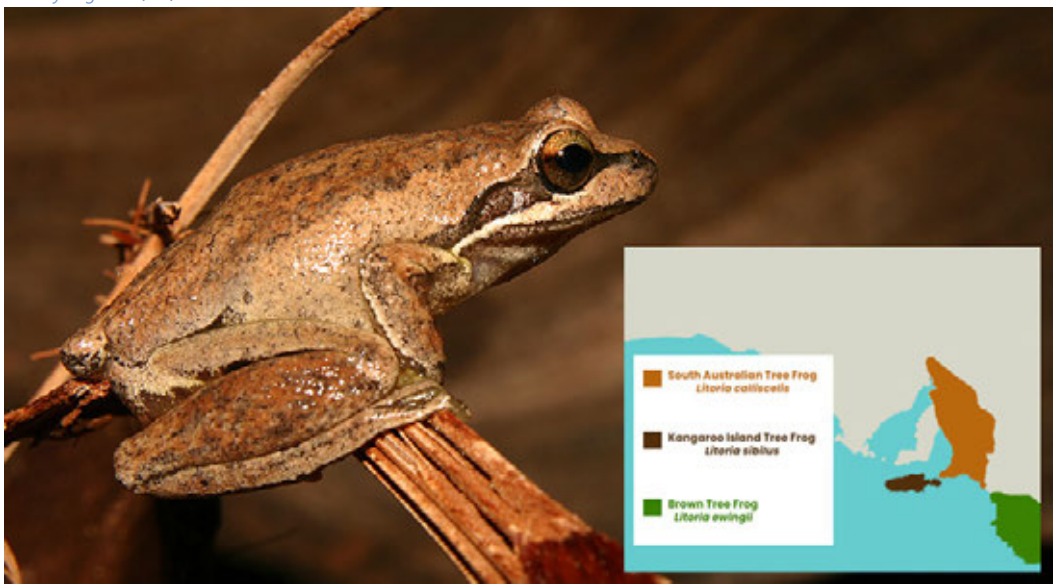
It may sound like the 'pobblebonk' call comes from just one frog but in fact it is likely several males calling, one after the other, bouncing around the waterbody like a Mexican wave. The deeper the call, the more likely the male is to attract a female, so they go to great lengths to find the right nook or cranny from which to project the deepest sound. It's quite an experience to listen to a full chorus.

During breeding, with the male on her back, the female Eastern Banjo Frog will use webbing on her fingers to push pockets of air under her body to her rear and mix them with the eggs. This provides the eggs with a bubble of air for protection and to oxygenate them, appearing as a collection of white foam-like bubbles on the surface of the water.

Breeding will typically finish around October in Adelaide and the Mt Lofty Ranges with a breeding pair laying around 4000 eggs! Tadpoles hatch in about a week and can take anywhere from four to 15 months to complete development.

The frogs congregate around large bodies of water, especially dams and wetlands, emerging from underground burrows towards the end of winter or early spring to breed.

Over to you, it's time to head out and see if you can locate some Pobblebonks. To find out more about other local frog species, check out FrogWatch SA or our identification chart.



A South Australian Tree Frog demonstrating its ability to climb and balance on vegetation (Photo: Steve Walker)

A brownish tree frog that splits in 3

One of Adelaide's most loved frogs, a brown coloured tree frog with yellow-orange patches and black spots on its thighs and a dark stripe across its face, has undergone a bit of an identity crisis. This delightful frog that is often found in gardens, ponds, greenhouses and wetlands in the Adelaide Hills and eastern Adelaide was the subject of a recent review by scientists who studied genetic material, physical specimens and mating calls. At the beginning of February their paper was published in the journal Zootaxa and it determined that the frog we knew as the Brown Tree Frog, *Litoria ewingii*, is actually 3 different species. This means that we no longer have that particular species in our region, but we do have 2 extra species for the state.

So, the Brown Tree Frog is now considered to just be the species restricted to the south east of South Australia and further east into Victoria, NSW and Tasmania. Kangaroo Island has its own species, aptly named the Kangaroo Island Tree Frog, *Litoria sibilus*, and throughout Adelaide and the Mt Lofty Ranges, Southern Flinders Ranges and Lower Murray Valley we have the South Australian Tree Frog, *Litoria calliscelis*, although Mt Lofty Ranges Tree Frog might be a more appropriate name given its distribution.

Although the larger Peron's Tree Frog has been translocated here, the South Australian Tree Frog is the only tree frog naturally found in Adelaide and the Mt Lofty Ranges. In settled areas they are often found clinging to windows and are common visitors to bathrooms. They shelter in damp vegetation on or near the ground and are frequently found in leaf litter, reeds and sedges around streams, lakes, wetlands and ponds.

Their call is a fast 'cree creee creee cree creeee' of 7 to 32 pulsed notes that can be heard in any month of the year, from the ground, in low vegetation, or in reeds and other aquatic plants.

The back varies from cream to grey, copper or dark brown, with darker patches running down the middle. They are slender, medium sized frogs with a broad head and rounded snout. A dark stripe runs through the eye from the snout to the shoulder, with a pale stripe beneath.

Celebrate World Frog Day on Wednesday 20 March and help map its distribution by taking part in FrogWatch SA.

Reptiles

Eastern Striped Skink in rocky, hilly habitat at Morialta (Photo: Rob Wallace)

A lizard that carries its comb in its ear

The Eastern Striped Skink, Ctenotus robustus, is a diurnal, medium sized solid skink growing to 123 mm, snout to vent. It is a striking lizard with dark brown/black and light-coloured stripes on its back, and mottled spots along a side stripe and on the lower side of the body. Its belly is white.

The Ctenotus genus, or comb-eared skink, is the largest genus of lizards in Australia with close to 100 species. It is estimated they make up between 10 and 25 per cent of our lizard fauna.

Eastern Striped Skinks are found across south-eastern, eastern and northern Australia, living in a wide range of habitats including forest, woodlands, sandy heath and rocky outcrops usually in undisturbed areas. While they are a common lizard they are not often seen.

Ctenotus means comb ear. If you look at the image you will notice comb-like projections along the front of the ear. Robustus means robust and refers to the stocky body. They lay an average of six eggs, which are soft, are laid in late winter and spring, and take about two months to hatch.

Some reptiles are oviparous or egg laying while others are viviparous or bear live young.

They shelter under rocks, logs, groundcover and leaf litter and make burrows under rocks where they hibernate and nest.

They feed on invertebrates and occasionally, young lizards. They in turn are preyed upon by cats and snakes.

The biggest threats to this species are cats and clearing of habitat. The best way you can support Eastern Striped Skinks if you have them on your property is to leave habitat and fallen timber undisturbed.

Currently the Eastern Striped Skink is a common species, with a wide distribution and can be found in the hills in the Green Adelaide area.

White's Skink heading into its burrow (Photo: Rob Wallace)

A lesson on how to move the kids out of home

Known as White's Skink or White's Rock Skink (*Liopholis* (formerly *Egernia*) *whitii*), it is a common, widespread and slow-growing medium-sized skink found in south eastern Australia in forest, woodland and Mallee in rocky habitats. Its length is up to 30cm, including the tail, which is about two thirds of its total length.

The species varies from grey to brown with few markings, to a more common patterned form with a rusty coloured back stripe, flanked by two darker spotted stripes. Their flanks can be plain or covered with leopard style spots. Their belly is cream to grey and the legs are brown.

White's Skink can live for up to eight years and it is an omnivore, feeding on invertebrates, fruits and flowers. Females give birth to up to five live young in summer. The species is polygynous, with one male per group of up to five females, living in temporary family groups in complex burrows. The females sometimes mate with males outside of the family group.

Adults are highly aggressive towards White's Skinks from outside the group, and juveniles to other juveniles within the group from an early age. Juveniles will stay in the group until they are half grown, when the adults will chase them away.

References:

- Museums Victoria Collection Liopholis whitii (Lacepède, 1804), White's Skink
- Reptile Database
- Smith, J. 2016. Wildlife of Greater Adelaide. Axiom
- White's skink (Liopholis whitii) Atlas of Living Australia

Bearded dragons have spiny scales on their throats which form an impressive beard (Photo: Steve Walker)

Dragons aren't just in fairytales

Have you got a dragon in your backyard? A bearded dragon that is. The Eastern Bearded Dragon, *Pogona barbata*, is Australia's most common bearded dragon and it can be found across central, southern and eastern Australia.

There are several species of bearded dragon, all having similar features of a flat body, broad head, stout legs, and spikes along the sides of their body. The Eastern Bearded Dragon is one of the larger species with males growing up to 60cm and females 50cm. Bearded dragons are named after the flap of skin below their jaws which, along with their body, they can puff up when threatened. They may also open their mouth if further provoked and they can be quite territorial. They can change their skin colour (within minutes) when threatened or if they need to regulate their body temperature.

Bearded dragons are active during the day (diurnal), finding a nice log, tree branch or rock to bask in the sun. They are also arboreal, so great climbers of trees, fence posts and similar structures. During inactive times (such as cold or hot weather) they shelter in burrows. Females also lay their eggs in the burrows, about 10 to 35 eggs at a time.

Bearded dragons are omnivores meaning they eat plants and animals. Their diet can include small animals like mice, small reptiles, insects, fruit, berries and flowers. They can run with speed to catch their prey. If water sources are scarce, during light rain, they stand on their front legs (for up to 30 minutes) so water runs towards their mouth.

They can make a great native pet but, unlike for Central Bearded Dragons, keeping Eastern Bearded Dragons does require you to have a permit. If you're interested in having one as a family member, be sure to read this blog which explains some must haves to look after bearded dragons.

References:

- https://bie.ala.org.au/species/https://biodiversity.org.au/afd/taxa/25b7606b-0b61-4f2d-967e-9c5c210fe332
- https://www.bushheritage.org.au/species/bearded-dragons

Yellow-Faced whip snake, always alert and fleeing quickly when disturbed (Photo: Arthur Chapman)

A case of mistaken identity

Often mistaken for the Eastern Brown snake due to their similar appearance, the Yellow-Faced Whip Snake (*Demansia psammophis*) can be distinguished by its facial markings and smaller size, however being alert and often fleeing quickly when disturbed makes them hard to identify and observe closely.

This long thin snake with a narrow head can grow up to 1m in length but has an average length of around 80cm. These snakes are characterized by their narrow yellowish head, pale ring around the eyes and a dark marking curving along the upper lip. Their colour can vary, ranging from olive green to grey and brown.

Found in a variety of habitats throughout most of Australia, the Yellow-faced Whip Snake is mainly active during the day but can be found foraging at night. Their main source of food is small diurnal lizards, as well as frogs and lizard eggs. The Yellow-Faced Whip Snake has the largest eyes of any Australian snake, giving them the advantage of good eyesight to assist in capturing their prey.

It is also not uncommon to find more than one of these fascinating snakes because they are community dwellers, often gathering in winter months in rock crevices and under logs.

The Yellow-faced Whip Snake is a venomous snake and while a bite could be extremely painful and cause local swelling, it is not considered dangerous.

References:

- Atlas of Living Australia
- Australian Museum
- SA Museum - Key to the snakes of South Australia (pg. 11)

Birds

The elegant but unusual looking Australian Pratincole (Photo: Steve Walker)

Skinny as a beanpole

The Australian Pratincole, *Stiltia isabella*, is a most unusual bird. The genus name *Stiltia* comes from the Middle English *stilt*, which of course refers to the length of the legs. With those long skinny legs, a slim body, upright gait, and habit of chasing insects, spiders, centipedes and other invertebrate prey along the ground, it is not surprising that it is also known as the Roadrunner.

The upper body feathers are sandy olive, the chest a deep chestnut brown and the flanks and wing tips are black. During breeding season, the base of the bill changes from black to a bright red with a black tip.

The Australian Pratincole is mainly found in inland Australia and the northern coasts, as well as some of the offshore islands and Papua New Guinea but migrates to the south to breed during spring and summer.

It is typically found in arid or semi-arid areas with little or very low vegetation, such as grasslands, open woodland, stony plains and claypans, most commonly close to waterbodies such as wetlands, lagoons, creeks, and riverbeds. The chicks shelter and hide in shrubs, so breeding sites with scattered low shrubland are preferred.

They are not very common around Adelaide but historically they have been found along the River Torrens and the coast, with more recent records of them at some of the larger wetlands such as Greenfields. So, it is well worth a visit there to try spot them. They forage throughout the day, but peak periods occur at dawn and dusk.

Two eggs are laid on bare ground, with the parents taking turns to incubate, brood and feed the eggs and hatchlings. The young develop very rapidly; feathers start to appear at just 10 days and by three weeks they are fully feathered and look just like a non-breeding adult. By five weeks they can fly and are no longer cared for by the parents.

If you're interested in our visiting our local wetlands to go bird watching, you might like to download our wetland birds identification chart and teacher information pack.

As the name suggests, the Crested Shrike-tit can be easily recognised by its feathered mohawk (Photo: Steve Walker)

Black and white and yellow all over

Have you ever tried to identify a bird as it's flying quickly overhead or hiding in the trees? You will find it can be quite difficult, but having striking colours and unique features can make it an easier task. The features of the Crested Shrike-tit (*Falcunculus frontatus*) with its bright belly, black and white striped head, and feathered mohawk make this small-medium bird easier to identify.

The three subspecies of this bird are endemic to mainland Australia. They can be found in eucalyptus woodlands, forested gullies and rivers, and in parks and gardens. Between August and January, you may see both the male and female building the cone-shaped nest and incubating the eggs in the fork of a eucalyptus tree.

If you fancy yourself as a bit of a bird spotter/watcher, why not participate in the Aussie Backyard Bird Count, from 19-25 October? To participate you need to spend 20 minutes in your backyard (whether that's your home backyard, local park, on a main road, or down near the beach) counting the birds and species you see. The aim is to help BirdLife Australia understand more about the birds that live where people live.

If you would like to find out more about native birds in your local area, why not have a go at identifying them with your students? We have a range of identification charts and teacher resources online, or you can borrow equipment and other materials from our loan library.

References:

- https://www.birdlife.org.au/bird-profile/crested-shrike-tit
- https://australian.museum/learn/animals/birds/crested-shrike-tit/

Little Raven: a type of crow found around Adelaide (Photo: Steve Walker)

Something to crow about

What's in a name? Most people would consider the Lion (*Panthera leo*), Cougar (*Puma concolor*), Bobcat (*Lynx rufus*), Caracal (*Caracal caracal*) and the Domestic Cat (*Felis catus*) to all be cats, even though they are in different genera, because all are members of the family Felidae.

Why then do people insist on differentiating crows and ravens? All of the world's crows and ravens, plus rooks and jackdaws, are in a single genus, *Corvus*, in the family Corvidae. Other members of the family include choughs, jays and the European, Asian and American magpies (but not Australian Magpies).

The genus name *Corvus* is the Latin word for raven, which has come from the Indo-European word '*ker*', which describes the guttural noise these birds make. This is, of course, related to the word '*crow*', which also describes a loud noise birds make (as in a crowing rooster). Therefore, crows and ravens are members of the same genus, so much more closely related to each other than the different cats are, and their common names both describe the loud calls they make.

Some corvids have black feathers with a grey base, some black feathers with a black base, some are black and white, but there is no consistent distinction to separate the common names crow and raven. Crow is typically, but not always, assigned to the smaller species, and raven to the larger ones. However, the Little Raven is the same size (40-50cm) as the American Crow but smaller than the Hooded Crow (48-52cm). Yet you are still likely to hear people argue that the only crows we have in Adelaide are in the football team. It's enough to drive you raven mad!

There are roughly 45 different species of Corvus throughout the world. In Australia, there are five native species: Torresian Crow, Little Crow, Australian Raven, Forest Raven and the above mentioned Little Raven. All can be found in South Australia, but a 2012 study reported in South Australian Ornithologist states that due to the incorrect use of features to identify them, and the extreme difficulty in seeing the correct diagnostic features in the field, there is realistically only one species likely to be found in and around Adelaide, the Little Raven (*Corvus mellori*).

So while we don't have Torresian or Little Crows in Adelaide, we do have crows; Little Ravens!

Olive-backed Oriole (Photo: Steve Walker)

This ventriloquist is no dummy

The Olive-backed Oriole is a medium-sized bird with olive-green feathers above, a streaked chest and belly, a long pink beak and red eyes. Males and females look similar, although females have a slightly paler beak, duller-green back and the streaks on the chest extend up to the beak.

Its distribution extends all the way from the Kimberley region of Western Australia, along the coastal areas of the northern and eastern states, then into Adelaide, the hills and Kangaroo Island. Despite this wide distribution, it is considered rare in South Australia and is usually a summer visitor more than a resident.

The Olive-backed Oriole is definitely a bird to watch out for though because it is an excellent mimic of other birds. In fact, it is often easier to hear its noisy call than it is to see; the olive feathers make excellent camouflage, enabling it to blend into vegetation and stay out of sight. Olive-backed Orioles have also been described as ventriloquists, able to throw their voices so that they appear to be calling from a different location.

They live in forests and woodland, also making use of well-vegetated urban parks, gardens and reserves, especially those with trees bearing berries and other fruits. They also forage in the canopy for invertebrates.

Although they are occasionally seen in small groups, they are most commonly found alone or in pairs. The female builds a cup-shaped nest out of bark and grass, bound with a spider's web, attached by the rim to a horizontal branch. Two to four eggs are laid, which the female incubates for about 18 days. The male helps to feed the young after hatching.

References:

- http://www.birdsinbackyards.net/species/Oriolus-sagittatus
- https://bie.ala.org.au/species/urn:lsid:biodiversity.org.au:afd.taxon:ae69de14-4a33-4aa4-aeaf-1c01277bce6e

Peregrine Falcon perching in a tree high up a cliff face (Photo: Rob Wallace)

Was that a Mexican Free-tail, a White-throated Needletail?

No, it's a Peregrine!

The Peregrine Falcon is a bird of prey. The adult has a masked head and wings that are both slaty grey with horizontal barring on the breast and belly. Its legs and feet are yellow.

The Peregrine Falcon is the fastest bird in the sky and has been clocked at 320 km/hr in a dive and 110 km/hr at horizontal speed. Two faster animals at horizontal speed, between 160 and 170 km/hr, are the White-throated Needletail (a bird) and the Mexican Free-tailed Bat.

Peregrine Falcons are widespread throughout Australia and the rest of the world. They typically nest on ledges of cliffs but it is not uncommon to see them nesting on ledges on high buildings in cities. They also sometimes nest in tree hollows or other birds' nests.

Pairs mate for life and breed from August to December, laying two to four eggs, which take a month to incubate. The offspring spend another 35 days at the nest site till fledging.

Pairs have a home range up to 30 km square and often hunt together, with the male scattering flocks of birds while the female swoops on an individual. They feed on birds, rabbits, other smaller mammals and larger insects.

The biggest threat to their survival is habitat loss.

References:

- Fastest animals
- List of birds by flight speed
- Peregrine Falcon - Australian Museum
- Peregrine Falcon - BirdLife Australia

Southern Boobook adult with juveniles. (Photo: Liz Milner, Friends of Black Hill & Morialta)

Stealth hunters

The Southern Boobook owl is the smallest (up to 25cm), most common and widespread (geographically) owl found in Australia.

Boobooks are nocturnal animals. The Boobook, like most owls, breeds in tree hollows or will utilise owl nesting boxes. They use the hollows, lined with decaying wood, for rearing their young. Baby Boobooks are adorable white fluff balls with brown rings around their eyes. They grow up to be quite round and are brown with white speckles.

The owl has a distinctive 'boo-book' or 'mo-poke' call. Hence their common names of Boobook or Mopoke. Boobooks are particularly vocal during their breeding season and can call for hours at night-time.

Feeding mostly occurs at night but sometimes they are seen hunting in the late afternoon or early morning on a dull day. They will swoop down on flying prey such as moths and small bats and catch them mid-air, or pounce on ground-dwelling prey. Owls are part of the raptor family and often eat their prey whole. They will then vomit up the non-nutritious parts of their prey several hours later as a pellet from their gizzard.

They are great hunters because their wings make no noise when they fly. This is because their feathers are shaped to reduce the amount of air movement around their wings, and the velvety surface absorbs some of the flapping sound. They also have particularly good eyesight and hearing. Having forward facing eyes gives them excellent depth perception. They can also turn their heads almost the whole way around - up to 270 degrees. Some owls' ears are asymmetrical. This means sound reaches their ears at different times and helps them to pinpoint the exact direction of noise, which is important for hunting.

References:

- https://faunature.com.au/product/owl-nesting-box/
- https://australianmuseum.net.au/learn/animals/birds/southern-boobook-owl/
- https://www.bushheritage.org.au/species/owls

A White-plumed Honeyeater showing its distinct white neck band (Photo: Steve Walker)

Banding together against the bullies

If you live near River Red Gums, you may have awoken to a melodious "chick-o-wee" call belonging to a White-plumed Honeyeater (*Lichenostomus penicillatus*). These birds are medium-sized honeyeaters, yellow-grey in colour above, paler below, and with a distinct white neck band from which they get their name.

Their special honeyeater characteristic, a brush-tipped tongue, enables them to mop up nectar from flowers. In addition to nectar, their diet consists of insects, fruit and seeds.

White-plumed Honeyeaters are social birds, commonly found in groups. They are however particularly territorial. They commonly raise a distinctive "pee-pee-pee" alarm identifying predators and defend their territories in groups. This somewhat aggressive mob behaviour has even been observed against birds larger than themselves, such as Australian Magpies and Laughing Kookaburras.

White-Plumed Honeyeaters are common throughout most of South Australia, typically found along watercourses where River Red Gums are located, but also in open forests, woodlands and swamps. The species typically breeds in spring, and the females weave small nests from spider webs and grass in tree crowns up to 20 metres off the ground, and line them with wool, hair or feathers.

To find out more about birds in our local area, check out our Common Urban Birds identification chart.

References:

- birdlife.org.au/bird-profile/white-plumed-honeyeater
- birdsinbackyards.net/birds/featured/Honeyeaters

If observed at the correct angle, the coloured speculum feathers are particularly beautiful (Photo: Steve Walker)

What colour is the Pacific Black Duck?

Don't be fooled by the name, the Pacific Black Duck (*Anas superciliosa*), isn't really black at all.

These ducks have mottled dark brown feathers, a distinctive cream and black stripe across the head (the species name *superciliosa* refers to the eyebrow area) and a metallic green or purple panel (speculum feathers) on their wings, particularly visible in flight.

Pacific Black Ducks are found throughout South Australia in wetlands, ponds, lakes, dams and rivers, dispersing in drought years to find wetter areas. Their ideal habitat is one with low salinity and lots of vegetation because they are primarily vegetarians, feeding on aquatic plants, but also eating molluscs, aquatic insects and their larvae.

The Pacific Black Duck is one of the most common ducks in Australia and, while humans often share their food with them, it's important to remember that our processed foods are of no nutritional value to the species and can actually have detrimental effects to their health and growth. So, let's keep those cakes, biscuits and bread to ourselves!

They can be found nesting in tree hollows as well as adopting other waterbirds' nests for themselves. Pacific Black Ducks breed between June and February in South Australia, and sometimes breed with the similar introduced Mallard species, resulting in hybrid ducks.

To find out more about other local bird species, check out our Wetland Birds of South Australia identification chart.

References:

- birdlife.org.au/bird-profile/pacific-black-duck
- ebird.org/species/pabduc1?siteLanguage=en_AU
- australian.museum/learn/animals/birds/pacific-black-duck
- greeningaustralia.org.au/wp-content/uploads/2017/11/GUAH-Black-Duck-Fact-Sheet.pdf

Owlet-nightjars breed in hollows and adapt readily to nest boxes (Photos: Rob Wallace)

When is an owl not an owl? When it's a night-jar!

The Australian Owlet-nightjar, *Aegotheles cristatus*, is the smallest of Australia's nocturnal birds. They are rarely seen at night but can be seen during the day because they are easily disturbed and fly from hollow roosts. They are widespread and common, and their distribution extends across most of Australia and into southern New Guinea, from rainforest to inland arid areas. They are found in a variety of habitats with trees containing hollows, including rainforest, eucalypt forests, woodland, arid open woodland including Mallee, and along watercourses.

Owlet-nightjars are medium-sized birds, growing to 24 cm. They are grey-brown to rufous, have pink legs and feet, an owl-like head with lateral brown stripes coming down through the eyes and whiskers around and above the beak. The breast is dark, belly white and the tail has grey-brown and white bars.

Owlet-nightjars feed at night, either on the wing, or by jumping on prey in trees or on the ground. Their wide gape (mouth) surrounded by whiskers assists with catching prey on the wing.

Owlet-nightjars breed in hollows and occasionally rock-crevices, and adapt readily to nest boxes. They line hollows with green leaves. Both parents build the nest, incubate the brood and raise the chicks. They have one brood each season, usually containing three to five white eggs.

They have a number of roost or bolt holes, so they can escape from one to another if disturbed. They are usually resident in the same area and use the same hollows for many years.

References:

- Birds in Backyards – Australian Owlet-nightjar
- Graham Chapman – Australian birds. Australian Owlet-nightjar
- Pizzey and Knight, Field Guide to the Birds of Australia

Hoodie looking for food in the shallows (Photo: Rob Wallace)

A Hoodie getting a bad rap from humans

Hooded Plovers (*Thinornis rubricollis*), or Hoodies as they are affectionately called, are medium-sized shore birds with a black head, white nape, black-tipped red beak and red eye rings. They have a black shoulder band, sandy-brown back, white belly and a black-tipped tail. Their legs are yellow to pink in colour. Hooded Plovers feed on range of invertebrates.

Hoodies are listed as vulnerable nationally, which according to the International Union for Conservation of Nature red list means they are threatened with extinction. There are only 800 in SA, with around 29 breeding pairs on the Fleurieu.

Their biggest threats are in urban areas through coastal development, and human and pest animal activity. Climate change is also a potential impact. Hoodies nest on Adelaide's beaches in scrapes in the sand, usually at the foot of dunes, from spring through to summer when human activity, including walking dogs, is at its peak. Foxes also predate eggs.

Hoodies lay two to three speckled eggs and will abandon eggs and chicks if persistently disturbed by dogs and foxes, or humans in vehicles and on foot.

There are a number of things you can you do to make sure you don't disturb them during breeding and other times: don't drive on beach or dune areas; move away when you see Hooded Plovers; walk below the high tide mark during breeding season; keep your dog on a leash at the beach, especially during breeding season; and get students to research about Hoodies to see how they can help.

While Hooded Plovers aren't a migratory species you might want to also find out about the threats that our migratory birds face along the East Asia/Australasia Flyway.

Outer tail feathers are slightly shorter in the female (Photo: Steve Walker)

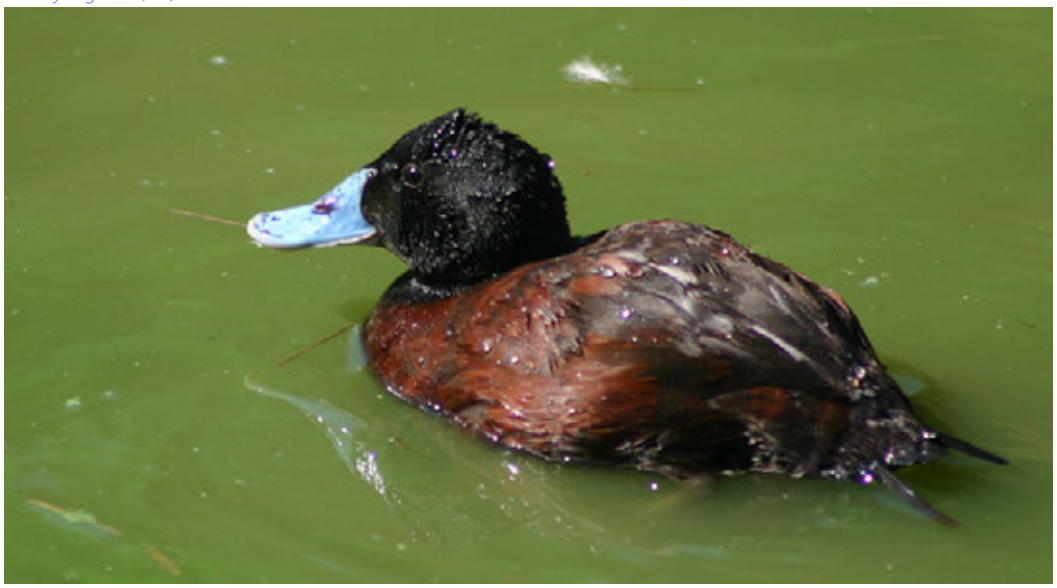
Welcome, swallow!

The Welcome Swallow (*Hirundo neoxena*) is Australia's most abundant swallow species; found in every state and territory. The origin of the 'welcome' in their name is disputed. Some sources say it refers to sailor's excitement at seeing the birds because it meant land was not far away. Other sources report that the migratory arrival of these birds was an indication to people living in southern Australia that spring was coming, a welcome sight after winter.

The Welcome Swallows are agile fliers, able to catch insects on the wing as they glide in graceful arcs. Bristles at the corner of their mouths are a useful adaptation that helps guide prey into their beaks. They can be found hunting in open areas; grasslands, parks, open woodland, around water bodies and along the coast. It can be difficult to see these birds clearly as they fly because they are so fast but two clear identifying features are their forked tails and metallic blue-black feathers on their backs.

Their preference for building mud and grass nests in sheltered positions, like eaves and roof beams, brings them into close contact with people. These nests are often used to raise two broods per year, and can be reused for multiple years.

Will Welcome Swallows be on the list of birds you observe during this week's annual Aussie Backyard Bird Count**? See our** bird ID charts **to help you identify some of the birds near you.**



A male showing the distinctive blue bill that gives rise to its common name (Photo: Steve Walker)

Why so blue?

One of two species of stiff-tailed diving ducks in Australia – the other being the larger Musk Duck – the Blue-billed Duck, as its name suggests, is easily identified by a sky-blue beak. However, it is only the male's that is blue, and usually only in breeding season (November to March). Outside breeding season, the bill often changes to grey or dark green. His head is glossy black and the body chestnut (dark grey when non-breeding). Females have a brown bill, and the feathers are dark brown with light brown bands.

Both males and females have stiff tail feathers that are normally held flat on the surface of the water but may be raised in a defensive posture when alarmed. Males also hold the tail erect during courtship displays.

Found in the temperate wetlands of southern Australia, Blue-billed Ducks are normally quite solitary and very rarely venture on land, preferring to stay far from shore, but may congregate in their hundreds outside of breeding season, forming large rafts in open water.

They are omnivorous, diving under water or down to the mud at the bottom to catch or filter out aquatic invertebrates, such as insects and crustaceans, as well as seeds, leaves and other vegetation.

Some Blue-billed Ducks are sedentary, staying within a small range year-round, whilst others move vast distances to breed during spring and summer. They are considered rare in South Australia but can be seen in some of the larger wetlands around Adelaide and the Mt Lofty Ranges.

To find out more about our local wetland birds, check out our Wetland Birds of South Australia identification chart and teacher information pack.

References:

- https://www.swifft.net.au/cb_pages/sp_blue-billed_duck.php
- https://birdssa.asn.au/birddirectory/blue-billed-duck/
- https://australian.museum/learn/animals/birds/blue-billed-duck/

Crested Pigeons are easily recognised by their distinctive headwear (Photo: Jeremy Gramp)

Riding high on the crest of an urban wave

Urbanisation of our environment often has a detrimental effect on our native plants and animals, but some species benefit from the modifications that humans make to the landscape. One such creature is the Crested Pigeon.

These pigeons were originally restricted to arid and semi-arid zones of inland Australia. As land was cleared for agriculture and urban development, they significantly expanded their range. They now can be found across much of Australia, except for dense scrub and forest. They are very common throughout the Green Adelaide region. In fact, Adelaide was the first major city that they colonised.

As their name suggests, the Crested Pigeon has a distinctive erect black crest. This feature makes them easily distinguished from the other pigeon species found in Adelaide. Most of their plumage is grey-brown, with their wings having black bars and patches of glossy green and purple.

Another characteristic feature is the whistling sound that is created if the Crested Pigeon is startled and takes flight. This sound is caused by air passing over a modified feather in their wing. When they land, they swing their tail high in the air.

Crested Pigeons feed mostly on seeds from native plants, as well as introduced crops and weeds. They have to drink every day so are usually found in the vicinity of water.

Their nests consist of a frail platform of sticks in dense foliage usually below 5m high. They lay one to two eggs, normally from August to March, and both parents build the nest, incubate and care for the young.

If you would like to learn more about native birds found in our region visit the teacher resources page of our website. We have a variety of identification charts, teacher packs and games.

References:

- Birdlife Australia - Crested Pigeon
- Smith, J. 2016. Wildlife of Greater Adelaide. Axiom

Males have an all-black head; females have a white ring around the eye (Photos: Steve Walker)

Does it have a familiar ring to it?

The Australian Shelduck is quite unmistakable. It is our largest duck species, growing to about 74cm long, and has a somewhat patchwork assortment of markings; copper breast, black upper parts, dark brown under parts, black and brown wings with a metallic-green speculum, dark green/black head, and white band around the neck.

You may not have paid close attention, but the females can easily be distinguished by a narrower neck band and a white ring around the eye. Females also have a white ring around the base of the bill, but this is also occasionally seen in the males.

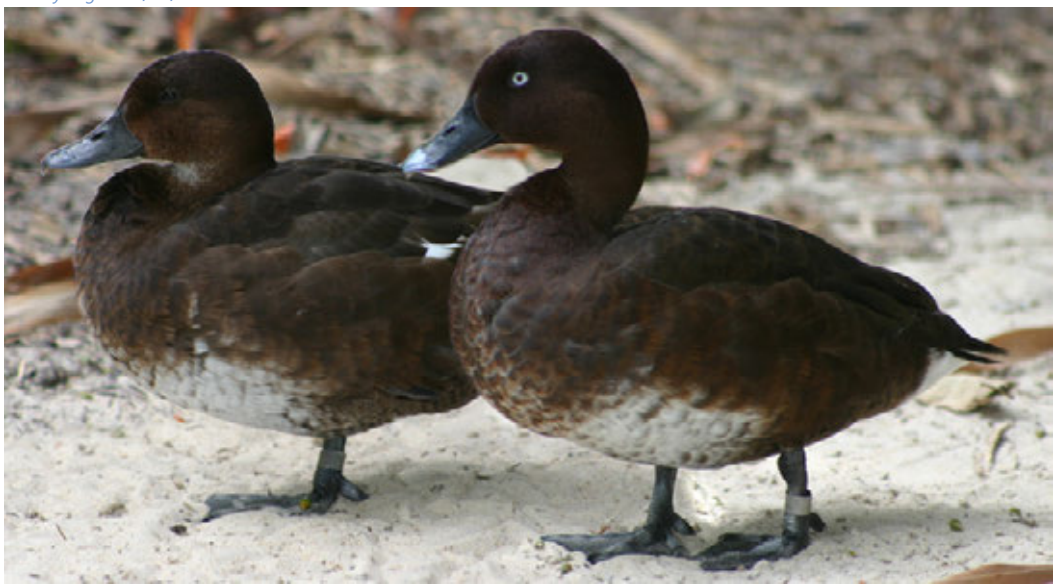
Australian Shelducks live in swamps, lakes, wetlands, dams and surrounding open areas in the south-west and south-east of Australia, preferring freshwater over saline habitat, and are occasional visitors to central and north-western Australia.

Due to their preference for open areas near water, Australian Shelducks have been happy to adopt the cropland and pastures that have been cleared for agriculture, particularly around farm dams, which has led to an increased local population size in some areas.

They feed almost exclusively on vegetation, grazing on grass and a wide range of wetland plants, but will also eat insects and molluscs.

Australian Shelducks typically nest in large tree hollows that have been well-lined with down, but they have also been recorded making use of rabbit burrows, shallow caves, and crevices in riverbanks and cliff faces. The female lays between 5 and 15 eggs, which she incubates for about 33 days. Whilst she tends the eggs, the male aggressively guards the surrounding territory.

To find out more about other local bird species, check out our Wetland Birds of South Australia identification chart and teacher pack.



Females have brown eyes and males have white eyes (Photo: Steve Walker)

Diving in hardhead first

The Hardhead (*Aythya australis*) is a chocolate-brown coloured duck with white under the tail. When in flight, you can see their white breast patch and white underwings outlined in brown. They are distinguishable by the white or yellow eyes of the male, which gives rise to their other common name 'White-eyed Duck'. Females, however, have brown eyes.

Despite the name Hardhead, these ducks don't actually have a particularly hard head. The name comes from the early taxidermists finding it the most difficult part of the duck to process.

Hardheads are found across Australia in freshwater well-vegetated swamps, wetlands and deep-water lakes, spending most of their time in the water. They sometimes eat fish but are primarily vegetarian, feeding on grasses, sedges and other aquatic vegetation. They are considered the only true diving ducks in Australia. As such they dive much deeper for their food than other Australian species.

Made from reeds, sedges and other plant materials, their nests are concealed in dense vegetation, with the females both building the nests and incubating the eggs alone. The breeding season is during spring and early summer, when wetlands have plentiful vegetation.

To find out more about other local bird species, check out our Wetland Birds of South Australia identification chart and teacher pack.

References:

- birdssa.asn.au/birddirectory/bd-hardhead/
- birdlife.org.au/bird-profile/hardhead
- ebird.org/species/wheduc1

The distinctive breeding plumage and (inset) hunting technique of the Royal Spoonbill (Photos: Steve Walker)

A spoon full of fish

The Royal Spoonbill (*Platalea regia*) is an easily recognisable, snowy-white waterbird. As the name suggests, it has a distinctive black, spoon-shaped bill, as well as black facial skin, legs and feet.

While both sexes are very similar, the males are slightly larger with longer legs and bills. During breeding season, both sexes develop a long and untidy crest on the back of their head, a yellow wash over their chest and across their lower neck, a yellow patch above their eyes, and a red patch in the middle of their forehead.

Royal Spoonbills primarily eat fish, but also consume shrimp, aquatic insects, molluscs and plants. They have a distinctive way of foraging for food, submerging and sweeping their bills from side to side in shallow water, either individually or in flocks. Inside their bill are papillae, vibration detectors which help them to feel for prey in the dark or in muddy water. When they catch the food, they then toss back their heads so that it falls down their throat.

These waterbirds are typically spotted in shallow freshwater and saltwater wetlands, as well as wet grasslands and intertidal mud flats. Breeding season is typically from September to November, and they usually nest in pairs among the noisy breeding colonies of other waterbirds. The nests are constructed in small trees over water using sticks and twigs, lined with soft vegetation.

Have you spotted them inyour local wetland? Find out more about our local waterbirds in our Wetland Birds of South Australia identification chart and teacher information pack.

References:

- birdssa.asn.au/birddirectory/royal-spoonbill/
- birdlife.org.au/bird-profile/royal-spoonbill
- ebird.org/australia/species/royspo1/AU-VIC-GGE

Male Crescent Honeyeater calling in Stringybark Woodland (Photo: Rob Wallace)

A honeyeater with fancy lapels

If you are walking through a Brown Stringybark woodland in the hills and hear a bird loudly calling eegypt or a sharp jik sound but can't manage to find it, there's a good chance it's a Crescent Honeyeater, *Phylidonyris pyrrhopterus*.

When calling, Crescent Honeyeaters have a habit of staying very still, hidden amongst the leaves in the canopy of Stringybarks and Pink Gums.

Crescent Honeyeaters are found in hilly, mountainous, and coastal woodlands and forests in south-eastern Australia but they move into lower areas in winter, so you might be lucky enough to see one in your garden. They can be seen alone or in small noisy groups moving quickly from plant to plant.

They are small to medium sized honeyeaters and have the same yellow and blackish wing patches as the closely related New Holland Honeyeater, but with crescent-shaped markings that look like lapels on the breast and white lines below the crescent and above the dark eye patch.

Their eyes are red and their downward curved beak is ideal for getting nectar from tubular flowers, like those on the Common Heath and Flame Heath. Males are dark grey above and a lighter grey below. Females are darker brown above and lighter brown below. The males have white tips on their tail feathers.

As well feeding on nectar from flowers, they feed on honeydew on Eucalypts and forage for invertebrates under bark or catch them while on the wing.

References:

- Crescent Honeyeater. Birdlife Australia
- Menkhorst, P et al. The Australian Bird Guide, CSIRO.

This female Red-capped Plover, photographed in September 2021, was banded in 2015 (Photo: Steve Walker)

Little red resident

September 16 is Plover Appreciation Day, when we celebrate these ground nesting birds that typically live along our coastlines, wetlands and lakes.

Australia's smallest plover is the Red-capped Plover and, unlike migratory shorebirds, this little bird spends its entire life in Australia. It has a wide distribution, being found all around Australia's coast, as well as in many inland areas, including wetlands, mudflats and salt lakes.

As their name so clearly describes, these birds are characterised by the rust-coloured crown and nape, which is brighter on the male than the female. As well as the red-cap, males have a dark band running from the base of the beak, through the eye to the cap, then down the edge of the neck to the breast. Both sexes have a brown back (red-brown in males, grey-brown in females) and a white belly.

They feed upon insects, snails, worms, crustaceans, and other invertebrates, foraging along the beaches, mudflats and saltmarshes with a delightful run-and-peck technique, assisted by their large eyes which locate prey. Head down to your local beach with a pair of binoculars and you might get a chance to watch them in action.

Although they are widespread and abundant, monitoring during biennial beach-nesting birds counts shows that they do suffer the same problems as other beach-dwelling species. Given that they lay eggs in shallow but exposed depressions in the sand or pebbles, they are open to predation and harassment by cats, dogs, foxes, gulls and other birds; susceptible to damage and flooding during high tides and storm surges; trampled by people and vehicles on beaches; and impacted by the presence of aerial drones and invasive weed species.

So, when at the beach, please keep your pets on a leash, stick to the designated walking areas and avoid getting too close.

The spectacular White-winged Fairy-wren (Photo: JJ Harrison)

I'm a survivor

The White-winged Fairy-wren (*Malurus* leucopterus) is defying the odds and persisting in coastal saltmarshes and small pockets of remnant shrubland in the Cities of Salisbury and Playford in the northern suburbs of Adelaide.

The shrubland habitat for this striking bird is under threat from development, but a significant pressure is also placed on them from well-meaning tree planting projects. The introduction of trees to open shrubland areas where the fairy-wrens live has the unintended consequence of creating habitat for bird predators such as Magpies, Kookaburras and Grey Currawongs, as well as shading out their preferred shrub habitat. Foxes and cats are also predators of the White-winged Fairy-wren.

Recent shrubland surveys undertaken for Green Adelaide have highlighted the need to protect this unique declining habitat, which is often viewed as a barren landscape in need of trees, but where the low shrubs provide cover for small birds.

Those lucky enough to see a White-winged Fairy-wren during breeding season in spring and summer, will marvel at the males with their bright cobalt-blue feathers and contrasting white wings. Like other fairy-wrens, the females, juveniles and non-breeding males are mostly light brown or pale grey in colour. They are typically seen and photographed when they perch on the very tops of the sparsely distributed bushes.

These resourceful birds build domed nests close to the ground from grasses, roots, wool and spider webs. The nest has a small entrance to one side and three or four white eggs, finely spotted with red-brown and purple, are laid, hatching after about 14 days.

White-winged Fairy-wrens are mainly insectivorous, feeding on a range of small beetles, moths, caterpillars, spiders and other bugs, but will supplement their diet with seeds and small berries.

Spotless Crakes can be spotted in some of our local wetlands (Photo: Steve Walker)

Have you ever spotted this crake?

If you have, consider yourself lucky. Despite having an extremely large range throughout the Pacific region, which includes the Philippines, Indonesia, Australia and New Zealand, this cryptic and unassuming bird is considered rare in South Australia.

However, Spotless Crakes have been seen at numerous wetlands in Greater Adelaide, where they will feed on vegetation and aquatic invertebrates. They forage in muddy areas amongst the thick reedbeds or in shallow water, wading or climbing over floating vegetation but rarely spending much time out in the open during daylight hours. If disturbed, they will quickly run back to the vegetation to hide.

Spotless Crakes do not get their name because they are very clean or rarely seen, but instead because of the absence of the contrasting markings that are present on the feathers of their relatives, such as Australian Spotted Crakes and Baillon's Crakes.

Spotless Crakes have a bluish slate-grey head, neck and breast, with reddish-brown back and wings, becoming darker at the rear. The eyes are deep red, the bill black and legs reddish pink.

Breeding season is between late August and early January, with a clutch of two to five eggs being laid in a nest of woven reeds and other grasses, constructed above the water in sedges. Both parents incubate the eggs, which hatch after about 20 days. The young are very well-developed on hatching, being able to catch their own prey after just three days, although they remain with their parents for up to five months.

With a little luck and lots of patience, you might just be able to spot one yourself.

To find out more about other local bird species, check out our Wetland Birds of South Australia identification chart.

References:

- Spotless Crake – Threatened species profile
- https://nzbirdsonline.org.nz/species/spotless-crake

The breeding male Superb Fairy-wren shows off his striking blue plumage to attract females (Photo: Rob Wallace)

A honeyeater with fancy lapels

The male Superb Fairy-wren (*Malurus cyaneus*) may catch your eye with his dazzling blue plumage, but unfortunately you may not be the only eye he catches. With significantly less camouflage than the brown females and juveniles, he is at higher risk of predation and spends more time scanning for predators (larger bids, cats, dogs and foxes). Researchers from Monash University discovered the cautious behaviour that comes with the breeding male's good looks allows the females to relax their guard when in his presence, as they are less obvious to predators. The Superb Fairy-wren is part of the wren family, Maluridae, and typically weighs just 10 grams. It can be found throughout eastern Australia from the south-eastern of Queensland to the Eyre Peninsula, including Tasmania, Kangaroo Island and other islands. Its ideal habitat is thick-growing woodland shrubs that provide a safe place from predators. Planting some dense bushes with prickly leaves and branches in a corner of your garden can help provide a retreat for these beautiful birds.

You might have noticed Fairy-wrens are often seen hopping around rather than flying. This is because they have long strong legs but not so powerful wings. In a series of hops, they gather food from the leaf litter. Their diet is made up of small insects, with grasshoppers a delicacy. Try to avoid using pesticides in your garden as this will kill the insects that are their food. Superb Fairy-wrens do form mating pairs, but the bright blue breeding male will still try to court other females. His displays include presenting females with yellow flower petals. The female fairy-wrens are also well known for taking a night hop to find a brighter male before returning to the nest. She works very hard to build a nest in just a few days, using spider webs, animal hair, grass and fine twigs. The different coloured beaks of the females (orange-red beak) and non-breeding males (black beak) is how you can tell them apart.

To find out more about other local bird species, check out our Bushland Birds of the Adelaide Hills ID chart.

References:

- https://backyardbuddies.org.au/backyard-buddies/superb-fairy-wren/
- https://theconversation.com/it-isnt-easy-being-blue-the-cost-of-colour-in-fairy-wrens-80006

The wedge-shaped tail, which gives this bird its name, is particularly obvious during flight (Photos: Steve Walker)

Australia's apex predator of the sky

The majestic Wedge-tailed Eagle is Australia's largest living bird of prey and one of the largest eagles in the world. They stand over 1 m tall with a 2.5 m wingspan and soar through the air at altitudes of up to 2 km. They are found throughout the continent from the tropical Top End to Tasmania, but prefer open woodlands where they can be found nesting in the tallest trees in some of the world's largest nests of around 2 m diameter.

Wedge-tailed Eagles have a characteristic long, wedge-shaped tail, and legs that are feathered all the way to the base of the toes. They can see in a larger range of colours and with 8 times more detail than humans because they can squeeze and elongate their eyeball like a zoom lens on a camera.

These apex carnivores are both hunter and scavenger. They prey on ground-dwelling animals, attacking with a fast-swooping motion usually killing their prey instantly with their powerful talons. They also provide benefit to farmers as they feast on feral cats and rabbits and clean up roadkill, which reduces the spread of disease.

They have however been blamed for killing young lambs and have been hunted and poisoned by farmers across the continent in the past, despite becoming a protected species under the Wildlife Act 1975. Wedge-tailed Eagles are more likely to prey on sick or dying lambs, or feast on dead carcasses, than attack healthy lambs, unless alternative food sources are low.

Interestingly, females are larger than males, a trait called 'reverse sexual dimorphism' which is common amongst most species of hawks, owls, falcons, eagles and some other birds of prey. While many interesting theories exist, no one really knows why this occurs.

References:

- https://www.environment.nsw.gov.au/topics/animals-and-plants/native-animals/native-animal-facts/woodland-birds/wedge-tailed-eagle
- https://www.wildlife.vic.gov.au/__data/assets/pdf_file/0017/115343/Wedge-tailed-Eagle.pdf

With its unusual bill and striking plumage, the Pink-eared Duck is hard to misidentify (Photo: JJ Harrison)

Flying, pink-eared, vortex feeder

The Pink-eared Duck (*Malacorhynchus membranaceus*) is one of the smaller Australian ducks, with adults ranging in size from just 36 to 45 cm. In comparison, the common Pacific Black Duck grows 47 to 60 cm and the Australian Shelduck 56 to 72 cm.

It gets its common name from the small patch of pink feathers located behind the large brown eye patch. However, the patch can be quite difficult to see from a distance, so many people prefer to call it the Zebra Duck, after the distinctive stripes found on its flanks, breast and lower neck.

A particular feature is the unusual, highly specialised bill. The genus name *Malacorhynchus* means 'soft beak', referring to the membrane of pliable skin that protrudes on each side of the tip, giving a square appearance.

With the aid of the membrane, the duck sucks up water and expels it through fine fringed grooves that run along the length of the bill, leaving behind the plankton and small invertebrates the duck feeds on.

To improve their ability to catch their prey, the ducks often swim together in large groups to increase agitation of the water, or they will pair up and swim head to tail in a tight circle that generates a small vortex of water, like a mini whirlpool, concentrating the invertebrates before sucking them in. This behaviour is called vortexing.

Pink-eared Ducks are highly nomadic, with large flocks flying long distances in search of lakes, wetlands, large farm dams and other temporary waters. The have been recorded throughout most of mainland Australia, although they rarely visit the driest parts of South Australia and Western Australia. They also occasionally visit Tasmania and, surprisingly, a single bird was recorded at a sewage pond in New Zealand in 1990.

Find out more about our local waterbirds in our Wetland Birds of South Australia identification chart and teacher information pack.

With a long-curved beak, the Australian White Ibis is well suited to dig for aquatic invertebrates (Photo: Steve Walker)

Have you ever spotted this crake?

The Australian White Ibis (*Threskiornis molucca*), affectionately known by some Australians as the 'bin chicken', is a familiar but widely misunderstood bird within the Australian landscape.

One of three species of ibis found in South Australia, alongside the Straw-necked Ibis and Glossy Ibis, the birds are considered sacred among indigenous communities and an indicator of wetland health.

They are identifiable by their white body, featherless black head and neck, pink bands across their nape and yellow upper tail. If you get a glimpse under their wings, you will see striking bare pinkish skin.

The Australian White Ibis resides in sheltered coastal and marine habitats, including fresh and tidal marshy wetlands, tidal mud flats, mangroves, salt pans, coastal lagoons, and floodplains, but they are being more frequently sighted in urban parks and landfill areas. They prefer to roost together in trees or bullrush reeds, in or near water.

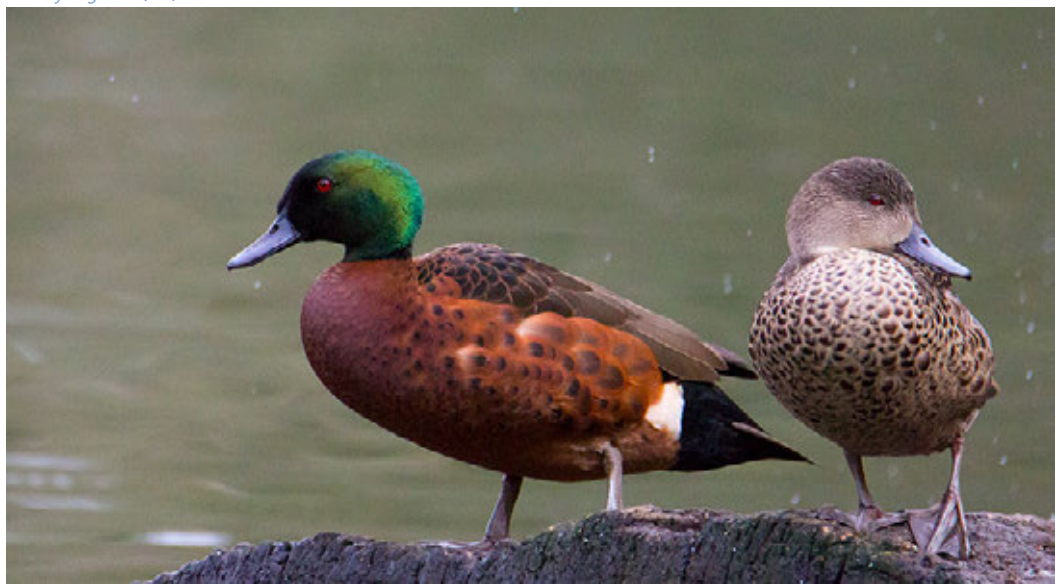
To feed, ibis use their long curved black beaks to dig for freshwater crayfish, mussels and the other aquatic and terrestrial invertebrates that make up their natural diet. More recently however, with increased urban sprawl and reduced habitat, the ibis has supplemented its diet with more predictable food sources, sifting for scraps in bins and at landfill sites. It is important to remember that processed foods can have detrimental effects on their health and growth, so let's keep them out of our bins.

To attract a mate, the male finds a suitable tree branch in which he proceeds with a noisy display and aggressive harsh croaks towards other males. If a female lands nearby, showing interest, he will bow to her and offer her a twig as a gesture to mate. If accepted, the pair fly off together to build a nest and they will raise 2 to 3 chicks that fledge after approximately 48 days. They may live for as long as 28 years!

To find out more about other local bird species, check out our Wetland Birds of South Australia identification chart.

Reference:

- Field Guide to the Birds of Australia, Simpson & Day 8th Edition 2010



Male and female Chestnut Teals are coloured quite differently (Photo: Steve Walker)

That old chestnut

The Chestnut Teal (*Anas castanea*) is a small dabbling duck which exhibits sexual dimorphism. In other words, the males and females have different appearances.

Males have a mottled, chestnut breast, dark brown wings and a distinctive iridescent bottle-green head. When in eclipse plumage, outside of breeding times, the head loses its iridescence and the body becomes duller.

Females and immature males have a mottled brown body and wings, and a brown head, which is darker on top. They can be confused with the closely related Grey Teal (*Anas gracilis*), with which they are commonly found, but Grey Teals have a pale-grey breast and chin, rather than brown, and don't exhibit dimorphism. Hybrids have been known to occur, further adding to the confusion in identifying them.

Chestnut Teals are found throughout south-east and south-west Australia in rivers, wetlands, dams and lakes, but are more common in coastal areas. They typically breed between July and January in brackish or freshwater coastal swamps, being one of the few ducks to tolerate the high levels of salt. Nests are normally made in a tree hollow located 6 to 10m above water and are lined with soft, downy feathers.

Whilst the male does not assist with incubating the eggs, he does stay with the female throughout and helps raise the ducklings. Females have also been known to lay their eggs in the nest of another pair, leaving the other female to incubate and raise the ducklings.

They are also a popular target for duck hunters. Native predators include ravens, lizards, Purple Swamphens, Musk Ducks and raptors such as Swamp Harriers and Peregrine Falcons.

Chestnut Teals have declined over the past 25 years due to water pollution, habitat clearing, coastal development and introduced predators such as foxes. However, Chestnut Teals will readily make use of correctly placed and constructed nest boxes, so there is hope that numbers will increase with suitable protection and management of their favoured habitats.

Find out more about our local waterbirds in our Wetland Birds of South Australia identification chart **and** teacher information pack.

Males are easily recognisable by their bright red throat, chest and undertail (Photo: Ricardo Simao)

Mistletoe Birds

Mistletoe Birds (*Dicaeum hirundinaceum*) are named after their key food source: mistletoe berries. They are found throughout Australia's woodlands and forests (except for Tasmania) and wherever mistletoe grows. Their simple digestive system makes them a good companion to the mistletoe plant. They lack a muscular gizzard (food grinding organ), leaving seeds of the mistletoe berries intact as they pass through the bird. The rest of the outer parts of the berry are ingested and the seeds are defecated within 4-12 minutes. This bird does not simply poop and drop its faeces – a rather fortunate trait if you happen to be hanging out under its tree! Instead it sits along the branch, doing elaborate body-twisting movements to wipe the seeds onto it. The fruit contains a substance called viscin, which helps the seeds stick and can harden, thus protecting the seed until it's ready to germinate. Luckily for both bird and plant, germination happens rather quickly and high above the ground. Thus, this mutually beneficial relationship ensures a constant supply of food not just for the mistletoe bird and other frugivores (animals that rely mostly on fruit). but also butterfly larvae, koalas, sugar gliders, and possums. In return, the plant continues to reproduce.

Of the 100 native species of mistletoe in Australia, five occur in the greater Adelaide area. These semi-parasitic plants are found in the tree canopies of woodlands or forest systems. They don't have traditional roots that grow underground. Rather mistletoes engage a haustorium, a stem or root that can attach and grow on a host plant. The haustorium can take nutrients and water directly from the branch, just like roots do from the soil. Many mistletoe species have similar leaves to their hosts and appear to mimic the shape, size, and presentation of leaves to blend in. This is believed to be due to convergent evolution. Mistletoes have a varied reputation as they can smother and kill their host trees. However, the problem lies more with what's missing rather than the plant's parasitic nature itself. Land clearing, fewer fires and not enough animals eating it can lead to unchecked growth. If the tree and surrounding environment is healthy, and there are enough species consuming it, then the mistletoe lives in balance with its host. Rather than a scourge, it can be viewed as essential to ecosystem health with a variety of species adapted to depend on it for survival, like the Mistletoe Bird and the larvae of the beautiful Genoveva Azure Butterfly.

Grey Butcherbirds have a black head, grey body and wings, and a white collar (Photo: Tatiana Gerus)

Feeling a little grey?

Grey is a colour often associated with feelings of monotony, gloom, misery and a disinterest in life. But those descriptions certainly don't match the outlook of the Grey Butcherbird.

This species looks like a small version of the Australian Magpie, which isn't surprising because it is a member of the same family. Like it's larger cousin, it has a loud musical call, with members of a territorial group often coming together like a team of carollers to mark their territory in musical form. When sung in pairs or small collectives, each individual will take their turn to add a piece to the song. Some parts will be very musical, with rich piping melodies and mimicry of other species, but other parts are more like harsh cackling calls.

Grey Butcherbirds are so named because of their aggressive predatory behaviour. They sit on an open perch, looking around to detect prey, and then either capture it on the wing or drop to the ground to pounce on it. The prey is then hung off a branch or in the fork of a tree, and the meat hacked away using the hook at the end of their beak. Any food that is not eaten straight away will be stored for later consumption. Prey items include a range on invertebrates and small vertebrates, including beetles, wasps, mice, frogs, lizards, small birds and their chicks. They also occasionally eat fruit and small seeds.

Grey Butcherbirds occur in a large range of habitats including eucalypt forests, woodlands, the mallee, rainforests, along waterways, and in urban areas. They are widely distributed throughout most of southern Australia from eastern Queensland through to Port Hedland in Western Australia, apart from some of the more arid areas of central Western Australia and the Northern Territory, and north-eastern South Australia. An isolated population occurs from the Kimberley region of Western Australia across to the top of the Northern Territory. They are largely absent from the monsoonal tropics.

While they may not be encountered as commonly as Australian Magpies, they do appear to be happy to live in urban areas and make delightful visitors to our gardens, helping to control many unwanted insect pests.

To find out more about our local bird species, check out our downloadable ID charts, teaching tools, packages and games.

Despite the distinctive markings, this dotterel has great camouflage when nesting (Photo: Steve Walker)

Doting on this dainty shorebird

On 16 September each year we celebrate Plover Appreciation Day to raise awareness and understanding of a subfamily of wading shorebirds. There are about 45 species in the subfamily (Charadriinae) and they are found throughout the world, except for the Sahara and the polar regions.

This week we'll be featuring the Black-fronted Dotterel, which is widespread throughout Australia and is becoming common in New Zealand since it colonised there in the 1950s.

It is a dainty species, with a distinctive black face mask and chest band, chestnut shoulders and head, yellow-orange legs, and red bill with a black tip. A bright red ring is present around each of the black eyes, and the chin and undersides are white. It might seem like this striking arrangement of colours would make them highly visible, but the markings provide excellent camouflage, enabling them to blend in with the stony riverbeds and other marshy areas where they live.

Unlike many shorebirds, which migrate long distances to breed each year, Black-fronted Dotterels tend to be sedentary, with an individual, pair or small family group of 4 or 5 birds occupying a favoured location permanently. They are normally found around the shallow edges of freshwater wetlands, lakes, dams and claypans, but can sometimes also be found around estuaries and saline mudflats.

Their diet mainly consists of small invertebrates such as insects, snails, crustaceans, spiders and worms, but they will also eat seeds. It is a delight to watch them feed; they run short distances then slowly walk along the water's edge, holding their body in a horizontal posture, before stopping to peck at prey items in the mud with a bobbing motion. They may retrace their steps over and over to make sure they catch all available prey.

The eggs are laid in a small depression on the ground, with the nest loosely lined with twigs, grasses, shells and pebbles. Parents will feign injury and call loudly to lure predators away from either the nests, or young birds that have hatched and hidden in less exposed sites.

Find out more about our local waterbirds in our Wetland Birds of South Australia identification chart **and** teacher information pack.

The male Red-rumped Parrot is much more colourful than the female (Photo: Rob Wallace)

He's a pretty boy

Parrots are some of our most colourful birds, with the male usually displaying a brighter plumage than their female counterpart. But it's not just females who have duller colours; newly hatched chicks, regardless of gender, come out of their eggs with the same dull colour. Observable differences between genders of the same species is known as sexual dimorphism. In birds this usually translates as differences in size or plumage. When the dimorphism relates to their colour, it is known as sexual dichromatism.

The Red-rumped Parrot - a medium-sized parrot native to Australia - displays these characteristics with the adult male a bright green colour with a light-yellow or green belly and a red rump. The female is a duller, olive-green, with a green rump and faint yellow or light green scales on the belly. Young birds of both sexes are duller in colour, with brighter colours emerging as the chicks grow and become more capable of defending themselves. Red-rumped Parrots mate for life, with the female being the one who will choose and prepare the nesting site, usually within an existing hollow in a Eucalypt tree. These parrots are not as abundant as other parrots in SA, but are still common in parts of Adelaide. They spend a great deal of time feeding on the ground and are usually found in pairs or flocks in open areas with access to water. This parrot prefers seeds and grass leaves but will also eat fruit and flowers in trees. You may also find them feeding with other parrots including Eastern Rosellas and Galahs within suburban parks and gardens.

There are lots of ways you can help attract these native birds and protect them in your school yard. You can incorporate a variety of native plants to provide structure which include a range of smaller, shrubby species to provide a place for smaller native birds to hide from threats. By choosing plants that fruit, flower or seed at different times of the year you can provide access to food all year round. Don't forget to provide a water source of varying depths close to your trees and shrubs, providing an easy getaway from threats.

References:

- https://www.birdsinbackyards.net/species/Psephotus-haematonotus
- Wildlife of Greater Adelaide by James I.D. Smith

Treecreepers scale tree trunks and branches hunting for small insects (Photo: Rob Wallace)

What has a white throat and climbs trees?

A White-throated Treecreeper of course!

The White-throated Treecreeper (*Cormobates leucophaea*) is a dark brown bird 13 cm to 17 cm in length, with a distinctive white throat and chest. The treecreeper also displays white streaks on the sides of its body and a red bar is visible on its wings during flight. Females can be identified by orange marks on the sides of their faces.

A colourful songbird, the White-throated Treecreeper has a clear, loud, whistled song. These musical calls are sung consecutively and may resemble 'whit-whit-whit-', 'quit-quit-quit-' or a more mellow and musical 'tweit-tweit-tweit-'. They are also known to deliver a loud, rippling series of quickly repeated high notes.

You can catch a glimpse of these birds in south-eastern South Australia all the way up to the Tropic of Capricorn, mostly on the eastern side of the Great Dividing Range. Their ideal habitats are eucalypt forests, rainforests and woodlands, as well as lower scrubs of banksia woodland, mallee and brigalow. Scaling up tree trunks and branches in a spiral fashion, the treecreeper searches vigorously amongst the bark for small unsuspecting insects, predominantly ants, but will also feed on nectar.

During the breeding season from August to January, these otherwise solitary birds come together to mate. If successful, the female will go on to prepare a nest in a tree cavity lined with bark, fur and hair. She will then incubate the eggs, but both sexes will care for the young. They can raise up to two broods in one season.

To find out more about other local bird species, check out our Birds of South Australia identification charts.

References:

- Michael Morcombe; Field Guide to Australian Birds 2002
- australian.museum/learn/animals/birds/white-throated-treecreeper/

The white streaks on the head and face give this bird an aged look (Photos: Steve Walker)

Not as old as it looks

The word 'hoary' generally means grey or white with age. In zoology it means 'of a pale silver grey' and in botany it means 'covered with short, dense, greyish white hairs'. So, it's not surprising that a waterbird with white streaks across its head is called the Hoary-headed Grebe.

What may be surprising is that the white streaks, as well as a much darker throat and buff-coloured breast, are only present during breeding season. Throughout the rest of the year adults are rather drab looking birds. They have dark grey wings and back, pale grey feathers below, a dark cap that extends below eye level to the beak, and a dark streak down the back of the neck. Their unusual brown iris has a dark central ring surrounded by lighter inner and outer rings.

Non-breeding Hoary-headed Grebes can easily be confused with the more common Australasian Grebe, but there are some key features that help distinguish them. Australasian Grebes have golden irises, the dark cap doesn't extend below the eye, and they have a yellow spot of bare skin at the edge of the beak, just below the eye (see inset photos, Hoary-headed Grebe above, Australasian Grebe below).

Hoary-headed Grebes have a wide range, being found in all states and territories, although they are generally absent from the more arid areas. They seem to prefer wide, open areas of water and can form very large flocks away from the shoreline. They are not limited to freshwater, also being found in estuarine or brackish lakes and ponds, as well as sheltered coastal seas.

Like other grebe species, Hoary-headed Grebes have their legs set towards the back of the body, enabling them to dive and swim underwater to catch invertebrates with ease. However, they are extremely ungainly and very rarely venture on land, but they are able to rapidly run across the surface of the water, flapping their wings as they go, to gain lift and avoid predators. They are very flighty and will scatter at the first sign of danger.

Find out more about our local waterbirds in our Wetland Birds of South Australia identification chart and teacher information pack.

Fan-tailed Cuckoo in woodland (inset: Pheasant Coucal) (Photos: Rob Wallace)

Not so Cuckoo

Cuckoos are medium sized birds with soft plumage and long tails that are often striped. They have zygodactyl feet, meaning the two inner toes point forward and the two outside toes backward. There are 150 species of cuckoo worldwide, which are in the family Cuculidae. The family includes cuckoos, road runners, koels and coucals. In Australia there are 18 species, however some of these are vagrant and from one or two records. Cuckoos are found on every continent except Antarctica. While many lay their eggs in the nests of other birds, which raise the young, more than half of the world's cuckoos build their own nests and raise their young.

All but one of the Australian cuckoos are obligate brood parasites, including the Fan-tailed Cuckoo pictured. This means they lay an egg in the nest of other bird species and remove one of the eggs already in the nest. They quite often use the nests of fairy-wrens, scrubwrens and thornbills. Their eggs are similar size to their host. The baby cuckoo, once hatched, ejects the other eggs and babies from the nest so the foster-parent expends all its energy raising the cuckoo. It is not unusual to see a fairy-wren feeding a baby cuckoo twice its size.

The Fan-tailed Cuckoo can be seen in woodland areas around Adelaide. Some of their population migrates to northern Australia in our winter. They lay their eggs in hosts' nests that are domed mostly, but sometimes those in species with cup nests.

The only cuckoo in Australia that raises its own young is the Pheasant Coucal of northern and eastern Australia (pictured inset).

To find out more about our local bird species, check out our downloadable ID charts, teaching tools, packages and games.

References

- Cuckoo. Wikipedia
- Menkhorst, P. (2020). The Australian Bird Guide. CSIRO
- Simpson and Day, Field Guide to Birds of Australia, Viking O'Neil

The male Red-capped Robin is more striking than the female (Photos: Steve Walker)

Who's got the best red cap and breast?

In Britain, the European Robin is closely associated with winter and has become a symbol of Christmas, frequently appearing on cards and wrapping paper. It is a regular visitor to gardens, feeding on worms and other invertebrates dug up by gardeners. With its characteristic red breast, it is often listed at the top of polls for Britain's favourite bird.

Here in Australia, the birds in the Petroicidae family are known as Australasian Robins, with those in the genus *Petroica* colloquially called the red robins. However, despite the similar appearance, they are not related to the European Robin. The smallest of the red robins is the Red-capped Robin and with its bright red cap and breast, you could argue that it is the most attractive of all the robins.

The males are the most spectacularly coloured; with the aforementioned red breast and cap, black head and back, and black and white wings and tail. Females are grey-brown above, with a pale red cap, and the wings are dark-brown and black with white or buff bands. The breast ranges from off white to red. Juveniles of both sexes look like the female, but lack the red cap and are boldly streaked on the breast.

Interestingly, the redness of the male's plumage is an indicator of his health, so is used by females when selecting who she will breed with. The red in the feathers comes from keto-carotenoid pigments. These pigments are also deposited in oil droplets within the retinas of birds, where they are responsible for enhancing colour discrimination. Unfortunately, most animals cannot produce keto-carotenoids, so must obtain them from their diet. They are also important in the immune system, so having excess that can be redirected to colour the feathers shows that the male is strong and healthy.

Red-capped Robins have a large distribution, being found throughout most of mainland Australia, mainly below 20° latitude but less commonly in coastal areas.

They feed on the ground, darting down from perches to catch insects and other invertebrates, so are impacted by changing vegetation structure such as excessive clearing, which reduces their access to perches, and weeds like Bridal Creeper and exotic grasses, which smother the ground, reducing visibility of prey items.

A Wood Sandpiper seen in Jan 2024 at Magazine Creek Wetlands (Photo: Steve Walker)

I prefer wetlands to beach sand!

The old joke asks '*Why do birds fly south for the winter? Because it's too far to walk*'. As you probably know, the real reason many birds that breed in the northern hemisphere migrate to the south is to escape the northern winter. This is certainly the case for the Wood Sandpiper, a small to medium-sized (20 to 23cm) wading bird that breeds in subarctic and palearctic wetlands across northern Europe from Russia, through the Baltic, Scandinavia and across to the Scottish Highlands.

As you can imagine, the winter climate in that part of the world can be extreme, so the birds migrate south along the East Asian-Australasian Flyway, arriving in Australia from August and overwintering until April or early May. Wood Sandpipers are much more common in northern areas but can be found in suitable habitat throughout much of Australia.

Unlike most visiting shorebirds, which visit our coastal beaches and mudflats, Wood Sandpipers prefer shallow freshwater wetlands with abundant reeds and grasses, aquatic plants, trees and fallen timber. They feed on insects and other aquatic prey, probing for them in the shallow mud, pecking at them on the surface of the water or sweeping their bills from side to side below the surface. They swim well and can be seen wading out into belly-deep water to catch their prey.

Wood Sandpipers are slim birds with long, yellow-green legs, white underparts, a dark grey-brown back and wings, and a mottled neck and breast. The bill is short and straight.

They are normally seen individually, in pairs or in small flocks, but can occasionally be seen in flocks containing hundreds of birds. Wood Sandpipers are the most abundant migratory wader in non-coastal habitats throughout Asia, but they are wary and excitable birds, and will fly off if disturbed. Surprisingly though, solitary birds sometimes tolerate close approaches.

References:

- https://birdlife.org.au/bird-profiles/wood-sandpiper/
- https://ebird.org/species/woosan

A Singing Honeyeater in the coastal cliff-top vegetation at Aldinga Beach (Photo: Jeremy Gramp)

The Masked Singers

This time of year is the perfect time to get out and enjoy our amazing coastline. While you are there, keep an ear out for one of the more recognisable bird calls coming from within the coastal vegetation. It could well be a Singing Honeyeater that you are hearing. Their calls vary, depending on what it is that they are trying to communicate. Their contact call is a whistled 'Screee', soft 'Prrit-prrit', while their song is a trilled 'Crik-crikit-crikit'. Once you have heard these calls and can recognise them you will easily be able to identify when they are around.

Singing Honeyeaters are not just restricted to our coastal vegetation; they also occur in open heathlands, mallee, mulga, scrublands, vegetated watercourses, golf courses and gardens. They are the most widespread of all of Australia's honeyeaters, occurring throughout the Australian mainland west of the Great Dividing Range

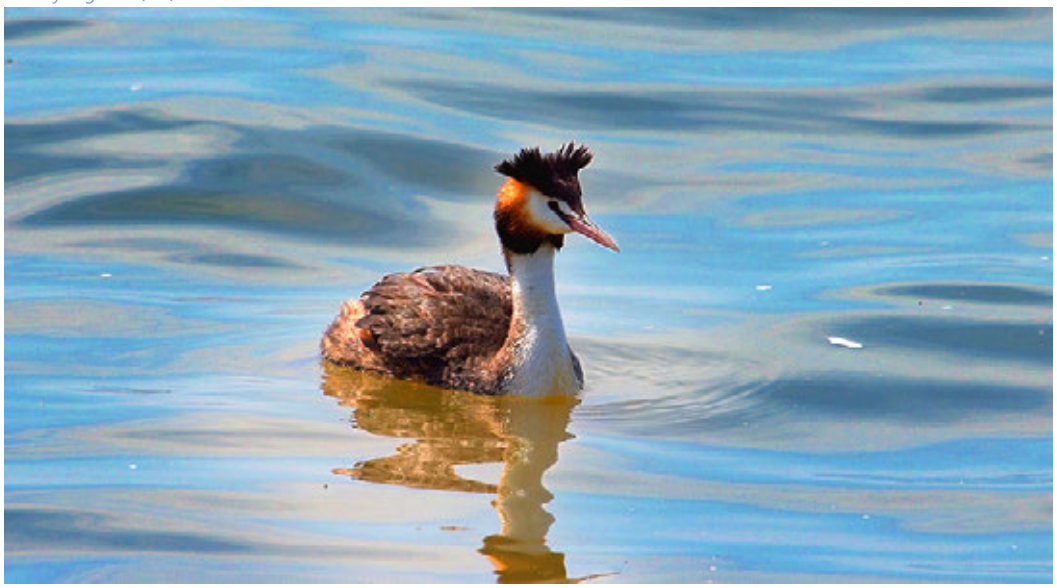
They are small birds, approximately 20cm in length, and their overall appearance is fawn-grey, with a prominent black mask running from the beak, through the eyes and down the neck. Their wings and tail have yellow margins. Their diet changes depending on availability of food, consisting of nectar, insects and fruit. They forage in low shrubs or on the ground, usually on their own or sometimes in loose flocks, feeding at lower levels than most other honeyeaters.

They form monogamous pairs, sometimes with long-term bonds. In our region they generally breed from September to November, however it can be in any month. They create flimsy cup-nests using things like plant-stems, leaves, seagrass or cobwebs, usually in dense low foliage. The female incubates the eggs alone but both adults feed the young.

If you would like to learn more about our local birdlife, check out our Common Urban Birds Identification Chart**.**

References:

- Smith, J. Wildlife of Greater Adelaide
- Birds in Backyards – Singing Honeyeater



Great Crested Grebes have distinctive crests and cheek frills (Photo: Steve Walker)

Ghostly penguin's cheeky frill weed dance

The Great Crested Grebe (*Podiceps cristatus*) is the largest grebe found in Australia and it has been recorded in all states and territories. Despite being considered rare in South Australia, reasonable numbers of them were observed over the 2023/24 summer period, encouraging many bird enthusiasts to venture out to sites where they'd been encountered. Many delighted reports of them came from down at the Goolwa Barrage and from the Barossa Valley Reservoir, but they were also seen closer to Adelaide at wetlands in Mt Barker, Onkaparinga River National Park and even at Magazine Creek Wetlands, Gillman.

As the name suggests, Great Crested Grebes are easily recognised by a distinctive black crest, which can be folded down when diving for fish, aquatic invertebrates and other prey. They have red eyes, bright chestnut and black cheek frills, a long neck, dark brown wings, and satin white underparts. The dark olive-green legs and feet are set towards the rear of the body, increasing the speed and efficiency of diving. In fact, they are so good at diving that they typically dive and swim long distances underwater rather than flying off when disturbed.

The Great Crested Grebe has a large geographical range, being found in parts of Africa and much of Eurasia, where they tend to migrate during winter. However, the Australian subspecies is more sedentary, moving between sites but rarely out of the country.

In Australia, breeding occurs between November and March and their flamboyant courtship display is something to behold. The synchronised display consists of sequences including head swaying and shaking, spreading the wings and facial ruff, preening motions, ripple diving then rising erect from the water with their heads down in a pose described as 'ghost penguin' and exchanging clumps of weeds.

Pairs are monogamous, and together will use mud and water plants to build a platform nest on the water's edge, defending the site vigorously. Three to 5 eggs are laid, incubated by both parents, who also raise the young together.

You can often hear Brown Treecreepers calling before you see them (Photo: Steve Walker)

It takes a village to raise a child

Australia's largest treecreeper, the Brown Treecreeper has a massive distribution being found in eucalypt-dominated woodlands and dry forest habitats throughout eastern Australia. It occurs from the Flinders Ranges throughout southeast South Australia, Victoria, New South Wales and up to Cape York Peninsula in Queensland, although around Adelaide it is much less commonly encountered than its smaller relative the White-throated Treecreeper.

Not surprising given their name, Brown Treecreepers are mostly grey-brown in colour, although the lower breast and belly are a paler buff-brown with white and dark grey streaks.

Treecreepers feed on insects, probing under bark and into cracks and other cavities as they noisily spiral up trunks and branches. Ants are their favourite prey, but they also feed on beetles, other insects and their larvae. Interestingly for treecreepers, Brown Treecreepers also feed on the ground, taking prey from fallen logs and even diving on them from a perch.

Brown Treecreepers have a complex social structure. A breeding pair forms a long-term bond, working together to create a nest in a tree hollow constructed from grasses, feathers, twigs, bark, dung, fur and other soft materials. They lay between two and four eggs, typically three, which are incubated by the female for about two weeks. Males bring caterpillars and other prey (but not ants) to the female which she then feeds to the hatched young. They leave the nest after 3 weeks but still receive care for a further month or more. Fledged females disperse to establish their own territory, but males remain to help look after future broods until a vacancy arises.

In fact, helper males have been known to give assistance to breeding pairs in nearby territories, sometimes in as many as 5 different territories. Assistance from these young birds greatly increases the breeding success, with more offspring being produced and four times as many likely to survive.

Brown Treecreepers are threatened by habitat degradation, including loss of hollow-bearing trees, fallen timber and other woody debris and the resulting decline in invertebrate prey. They also suffer from increased competition by aggressive honeyeaters, Common Starlings and other birds.

Male Scarlet Robins have a bright red chest and white face patch (Photo: Steve Walker)

A study in scarlet

Scarlet is a colour that is sometimes associated with immorality or sin, but when it comes to Scarlet Robins that couldn't be further from the truth. That's because these gorgeous, red-breasted robins form permanent monogamous pairs. In the Middle Ages, the Christian church adopted scarlet as a colour representing the blood of Christ and thereby demonstrating devotion and sacrifice. A much better fit for these colourful birds!

The male is the defender of the territory, doing his best to deter other birds, including other male Scarlet Robins and the larger Flame Robin, whilst the female is the nest builder, using bark, grass, lichen and moss to create an open, deep cup bound together with cobwebs. Two to 4 eggs are laid, usually 3, which hatch after around two weeks, then fledge about 17 days later. Both the male and the female care for and feed the nestlings and fledglings.

Scarlet Robins are sexually dimorphic, meaning the males and females differ in appearance. Males have a black head, neck and back; a white patch on the forehead; white wing stripes and underparts; and a striking orange to red breast. Females are grey-brown instead of black, have a more washed out red/orange breast and much smaller forehead patch.

Scarlet Robins predominantly occur in areas with higher rainfall, breeding in Eucalypt woodlands where there is an abundance of leaf litter, fallen logs and perches 1 to 2m high. They feed near the ground, typically catching insects and other invertebrate prey by pouncing on them from low branches, logs or other perches. During summer they may switch to searching along tree trunks and in leaves for prey.

They are threatened by loss of habitat but are reported as coping well and even becoming quite tame in urban areas if suitable cover is available.

To attract them to your garden, plant various sized native shrubs to provide perches and protection from cats and other predators, and maintain leaf litter and patches of native grasses to attract insects for them to feed upon.

Pied Stilts are characterised by long, pink legs and black feathers on the wings and back of the neck (Photo: Steve Walker)

A stilted conversation about names

Three birds in the family *Recurvirostridae* (the avocets and stilts) can be found in South Australia. The Pied Stilt (*Himantopus leucocephalus*) is the most commonly seen, the others being the Banded Stilt and the Red-necked Avocet. The name *Recurvirostridae* means 'curved back beak', which perfectly suits the avocets, but the beaks of stilts are straight or only slightly curved.

Pied Stilts were previously thought to be the same species as the Black-winged Stilt (*Himantopus himantopus*) found in Europe, Asia and Africa, but they are now considered a distinct species; although some scientists believe them to be simply a subspecies and classify them as *Himantopus himantopus leucocephalus*.

In what might be seen to be a cruel joke to further confuse people, *leucocephalus* means white-headed, so another name used for the species is White-headed Stilt. However, this name is not recommended, probably because the Banded Stilt also has a white head and its species name is *leucocephalus*, although it is in a different genus (*Cladorhyncus*). In fact, the name White-headed better suits the Banded Stilt because it has a completely white head, whereas the Pied Stilt has black feathers on the back of its head and neck.

Pied Stilts are slender, elegant wading birds with needle-like bills and long pink-red legs. The contrasting black and white plumage gives rise to their common name. The back of the head and neck is black, the upper surface of the wings is black with a greenish gloss, while the lower surface of the wings is plain black. The rest of the feathers are white. When in flight, the legs are held stiff, trailing behind the body.

They can be found around the margins of flooded paddocks, shallow marshes and wetlands (both freshwater and brackish), particularly where mudflats and bare ground are exposed. They use the bill to probe into the sediments to catch crustaceans, molluscs, insects and other invertebrates.

Pied Stilts are often found in small family groups but can form large flocks and disperse seasonally. The Australian Bird and Bat Banding Scheme has recorded them traveling as much as 1,748km.

Banded Stilts are bulkier and lack the black neck feathers found on Pied Stilts (Photo: Steve Walker)

Banding together

Last week we featured the Pied Stilt and with World Population Day coming up on 11 July it seems fitting to follow on with the Banded Stilt this week.

So, what's the connection to World Population Day? Well, despite being less commonly encountered than their pied relatives, Banded Stilts can sometimes be found in massive numbers. When Lake Torrens filled with water in July 2010, around 150,000 Banded Stilts flocked there. They are normally restricted to shallow outback salt lakes like Lake Torrens but move to coastal wetlands when the lakes dry up.

Banded Silts are endemic to Australia, meaning they are found nowhere else in the world. They are mainly found in the southern half of Australia but are highly nomadic, moving hundreds or thousands of kilometres across Australia in response to the flooding of the salt lakes and the resultant boom of prey items. Banded Stilts have a varied diet, feeding on brine shrimp and other crustaceans, molluscs, insects, other invertebrates, as well as seeds, roots and other plant material.

Recent research has revealed that they can arrive within eight days of a lake flooding, with one bird recorded travelling a whopping 2,200 km in just two overnight flights! Once they arrive at a salt lake, they mate quickly and usually lay 3 to 4 eggs that weigh the equivalent of 50-80% of their body weight and take 19 to 21 days to incubate. Both parents incubate the eggs, but the male takes over once the eggs hatch, enabling the female to lay and incubate a second batch if conditions are favourable.

However, salt lakes can dry up very quickly, so there is a high likelihood of nests being abandoned before the eggs hatch or the chicks fledge. In 1980 at Lake Barlee in Western Australia, over 179,000 nests were counted in a single abandoned breeding colony!

They can easily be distinguished from Pied Stilts by their all-white head and the chestnut brown u-shaped band that runs across the breast, giving them their common name. While they are similar in size, the Banded Stilt has a bulkier body and shorter orange-pink legs.

Major threats include loss of habitat and predation by Silver Gulls; a species that has increased in number as a result of human settlement.

Mammals

Chocolate Wattled Bat (Photo: Michael Pennay)

Going out to bat for the little guys

If you ask most people in Adelaide to name their favourite native mammals, bats tend to be fairly low on the list. However, there are many reasons to admire these amazing animals and the important part they play in our urban ecosystems. We are lucky enough to have nine species of microbat here in metropolitan Adelaide, which is the same number as 200 years ago – a strong indication that microbats are remarkably adaptable. While the number of species has not declined, unfortunately microbats are much less abundant than they once were due to lower food availability and habitat clearance.

One such local microbat is the Chocolate Wattled Bat (*Chalinolobus morio*), named for its milk-chocolate coloured fur and the fleshy lobes around its mouth; also known as wattles (the same reason that Red Wattlebirds have wattle in their name). This species is very small at around 6 cm long and it weighs just 9 grams – the same as a $1 coin.

Despite their small size, Chocolate Wattled Bats are extremely agile flyers, eating around half their body weight in insects every night, which they catch in mid-air. Agriculturalists and home gardeners are starting to recognise the importance of microbats like the Chocolate Wattled Bat in natural pest control, as they eat many insects that affect fruit trees and vegetables. They also as eat mosquitoes.

In order to protect and encourage microbats, we need to retain hollow-bearing trees, which provide roosting sites for many hundreds of individuals, and plant plants that are native to the local area. This will encourage a greater biodiversity of insect species (food for bats). We should avoid the use of pesticides which kill insects that are a bat food source.

Bats, including the Grey-Headed Flying Fox, have recently received attention as potential vectors of disease, so you should never handle a living or dead bat. Despite this, bats are not a problem in your backyard because they will avoid human contact.

If you have any concerns in relation to bats please call Fauna Rescue SA's Bat Rescue Hotline on 0475 132 093.

With external ear flaps and thick fur, this Long-nosed Fur Seal is in the same family as sea lions (Photo: Bernard Spragg)

This seal is not a true seal

The Long-nosed Fur Seal (*Arctocephalus forsteri*) is also known as the New Zealand Fur Seal, because that was where they were first described. Fur seals are in the eared seal family (Otariidae) not the true or earless seal family (Phocidae). True seals have no externally visible ear flaps and have blubber and thin fur, whereas fur seals and sea lions have small visible ear flaps, thick fur to keep warm and less blubber.

While some commercial and recreational fishers consider them pests, Long-nosed Fur Seals are actually native to South Australia and our population makes up over 80% of the total world population. Long-nosed Fur Seals mainly eat fish and cephalopods (squid and octopus) and they were almost hunted to extinction in the 19th century. Since a ban on hunting, their numbers are increasing each year. All seals and sea lions are protected in South Australia under both State and Commonwealth laws.

Long-nosed Fur Seals breed and give birth on land, often hauling themselves out on rocks or beaches. Their gestation time is 9 months and they give birth to one pup around December. Pups will stay with their mothers for 9 months and then disperse.

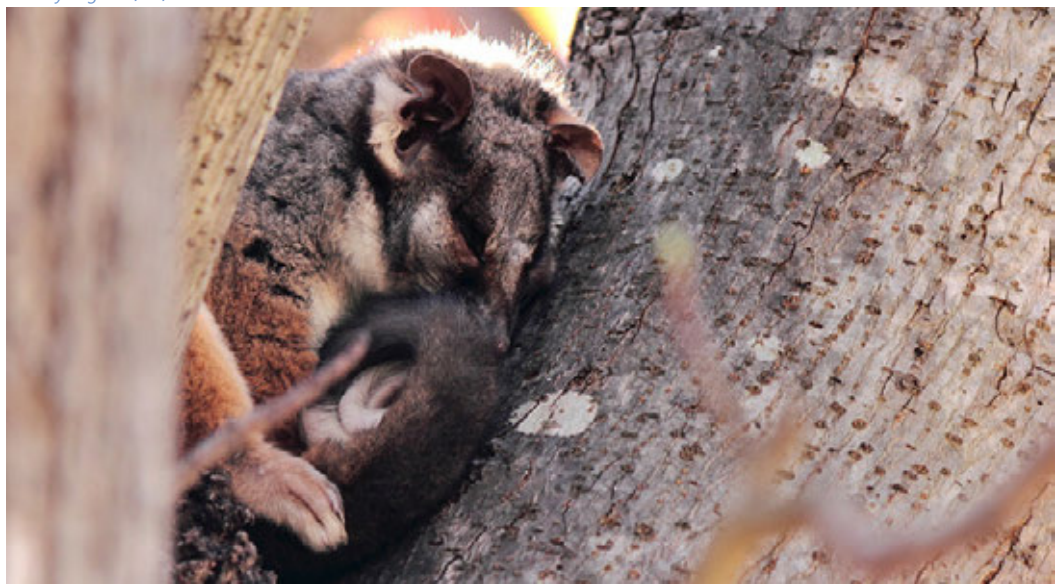
Long-nosed Fur Seals can commonly be seen in the Gulf, sometimes in shallow waters along the metro coast, but also on Kangaroo Island and resting on rocks around the coast of South Australia, where you may also see other Pinnipeds including Australian Fur Seals (*Arctocephalus pusillus doriferus*) and the endangered Australian Sealion (*Neophoca cinerea*).

Fur seals can often be seen, especially in summer, with a single flipper out of the water as they rest at the surface. This is done to regulate their body temperature, both to warm up and cool down using the sun and wind.

If you are interested in visiting our local beaches to look for fur seals take along our beachcombing guide or ID chart to see what else you find, or else dive into the Rockpool, a great coastal and marine online hub.

Reference:

- https://www.environment.sa.gov.au/topics/plants-and-animals/Living_with_wildlife/seals



The perfectly named Ringtail Possum and its distinctive tail (Photo: Peter Kerrawn)

With a familiar ring to it

There are two native possums that are commonly found in the Adelaide region. The Common Brushtail Possum (*Trichosurus vulpecula*) and the Common Ringtail Possum (*Pseudocheirus peregrinus*).

The most obvious differences are that the Common Brushtail Possum is much larger (1.5–4.5kg) with a bushy black tail, whereas the Ringtail Possum is smaller (<1kg) with a thin brown, white-tipped tail. Brushtails are also solitary and will come to the ground for food, whereas Ringtails are social and arboreal (meaning they live in the trees).

The arboreal lifestyle of the Ringtails means that they get their food from leaves (primarily eucalyptus), flowers, nectar and fruit (from a variety of trees). They also create a circular nest called a drey, which is made from branches, twigs, grass, bark and leaves in the fork of trees or tree hollows. Ringtails rest in their nest during the day with their small family group.

The "ring tail" is prehensile, so it helps the possum with gripping, climbing, and carrying nesting materials.

The biggest threats to these furry friends are habitat clearance and fragmentation, as well as vehicles and predators such as cats, foxes and dogs. Pet owners can help reduce threats to possums by keeping cats and dogs in secure runs or inside at night when the possums are most active.

To find out more about possums, check out our Sharing the garden with possums fact sheet.

References:

- www.wildlifesa.org.au/possums/
- www.adelaidezoo.com.au/animals/common-ringtail-possum/

This Western Pygmy Possum's photo was taken during a population sampling and weighing exercise (Photo: G. Kondo)

Friends of the littlest possums

September 7 was National Threatened Species Day. It's a time to consider the vulnerability of our flora and fauna, like the Tasmanian Tiger that went extinct on the same day in 1936. Luckily, we have a dedicated team of ecologists, rangers and volunteers who are trying to make sure the Western Pygmy Possum (*Cercartetus concinnus*) doesn't meet the same fate. The Western Pygmy Possum is considered threatened in the Adelaide and Mount Lofty Region. Average adults weigh only 13 grams and their bodies measure around 8 cm (plus a tail almost as equally long!). In fact, it is the size, nocturnal habits and cryptic behaviour of this tree-dwelling marsupial that makes them hard to track according to Green Adelaide's Urban Ecologist, Dr Elisa Sparrow.

There have been few sightings across the Fleurieu Peninsula and Mount Lofty Ranges over the decades. However, Elisa and her team have been quick to respond to sightings and set up nesting boxes and monitor populations. Habitat loss (including hollows), predation by cats and mistaken identity as rodents are causes for decline. In addition, as they rely on pollen and nectar from native plants as a food source, these pollinators can also be impacted by fire frequencies and intensities caused by human impacts. They are even known to travel up to 4 km a night in search for food! No wonder they're hard to pin down. Luckily, Elisa's work in Newland Head Conservation Park has led to a growing body of knowledge about possum health and population viability, especially within different sections of the park that have been exposed to fire. Building from this success, new monitoring stations have been set up in Aldinga Scrub Conservation Park in the Green Adelaide region. The fabulous Friends Group of Aldinga Scrub Conservation Park is on hand to monitor the nesting boxes and report back on any activity. Perhaps your local Friends Group is also involved in such important research. Find out more at Friends of Parks SA.

Special mention: the photo above was taken during a past survey. A Wildlife Ethics Permit was required for this survey to enable handling of the possums.

References:

- Know your native wildlife
- Department for Environment and Heritage
- Australian Geographic
- Regional Conservation Assessment

White-striped Free-tailed Bats have distinctive white stripes along the sides of the belly (Photo: Michael Pennay)

Coming your way this summer

Chances are you have heard the squeaking tink tink sound of a small animal at as it flies around Adelaide on warm summer nights, but you probably haven't seen more than the briefest glimpse of its silhouette in the moon or streetlight. What you've encountered is none other than a White Striped Free-tailed Bat, *Austronomous australis*.

This small mammal is one of a select few microbats with an echolocation call that can be heard by humans. It uses echolocation to find food, and despite having small eyes, has great eyesight.

White Striped Free-tailed Bats have chocolate or dark brown fur, paler on the belly, with distinctive white stripes along the sides of the belly and onto the wings. They are one of the largest microbats measuring around 8 to 10cm from head to tail and weighing 30 to 40 grams.

Typically roosting in tree hollows and buildings, they have been observed moving to a new roost every 10 days. They tend to fly up to 50 metres above the ground and largely feed on moths, beetles and grasshoppers. They are known to be either solitary or cluster in small groups of around 10, which can increase to 300 in maternity colonies.

They are preyed on by goannas, hawks and owls and while not endangered, their numbers have decreased due to loss of tree hollows, land clearing and wildfire.

Reference:

- Roost Fidelity and Fission–Fusion Dynamics of White-Striped Free-Tailed Bats (Tadarida australis) | Journal of Mammalogy | Oxford Academic (oup.com)

Since its introduction, the rabbit has cause massive damage to our environment (Photo: Rob Wallace)

Cute, furry destroyers of the environment

The introduced European Rabbit (*Oryctolagus cuniculus*) may seem like a cute furry animal but it has had a huge impact on our native plants, animals and agriculture, and has caused huge erosion problems in Australia.

Rabbits were introduced into Australia with the First Fleet, but the first release to go wild in Australia was from 13 rabbits in Geelong in 1859. Seven years later 14,253 were shot on the same property. A second release happened at Kapunda in 1870. The rate of spread of rabbits across Australia was the fastest of any colonising mammal in the world. The spread was aided by the growing of more nutritious grass crops that assisted their breeding and survival. They also used burrows of native animals. They are now spread across Tasmania and all of mainland Australia, except for the tropical northern parts.

Of the 30 extinctions of native animals in the Flinders Ranges, all but three happened after rabbits arrived in the area and before foxes did. While drought and clearing also had an impact rabbits played a big part in those extinctions through large population increases in a short time, competition with native animals for burrows and food, and their elimination of palatable native plant food sources. One rabbit/ha can severely affect native vegetation recruitment.

A female rabbit can produce 11 to 25 offspring in a breeding season, triggered by green feed and day length. Gestation is 30 days, and a female can mate again just a few hours after giving birth.

Rabbits need burrows or dense vegetation cover to survive. Control is carried out through a combination of poisoning, warren ripping or fumigation and through biological control agents.

Rabbits are one of a number of feral species Europeans introduced into Australia. For more information go to https://www.greenadelaide.sa.gov.au/discover/pest-animals

References:

- Wallace, R. National Rabbit Control Training Handbook. International Wool Secretariat
- Williams et al. Managing Vertebrate Pests. Bureau of Resource Sciences

Southern Forest Bats hunt at night using echolocation (Photo: Michael Pennay)

Mighty forests for a micro-sized bat

On 10 April each year we reflect on Arbour Day first held in Nebraska City in1872 to raise awareness and understanding of the importance of trees and their care. In the week following, 17 April is Bat Appreciation Day, so this time of year is perfect to celebrate those species of bat that depend on green flourishing spaces such as woodlands, shrublands and forests for roosting sites and feeding grounds.

These include microbats in the family *Vespertilionidae*, one of the largest, most diverse and widely distributed of bat families, with more than 300 species worldwide and found on every continent except Antarctica.

The Southern Forest Bat, *Vespadelus regulus*, is found in forests and woodlands in Tasmania, Western Australia and southeastern Australia. Around Adelaide they have a different accent to those in other parts of Australia and may turn out to be a different species.

The Southern Forest Bat has a triangular face with a simple-nose, large ears and thick reddish-brown fur on its back, with greyish light brown fur on the abdomen. Weighing just 4 to 7 grams, with forearms less than 2.5 cm long and a full body length of less than 5cm, this is one of the smallest bats in Australia.

It is an energetic and agile aerial predator, which hunts using echolocation in the evening, weaving its way from the ground to above the woodland, shrubland or forest canopy in search of insects. They emit ultrasonic pulses of sound, which bounce back from their prey, helping them to catch food around them. The sound reflects from surrounding objects to give the bats a clear image of where to head for their meal.

The Southern Forest Bat prefers to roost in large mature, decaying tree hollows but due to habitat loss will settle for buildings in leafy urban areas and agricultural regions. They form maternity colonies in spring and give birth to single young in summer after 3 months of gestation.

To find out more about other local microbats, check out our blog.

Fungi and symbiotes

The highly attractive Dyeball Fungus fruits in summer (Photo: Steve Walker)

Eyeball the Dyeball

As soil moisture decreases at the beginning of summer, many fungi avoid sending their spores out into the world. A fungus is mostly made up of mycelium; thread-like structures that spread through soil or other materials to extract carbohydrates and nutrients. The mushrooms we normally associate with fungi are the fruiting bodies which have evolved to spread spores, akin to an apple being just the fruit of the apple tree.

One local genus of fungi that bucks this trend of autumn or winter fruiting is *Pisolithus*, or Dyeball Fungus, as it tends to grow and release its spores during summer. This genus is found all over the world, including Adelaide and its surrounds. Many species in this genus have interesting common names such as Horse Dung or Dog Turd Fungus. They are often yellowish-brown ovals, usually around 5-10cm across, and push up from the soil in mid to late summer.

Unlike many mushrooms that have a cap with the spores hiding underneath, dyeballs are a mass of powdery spores inside a leathery dome that are slowly released as the skin cracks open. They are extremely drought tolerant, often growing in association with gum trees and wattles in challenging environments.

As their name suggests, dyeballs have traditionally been used for dying clothes; imparting a golden to red-brown colour, depending on the preparation method. Another interesting characteristic relates to their symbiotic relationship with plants. Mycorrhizal fungi like dyeballs can interact with plant roots, giving nutrients and water in exchange for sugars that the plants produce through photosynthesis. Many species of trees grow much taller and faster in the presence of mycorrhizal fungi.

To find out more about our amazing local mushrooms, see the Fungi of the Adelaide Hills ID chart.

The Emperor has spectacular purple mushrooms (Photo: Christina Suttner)

Purple reign

You could almost be forgiven for thinking that *Cortinarius archeri*, commonly called the Emperor Cortinar or more simply the Emperor, is straight out of the pages of a Lewis Carrol fantasy. However, this fungus is more fact that fiction.

Commonly found during autumn in Eucalypt or mixed forests, such as those in the Mount Lofty Ranges, these spectacular and distinctive mushrooms have slimy bright purple to violet caps, which fade to brown as they age. The cap can grow up to 10cm wide and is initially convex in shape, before flattening out at maturity. The stipe (stem) is typically 6-8cm long, cylindrical and swollen at the base. The gills are mauve in colour when young, changing to a "rusty" brown as the spores mature.

This species is symbiotic, forming a mycorrhizal association by colonising the roots of Eucalypts. This type of relationship plays and important role in plant nutrition, soil biology and chemistry, because the eucalypt and fungus exchange water, sugars and other nutrients through the soil.

The Emperor grows singly or in small clusters of two to three, growing up through bark and leaf litter and thriving in recently burnt-out forests. It can also be found in suburbia poking up through lawns.

Unlike the fungi in the much-adored adventures of Alice in Wonderland, which possibly alludes to those fungi containing psychedelics, many species of Cortinarius instead contain orellanine, a well-known nephrotoxin. So, the Emperor is also considered unsafe to eat.

With this in mind, when it comes to eating mushrooms, "*my darling, this is not Wonderland and you are not Alice*".

Reference:

- Cortinarius archeri, Wikipedia
- Cortinarius archeri, Australian Fungi
- Cortinarius archeri, FungiOz
- Emperor Cortinar (Cortinarius archeri), iNaturalist

If soil is moist and sticky, you may be transporting Phytophthora cinnamoni (Photo: eatonab12 from Pixabay)

Coming your way this summer

With World Soil Day (Monday 5 December) and International Mountain Day (Sunday 11 December) just around the corner, it is fitting to dig a little deeper and shine a light on a common South Australian soil borne pathogen, *Phytophthora cinnamoni*.

Native to Southeast Asia, the microscopic fungus-like organism is known for its devastating effects on susceptible South Australian native plants, as well as fruits, vegetables, and garden plants.

An effective killer, the pathogen attacks the roots and stem of a plant causing it to rot, in turn preventing the plant from accessing vital water and nutrients. The leaves of the affected plant may begin to yellow or turn red leading to eventual dieback.

Arriving in South Australia in the 1970s from infected berries, it has since thrived in acidic to neutral soils in areas where the average annual rainfall is greater than 400m. Since its introduction ithas spread through the Mt Lofty Ranges, Lower Southeast, Fleurieu Peninsula and Kangaroo Island.

It is very efficient at reproducing, spreading via mycelia (filament-like threads) when plants come into contact with infected plant material in water or warm, moist soil, and via spores (fruiting bodies).

With the seasonal warmer weather and rainfall, a few key actions will help protect our ecological communities and prevent further spread of this incurable disease. Please avoid soil disturbance in wet and sticky areas, keep to designated roads and tracks, brush down vehicles and equipment, and use wash down and hygiene stations when provided to clean your equipment before and after your visit. Enjoy the great outdoors and help educate others about the impact of *Phytophthora cinnamoni*.

Stringybark and Grass Trees are some of many native species affected by *Phytophthora*.

References:

- Government of South Australia, Department for Environment and Heritage, Phytopthora is killing our plants! 2009
- Landscape South Australia, Kangaroo Island, Preventing the spread of Phytophthora 2022

Ghoul Fungus growing beneath an animal carcass (Photo: Tricia Stewart)

Recycling dead bodies, it's a fungus thing!

In celebration of National Recycling Week (November 13 -19), we would like to take a moment to recognise the amazing work of one of nature's essential recyclers, the Ghoul Fungus.

A gruesome sounding fungus, the Ghoul Fungus (*Hebeloma aminophilum*) lives up to its name, preferring to grow on top of or close to decomposing animal carcasses and nitrogen-rich, urine-soaked soil. In fact, the Latin name *hebe* tells us that the shape of the mushroom is 'flat or obtuse' and *aminophilum* means 'loving amino acid'.

Pinkish brown in colour with a tan margin, the mushrooms often grow in large clusters. Individuals grow to around 11 cm in diameter and 12 cm tall. Under the cap, the mushroom's pink gills produce pinkish-brown spores, and the fungus is sticky to touch when fresh.

The mushrooms can help to effectively break down animal material and turn it back into accessible nutrients for the soil and plants.

While uncommon, the Ghoul Fungus is found in Western Australian, Victoria and southeastern South Australia, preferring to fruit in eucalyptus woodland. On one rare occasion, it was even recorded in an Adelaide suburban backyard!

Please note there is no safe way to tell which native fungi are safe to eat and very little is known about their toxicity. Do not eat any fungus collected from the wild.

To find out more about other local fungi species, check out our Fungi of Adelaide and the Hills identification chart.

References:

- library.dbca.wa.gov.au/static/FullTextFiles/PAM03050.pdf
- fungimap.org.au/hebeloma-animophilum-ghoul-fungus/

Couch spreads via horizontal stems that can form new roots wherever they touch the ground (Photo: Sam Ryan)

Grasses, algae and other water plants

Don't just sit on the couch

Most gardeners are aware of the invasive and fast-growing grass species commonly known as Couch (rhymes with pooch). Couch, *Cynodon dactylon*, is a drought-tolerant introduced grass that is commonly found as lawn, but also invades other areas of gardens and bushland if given the opportunity. For this reason, it is considered an environmental weed. Couch spreads via its stolons, which are horizontal stems that can form new roots wherever they touch the ground. It has a deep root system, commonly penetrating around 60cm in soil, but with the ability to dive 2 metres in some conditions. This makes it extremely good at spreading - both from an established plant, but also when cut sections are dumped or transported via stormwater.

Removing couch and other weeds is not a quick or easy task, but is possible. This can be a rewarding way to improve a property or local native bushland. February 11 celebrates Women and Girls in Science, and two pioneering scientists in the field of bush regeneration are the Bradley sisters, Eileen and Joan. They developed principles in the 1960s that are commonly referred to as 'the Bradley method' and still used by many people today. The first principle is to work from the best areas first that have low numbers of weeds. By removing these weeds, your best area is improved, and it also doesn't take very long before you can concentrate elsewhere. By contrast, if you start in the worst affected area, it is likely you will run out of time to remove the weeds in your best areas, so those become worse over time.

The second principle is to disturb the soil as little as possible. Many weeds are stimulated by ground disturbance so minimising digging helps reduce the conditions that favour weeds.

The third principle is to avoid over clearing, as nature abhors a vacuum and barren areas will soon be colonised by other plants, which may be weeds. If weeds are taken out, consider replacing them with local native plants or mulch from on the site. The caveat to this principle is in native bushland; the soil may should have a native vegetation seedbank that will allow the bush to regenerate, as long as weeds continue to be removed, thereby cutting down competition for light, moisture and nutrients.

Now is a great time to remove weeds that may be flowering and setting seed. As the old saying goes, one year's seeding is seven years weeding.

Sargassum macro algae with a Southern Pygmy Leatherjacket using it for shelter (Photo: Julian Finn, Museums Victoria)

Why did the ocean blush? Because the seaweed!

When walking along the beach after a storm or large high tide you may see many different types of marine algae or seaweed washed up. The marine ecosystem around South Australia is macroalgae dominated with more than 1500 species found along our coastline.

Macroalgae play a very important role in the marine ecosystem, providing food, habitat, structure and oxygen. *Sargassum* is one of the genera of marine algae that grow around Adelaide. *Sargassum longifolium* is the most common species found along our coastline, but there are several other species that may be found underwater, in rockpools or washed up on our beaches.

Sargassum is a brown alga that grows up to 1m tall from an anchor point on rocks. It typically has small leaves and may vary in colour from dark brown to green. *Sargassum* is often identified from the spherical vesicles that look like berries which grow on the plant. These are filled with gas to help the plant float in the water column.

Sargassum in combination with other seaweeds provides important habitat for small invertebrates such an snails and anchor points for creatures such as seahorses and pygmy leatherjackets. Macroalgae also photosynthesise like land plants, providing the water with oxygen.They trap sediment from the water, acting as a 'biofilter'. Once seaweed is washed up on the beach the decomposing wrack recycles nutrients into the ecosystem and provides food for bacteria and small amphipods.

If you are interested in learning about more about our local marine life dive into the Rockpool, a great coastal and marine hub with lots of resources. Or for land-based beachcombing, have a look at our ID chart to identify common items found on the beach.

Reference:

- https://www.environment.sa.gov.au/files/sharedassets/marine_parks/fact_sheets/snorkelers-guide-to-plants-and-animals-gen.pdf

Asparagopsis taxiformis among green algae (Photo: Papahānaumokuākea Marine National Monument)

Seaweed that is helping to save our climate

Asparagopsis taxiformis, also known as Red Weed, is found in our South Australian coastal waters. The name *Asparagopsis* refers to how similar the seaweed looks to asparagus, and *taxiformis* to its similarity to the Yew tree. Red Weed is found in varying shades of pink, grey and light brown. The pink colour is usually most prominent at the base of the plant.

Asparagopsis has the potential to have a huge impact on our greenhouse gas emissions. CSIRO scientists announced in 2020 that *Asparagopsis taxiformis* and *Asparagopis armata* mixed with regular cattle feed at a rate of 100 grams per cow per day reduced methane production by 90%. When *Asparagopsis* is fed to livestock, a bioactive compound called bromoform is produced, which prevents the formation of methane by inhibiting a specific enzyme in the gut during digestion. This is particularly significant as agricultural production accounted for one quarter of South Australia's greenhouse gas emissions in 2018. Much of these emissions were from cattle and sheep which produce the greenhouse gas methane, primarily when they burp. If one tenth of the world's livestock farmers fed their livestock *Asparagopsis*, it would have the same impact for our climate as removing 100 million cars from the world's roads!

This research is already starting to be put in action in South Australia. In January last year two licenses were granted to allow a commercial seaweed farm to be established on Yorke Peninsula. The production leases and licences for 10 hectares within the east Point Pearce intertidal aquaculture zone, and 30 hectares within the west zone have been granted to the Narungga Nation Aboriginal Corporation to specifically cultivate *Asparagopsis* for including in livestock feed.

References:

- https://www.blue-ecosystems.com/racheliSeaWeed/English/Asparagopsis-taxiformis-(Delile)-Trevisan
- https://www.csiro.au/en/research/animals/livestock/futurefeed
- https://pir.sa.gov.au/alerts_news_events/news/ministerial_releases/seaweed_industry_to_continue_to_grow_in_sa

Common Reeds have feathery flower spikes that fade from dark purple to brown (Photo: Jeremy Gramp)

Taking a stand for the Common Reed

Sunday 24 September is World Rivers Day, a day dedicated to celebrating the world's waterways. It highlights the many values of our rivers, strives to increase public awareness, and encourages the improved stewardship of all rivers around the world.

One of our local plant species strongly associated with rivers is the Common Reed, *Phragmites australis*. It is a semi-aquatic perennial grass that grows near or in water, especially along the banks of rivers and ponds, commonly forming extensive stands. It is a cosmopolitan species, meaning that it can be found almost anywhere in the world. In Australia it occurs in all mainland States.

Before they were extensively drained and cleared by European settlers, the freshwater swamps and lagoons that occurred to the west of Adelaide were collectively referred to as the 'Reedbeds' due to the abundance of the Common Reed. The River Torrens Breakout Creek project is now helping to transform the western end of the River Torrens/Karrawirra Pari into a healthier, more natural environment.

The roots of the Common Reed, the rhizomes, are thick and fleshy and its aerial stem is hollow like bamboo. The leaves are long and taper to a point and it generally grows 1-3 m high. Flowering occurs from December right through to August. It is an excellent plant for erosion control of waterways, protecting the banks and beds from erosive flows. It also does a great job of trapping sediment and filtering out impurities from the water.

Waterfowl and other small birds such as the Australian Reed Warbler use it for cover and many aquatic creatures including fish use it as a refuge. Humans throughout the world have traditionally used the plant for many purposes, including weaving baskets, making light spears, or using many parts of it for food. In particular, the rhizomes contain good quantities of starch and vitamins. A more contemporary use that you might be interested in trying yourself is to make bee hotels from the canes.

References:

- Bonney, Neville. (2021). From one small seed a forest is born.
- Woolshed Thurgoona Landcare Group - Phragmites australis

The long arching leaves of Red-fruit Saw-sedge and its small seed-like fruits (Photos: Jeremy Gramp)

A bit rough around the sedges

The Red-fruit Saw-sedge (*Gahnia sieberiana*) is a plant found in the wetter areas of our region, especially throughout the hills, and typically grows in swamps, heathlands and forest.

It is quite widespread geographically; it also occurs on Kangaroo Island, the southern Mount Lofty Ranges and the lower South-east in South Australia, along with parts of Queensland, New South Wales, Victoria, Tasmania, New Guinea and New Caledonia.

It is a tall, tussock-forming perennial sedge growing to 2.5 m high and 2 m wide. The 'saw-sedge' part of its name comes from the leaves, the edges of which contain minute erect teeth or serrations resembling a saw. Care must be taken when handling the leaves as it is very easy to cut your hands.

During spring and summer long clusters of flowers form at the ends of the stems. The flowers are followed by small seed-like fruits that are red-brown in colour and about 4 mm long. This is, of course, where the 'red-fruit' part of the name comes from.

Red-fruit Saw-sedge plays many important ecological roles, including providing habitat and food for various animal species, soil stabilisation and erosion control. For example, a range of butterflies including the Golden-haired Sedge-skipper and Flame Sedge-skipper use the plant, laying their eggs on the leaves for the caterpillars to eat upon hatching.

Small birds use the plant for nesting and feed upon the seeds. It is also good habitat for many other small native animals including reptiles, frogs and native rodents.

If you'd like to learn more about some of our other local native plants, check out our Native plants of the Adelaide Plains identification chart.

References:

- Seeds of South Australia - Gahnia sieberiana
- Bonney, Neville. (2021). From one small seed a forest is born.

Groundcovers

Gazanias invading West Beach sand dunes (Photo: Amy Blaylock)

Stop the 'perfect' garden plant becoming a coastal nightmare

Imagine finding a plant with brightly coloured flowers that grows in most places, requires very little water, readily reproduces itself and is hard to kill. The perfect plant, right?

South African Gazanias might seem perfect for the home garden, but for all of the reasons above they are a nightmare for natural ecosystems across our region, especially coastal dunes. They are a declared plant in South Australia, which means their sale and movement is banned, other than for three sterile cultivars.

Whether from dumping of garden waste, deliberate planting or introduction by seed or runners, their movement from gardens into local natural areas results in native ground cover plants being outcompeted. Prevention is much better than the cure because if you pull them up, pieces of the plant left behind can regrow. Their waxy, hairy leaves that prevent moisture loss and sun damage mean you will need to add a wetting agent to your herbicide to get it to stick.

If you want hardy groundcovers or small shrubs with colourful flowers or fruits, try landscaping with local coastal plants such as native or Round-leaf Pigface, Common or Clustered Everlasting, Sweet Apple Berry, Ruby Saltbush, Running Postman or Cushion Fan Flower.

As well as being low maintenance and drought tolerant, these plants provide food and habitat for native bees, butterflies, birds and small lizards.

References:

- Coastal Gardens: a planting guide
- Grow Me Instead
- PIRSA Gazania policy

One-year post-burn, a thallose liverwort and moss (Photo: Amy Blaylock)

A post-fire soil protector, worts and all

When a fire moves through the landscape, soil may be left completely bare, leaving it vulnerable to erosion by wind or water. Subsequent colonisation by mosses, liverworts or hornworts protects the soil crust from damage. You might have seen a liverwort growing in a damp, shady area and mistaken the flattened green blobs or tiny leaves for a lichen or a moss.

However, a liverwort is a non-vascular plant in a group called bryophytes, which also includes mosses and hornworts. These are quite separate from lichens, which are grouped with fungi.

Liverworts, named for the liver-shaped lobes of some species, are descendants of some of the first land plants. The ancestral form is a flattened mass of tissue called a thallus, so these types of leafless liverworts are called thallose. More advanced liverworts grow leaves along upright stems.

Wind or water help liverworts and other bryophytes reproduce, by moving their spores or their gemmae. On close inspection of some thallose liverworts, the lumps and bumps reveal intricate crescents or cups filled with gemmae.

Gemmae are pieces of tissue made up of a single cell or multiple cells which contain the genetic material required for growing a new plant via a process called fragmentation. Drops of rain wash the gemmae out of the cups and transport them to new sites to start growing a whole new liverwort!

References:

- Australian National Botanic Gardens
- Science Direct
- Mosses of South Australia

Orchids

Many people consider the Large Green-comb Spider-orchid to be the king of spider-orchids (Photos: Steve Walker)

The art of seduction, perfected by orchids

There are over 200 species of orchids in Australia but the Large Green-comb Spider-orchid, *Caladenia tentaculata*, is one of the easiest to identify in the Adelaide region. Their large and brightly coloured spidery-looking flowers appear over spring and summer, and can be up to 12cm in width. They are found in open woodland, heathland and forest.

Sadly, the Large Green-comb Spider-orchid and many other native orchids are in decline. Key threats include vegetation clearance, climate change, weed invasion, herbivory/grazing, in-breeding, recreational activities and lack of pollinators.

A lack of pollinators spells particularly bad news for orchids because the Australian orchids are the queens of deception. They deceive male insects – mostly wasps – into believing that they've found a female mate by releasing a chemical copy of the female wasp's pheromones. The orchid flower also mimics the female wasp visually, which further deceives the male. When a male wasp lands on the flower, the shape ensures the male is in the right position to make contact with the pollen (to deposit or pick up). Most Australian orchids that mimic female insects are pollinated by male Thynnine wasps. These are highly specific relationships with each orchid being adapted for pollination by a single species of wasp pollinator. Habitat conservation and restoration is vital to ensure the survival of both pollinators and the orchids that rely on them.

If you're interested in orchids, you might like to download our Native orchids of the Adelaide Hills identification chart. To learn more about your local biodiversity and what you can do to take action, please visit the Land Based Environments section of our website.

References:

- https://www.anbg.gov.au/cpbr/cd-keys/orchidkey/html/genera/Arachnorchis.htm
- https://www.australiangeographic.com.au/topics/science-environment

The Pink Hyacinth Orchid flowers from November to February (Photos: Robert Lawrence)

Pink jewels

The Pink Hyacinth Orchid, *Dipodium roseum*, is currently in bloom, flowering from November to February. The flower spike can have 15-50 flowers from pink to white in colour with mauve blotches. It is often confused with the Spotted Hyacinth Orchid, *Dipodium pardalinum*, however the Pink Hyacinth Orchid has pink stripes on the labellum (tongue). The flower spike can grow up to one metre and is green or brown.

Pink Hyacinth Orchids grow under the shade of the stringybark trees. Interestingly, the orchid does not have leaves or photosynthesise. Instead, it is a saprophyte and lives off decaying material. Many orchid species are saprophytes at the seedling stage, so the evolution to a completely saprophytic species is not surprising. Since it is very difficult to grow these plants in your own garden, they are jewels when you find them in the bush.

For more information about native orchids in the Adelaide Hills check out our ID chart.

References:

- https://www.yarraranges.vic.gov.au/PlantDirectory/Orchids/Dipodium-roseum
- https://www.britannica.com/plant/orchid/Characteristic-morphological-features

Emerging as a small rosette of green and purple red strappy leaves, the flower stem of Disa bracteata can reach 50cm (Photo: Amy Blaylock)

Disa not welcome in our woodlands

Rainfall sufficient to break the season is a welcome relief to those of us in temperate climates who have tired of the heat and the parched landscape. In the remnants of the original woodlands across Adelaide's parks and suburbs, autumn marks a major shift in the vegetation. Rain seeping down through the soil profile triggers a whole range of plants to start actively growing from bulbs, tubers and tussocks. While some plants like the Garland Lily send their flower stems up first, most plants put their stored energy into leaf growth. A flush of orchids, grasses and lilies cover the ground in a carpet of greens.

One unwelcome returnee is the South African Weed Orchid, *Disa bracteata*. From the early 1990s onwards, renowned Adelaide botanist and conservationist Enid Robertson, worked tirelessly with the community to try and eradicate this weed so that the already threatened native understorey plants could be protected from its invasion. Unfortunately, it is now so widespread that some consider it to be naturalised. Dust-like seeds spread easily, and within a few years new plants can produce their own flowers from the previous year's tuber. However, with a bit of practice, the strappy green leaves with purple-red on the underside can easily be distinguished before the flower spike even begins to form in spring, and the tubers dug out and destroyed. There are a lot of plants in our gardens that can become bushland weeds. By knowing what you have in your garden, you can eradicate pest plants before they spread. Local councils have some great guides with colour photographs to help you identify plants and instructions on how best to remove them from your garden.

Some plants are declared which means you have a legal responsibility to control them on your property – you can find out more in the Weed Control handbook or app.

References:

- Weeds in Adelaide
- Native Orchid Society of South Australia
- Images of flower stem
- Campbelltown & Tea Tree Gully weed guide.

Shrubs, herbs and climbers

Rough Halgania blooms most profusely in spring and summer, but can flower throughout the year (Photo: Amy Blaylock)

Mallee Blue-flower not rough on native bees

Native bees only live for a few weeks and need sources of pollen and nectar to reproduce. But we often unwittingly create food deserts in our gardens, favour European Honeybees with our flower choices, or provide flowers for only a limited part of the year.

To support our native bees, we need to aim for a smorgasbord of native flowers over the whole year. Rough Halgania, or Mallee Blue-flower, (*Halgania cyanea*) has bright blue flowers which offer pollen. It is a small shrub that grows on a variety of soil types but prefers well-drained soils in a sunny spot. In South Australia it is common in some areas like Eyre Peninsula and the Flinders Ranges, but is rare across much of Adelaide.

Make sure you complement it in your garden with sources of nectar so that our bees get a complete meal.

If you're interested in other local native plants that can provide food sources for birds, bees and butterflies, you might like to download our Native plants of the Adelaide plains identification chart.

References:

- Atlas of Living Australia
- Australian Native Plant Society (Australia)
- Seeds of South Australia

False Boobialla is often found growing on coastal dunes (Photo: Jeremy Gramp)

Wattle it be?

Since 1992, 1 September has been officially recognised as National Wattle Day, so it is a great time to learn about and celebrate this wonderful genus of plants. Wattle is the common term for plants in the Acacia genus, and we have over 900 species of them in Australia, making them even more diverse than Eucalypts!

Many Acacias flower in late winter and spring, including the False Boobialla, also known as Coastal Wattle (*Acacia longifolia* ssp. *sophorae*). This shrub is often found growing on coastal dunes or within a few kilometres of the beach. Its size is highly variable, with individuals on the foreshore reaching up to three metres high, while those in more sheltered positions grow as tall as seven metres, and spread nearly as wide.

Unlike most other Acacias that have round fluffy pompom flower clusters, Coastal Wattle produces abundant flower clusters that are fluffy, tubular and yellow. These are an important source of nectar and pollen for many species of insects and birds. The flowers are followed by pods that contain hard black seeds, which have been used as a source of protein and carbohydrate by Aboriginal nations from the east coast to the Nullarbor.

With so many kinds of Acacia, why not see if you can identify the ones growing near you? We've got ID charts on some of our local native plants to help you get started.

Clematis clambering up a fence at Redeemer Lutheran ELC, Nuriootpa (Inset: close up of the wreath stepladder woven out of vine canes)

Old Man's Beard is a Social Climber

The Adelaide region is blessed with several native climbers, which given the chance will use other plants as a stepladder in order survive and thrive. Old Man's Beard, *Clematis microphylla*, is one such climber with its delicate foliage and showy seed clusters with their fluffy white feathers.

Increasingly, our local native plants are being used in landscape design. To design effectively, it is important to look at how one plant complements another aesthetically, but also the conditions in which a plant will thrive.

In the wild, *Clematis* is fond of clambering up shrubs/small trees (eg Native Apricot, *Pittosporum angustifolium*) and, to give it a helping hand to get started, Barossa winemaker Andrew Seppelt has created an upcycled wreath which functions as a stepladder, woven out of cut vine canes (see photo above). Simply plant the climber within 15cm of the intended host shrub, then place the cane wreath at its base and the Old Man's Beard stalks can be wound through the canes to get it started on its journey to shrubby stardom.

So why not get creative and weave your own upcycled wreath stepladder out of natural materials such as vine canes, bamboo or reeds to fully realise Old Man's Beard's stunning potential?

Ideally Old Man's Beard prefers some shade/dappled sunlight rather than full sun, as its natural home is in the understorey with overhead canopy cover. An advantage of using this species is that it will not completely smother its host in the process.

Why not learn more about our local native plants via the Native Plants of the Adelaide Plains ID Chart?

Australian Buttercups are generally found in moist environments (Photo: Steve Walker)

Build me up buttercup

We all know how important it is to use local, native plants in our gardens and community. If you are trying to attract native bees to your gardens it is important to include blue, purple and yellow flowers. A native flower that offers one of these colours to the bees is the Australian Buttercup (*Ranunculus lappaceus*). Otherwise known as the Common Buttercup or the Native Buttercup, this plant produces beautiful bright yellow flowers from July to December.

Plants grow to 70 cm high, with two to 10 flowers on singular or branched stems. Flowers are 2 cm to 3.5 cm wide, with leaves divided into three broad triangles, with soft hairs.

The genus name, *Ranunculus*, is Latin for tadpole, deriving from the Latin word *rana*, meaning frog. It is suspected that this refers to the swampy habitat most species are found in, as they prefer moist, non-stagnant soils. That makes this plant ideal for use around the edges of frog ponds and in rockeries where it gets part to full sun.

If you do bring an Australian Buttercup into your garden space, be mindful that many buttercups can be poisonous. This particular species can cause colic and inflammation in animals, and may cause blindness in horses, but generally animals will avoid eating it due to its yucky taste.

References:

- www.flora.sa.gov.au/cgi-bin/speciesfacts_display.cgi?form=speciesfacts&name=Ranunculus_lappaceus
- www.abc.net.au/local/stories/2010/10/22/3042519.htm
- www.herbiguide.com.au/Descriptions/hg_Australian_Buttercup.htm
- www.victoriannativeseed.com.au/?product=australian-buttercup

Cone-bush at Aldinga Scrub Conservation Park (Photo: Sophie Rogers)

This prickly bush isn't rotten to the core

At first glance Cone-bush, *Isopogon ceratophyllus*, may seem a somewhat unwelcoming looking plant with prickly leaves (hence the species name) and a dead flower head that looks like a pine cone. However, the yellow flowers provide food for birds and insects such as ants, which also help with pollination.

Cone-bush is found growing in sandy soil, and is part of the Proteacea family. It grows to a maximum height of 50 cm and following a fire may re-sprout from a woody lignotuber; a swelling at the base of the stem that stores starches and dormant buds.

Unfortunately, the Cone-bush is particularly vulnerable to root rot, *Phytophthora cinnamomi*, a water-borne slime mould that stops the plant taking up water and nutrients.

There is currently no cure for root rot, so the best approach to controlling it is to try to prevent its spread.

Therefore, it is very important to use shoe cleaning stations found in bushland areas and at park entrances when walking. It is also important to clean vehicle tyres when leaving areas known to have *Phytophthora*.

Beaked Hakea has curved fruit (Photo: Jeremy Gramp)

Beaked Hakea for beaked friends

It is important to select local native plants if you want to attract local wildlife to your backyard or school garden. The Beaked Hakea, *Hakea rostrata*, is a great option as it provides food, habitat and refuge.

The plants grow to dense shrubs, 1-5 metres tall. Their prickly, needle-like leaves help make them an excellent refuge for birds and lizards to hide from predators. Hakea species are also an important food source for birds including honeyeaters and the threatened Yellow-tailed Black Cockatoo, as well as some native butterflies using them for nectar.

In addition to the wildlife attracting qualities, Beaked Hakea is hardy once established, making it suitable for low-maintenance gardens. Its spiny leaves, density and spread, make it a useful barrier plant to direct foot traffic. it is tolerant of full sun or shady areas, prefers well-drained soil and can grow under trees or in the open. It produces white flowers from July to November.

The common name, Beaked Hakea, is derived from the Latin word '*rostrata*', meaning beaked or curved, describing the shape of the plant's fruit.

To find more suitable plants for your garden, check out our Native Plants of the Adelaide Plains identification chart and Creating a Wildlife-friendly Garden resources.

References:

- plantselector.botanicgardens.sa.gov.au/Plants/Details/3377
- australianplants.com/plants.aspx?id=1294
- ahc.sa.gov.au/ahc-resident/Documents/Environmental/Native%20Habitat%20Landscaping%20and%20Gardening.pdf

The Leek Lily is a showy, yellow spring-flowering herb (Photo: Rob Wallace)

Bulbine by name but not nature

The Leek Lily, *Bulbine semibarbata*, which grows along coastal cliffs, in the mallee and in rocky gorges in the Green Adelaide area, is rated as a vulnerable plant species. It is found scattered across South Australia but is more common in the central part, especially on Eyre Peninsula, as well as Queensland, Western Australia, New South Wales, Tasmania and Victoria.

Bulbine means bulb and *semibarbata* means half-bearded, referring to the filaments of the anthers, of which three out of six are bearded. It is an annual with fleshy leaves growing from a base that resemble leek leaves. The yellow flowers, which come out between September and November and grow on stems to 30cm, are six 'petaled' (three petals and three coloured sepals). While the genus name suggests a bulb or tuber, this species has neither.

Leek Lilies make great understorey clumping plants with lots of colour for a native garden and are easy to grow. They readily throw viable seed that will germinate the following season. Being an annual, they die at the end of the flowering season. They tolerate full shade to full sun.

In the arid regions, stock will eat Leek Lilies but there is debate on whether they are poisonous.

So next time you are thinking about a showy, yellow spring-flowering herb, why not consider the Leek Lily?

If you live in the Mt Lofty Ranges, the closely related Golden Lily, *Bulbine bulbosa*, is the plant for your area. *Bulbine bulbosa* produces a tuber that Kaurna people ate. The tuber has been described as 'bland and starchy', but also 'the sweetest of all the native lilies'. A bit confusing!

References:

- Cunningham, G. (1992) Plants of Western New South Wales.
- Prescott, A. 2012. It's blue with five petals.
- Seeds SA - Bulbine semibarbata
- VicFlora - Bulbine semibarbata

Coast Twinleaf is so named because of its branching, succulent leaves (Photo: Jeremy Gramp)

Water a Flower Day

Around the world May 30 is celebrated as Water a Flower Day. However, most of Adelaide's native plants are not usually blooming at this time of year, so this makes us (and other animals) appreciate even more the ones that are in bloom. Creating and caring for our local native gardens is important work as it is therapeutic and healthy for us to get outside and connect with nature, while also being vital to the local creatures that we share the land with.

One flower that you might see on this day is the Coast Twinleaf, *Zygophyllum billardierei*. This shrubby perennial is a scrambling plant which grows along our coastal areas and is very important for helping to stabilise sand dunes. It has bright yellow flowers, which are only about 1cm long, and the distinctive y-shaped fleshy leaves giving rise to its common name.

Being a succulent plant, it is quite drought tolerant, but it does tend to be a short-lived species. Instead, it relies on being able to produce large numbers of seeds to ensure continued populations. Following flowering, it produces fleshy, 4-sided seeds pods each containing four brown, triangular seeds. The seeds have a gelatinous coating which helps glue them to the soil when wet, assisting germination.

Which other local native plants have you seen flowering recently? Don't forget to post your photos of them on social media and use the hashtag #wateraflowerday

If you're interested in our local native plants, you might like to download our native plants of the Adelaide plains identification chart.

References:

- www.understorey-network.org.au/family-index.html?species=Zygophyllum%20billardierei
- scnaturesearch.com.au/plant/Coast%20Twin%20Leaf

The flowers of the Common Eutaxia are yellow-orange with red veins (Photo: Rob Wallace)

X marks the spot

Common Eutaxia (*Eutaxia* microphylla), sometimes also called the Small-leaved Bush-pea, is a small shrub growing to approximately knee height. It can be found throughout the southern part of South Australia, growing in mallee, heath and woodland communities. It's also found in New South Wales, Victoria and Tasmania. It is an important understorey plant in the areas where it grows.

As you can see in the photo above, Common Eutaxia produces an abundance of attractive yellow and red pea flowers, with the flowering season usually occurring between August and November.

A characteristic of this species of *Eutaxia* is the short spiny ends of the branches and also its tiny leaves. These leaves are less than a centimeter long and between 0.5 to 3 mm wide.

The leaves grow in pairs on opposite sides of the stem. As you move up or down the stem each successive pair of leaves is at right angles, in other words they are rotated 90 degrees around the stem. When viewed from above this forms an X pattern which is known as 'decussate'. In Latin the Roman numeral for ten, *deca*, is an uppercase 'X'.

If you are looking to increase the variety of animals in your garden then the Common Eutaxia is a great option. All sorts of insects make use of different parts of the plant. Native bees collect pollen and nectar from the flowers; caterpillars of the Fringed Heath-blue butterfly eat the buds, flowers and occasionally the young leaves; ants eat the part of the seed called the aril; and some beetles lay eggs on the seed and when they hatch, drill into the seed to eat the protein rich contents. In addition to all those insects, honeyeater birds are also attracted to the flowers.

If you would like to learn more about some of our other local native plants then check out our Native plants of the Adelaide Plains identification chart.

References:

- South Australian Seed Conservation Centre
- Bonney, Neville. (1994). What seed is that?

Unfortunately, this pretty flower is a highly invasive weed (Photo: Steve Walker)

It's coming up roses...unfortunately!

Guildford Grass, *Romulea rosea*, also known as Onion Grass (but a different plant from Onion Weed), is a relatively small South African iris that was introduced into Australia because it was considered an attractive ornamental garden plant. Like many South African garden plants, it has since established itself as a major weed in many parts of Australia.

It is highly invasive and difficult to control due to its ability to spread by seed and through its corms. These brown fleshy underground stems store food so that the plant can survive difficult conditions, such as harsh winters and summer droughts. In addition, Guildford Grass has slender but extremely fibrous leaves that can easily damage the blades of lawn mowers and other grass cutters. These fibres are also a problem for livestock because they are not readily digestible.

The species name rosea describes the rosy colouration of the flowers, which are typically pink, pale violet or lilac, with a yellow centre surrounded by a white band. The flowers grow singly on a short stem 3 to 12cm long and the leaves, which grow 8 to 65cm long but are only a few millimetres wide, are clustered together at the base of the plant. Flowering usually occurs during spring.

The flowers produce a fruit which consists of a small cylindrical capsule filled with numerous reddish-brown seeds. These capsules split open when mature, releasing the seeds, which can then be dispersed by water or when the area is mowed or slashed. They have become established in the California and other parts of the United States following the importation of contaminated clover seed from Australia.

So, while some people may find them attractive plants to have in the garden, they pose a significant threat to our ecosystems and agriculture. See the Adelaide gardens – a planting guide for native grasses, groundcovers and herbs that are just as attractive, if not more so.

These native species will enhance the biodiversity value of your garden by providing food and shelter for butterflies, birds and other wildlife.

These purple flowers smell sweet like chocolate and are a food source for native bees (Photo: Jeremy Gramp)

Chocolate gives our native pollinators a buzz

Whilst walking through many of our parks and other areas with native vegetation, you may see tall stems (20 to 30 cm tall) with delicate purple pink flowers. If you pause to smell the flowers you may find they smell sweet like vanilla, caramel or chocolate. The Chocolate-lily (*Arthropodium strictum*) or Nodding Chocolate-lily (*Arthropodium fibriatum*) can both be found in open areas with herbaceous understorey in many of our local open spaces.

These native plants in the lily family are coming to the end of their flowering season (September to November). Whilst on the surface the sweet-smelling flowers may be gone, below the soil surface these plants have juicy tubers that can be roasted with a pinch of salt or eaten raw. These tubers are a food source known to have been eaten by Aboriginal people.

The plants are also great for our native bees because they provide essential pollen. They need to be pollinated by buzz pollinators, such as the blue banded bee, so a great choice to attract and feed native bees in your garden.

These lilies are easy to grow at home. They need well-draining soil, 20cm deep so the tubers can develop, and are suitable in a full sun or partly shaded area of the garden. Have a look at your local native plant nursery to add some native sweet-smelling flowers to your garden.

References:

- Hogendoorn, K. (2019) Food for native bees
- https://tuckerbush.com.au/chocolate-lily-arthropodium-strictum
- https://en.wikipedia.org/wiki/Dichopogon_strictus

Mountain Daisy (Photo: Rob Wallace)

Flower Power

March 12 is Plant a Flower Day. An excellent local native flowering plant to consider growing at home is the Mountain Daisy (*Ixodia achillaeoides*). It is a small perennial shrub up to 2 metres tall that grows in most soils in Adelaide. You can grow this plant at home in a rockery, as a background shrub or in a container. It prefers well-drained, moist soil in a sunny position. You can easily grow the plant from a cutting, and it responds well to a hard prune after flowering. From Spring to Summer, the Mountain Daisy produces many clusters of papery white daisy flowers.

The Mountain Daisy has become increasingly popular in the flower market industry over the last 20 years. Like many wildflowers, cultivation began from natural reserves. Fortunately, this is now widely recognised as unsustainable so they are now grown specifically for cultivation.

In 2001, the South Australian Research and Development Institute researched the potential for the Mountain Daisy to become a popular national and international variety in the cut and dried flower industry. They tested species from South Australia and Victoria for samples that had a longer stem and were more robust; important features for florists and in transportation.

They also researched the risks for disease problems. Like many monoculture (one variety) crops, they are susceptible to disease problems, so growing your own local native flowers in a mixed garden to put in your vase at home, or simply admiring them growing undisturbed in the bush are the most sustainable options.

References:

- https://www.agrifutures.com.au/wp-content/uploads/publications/00-186.pdf
- http://anpsa.org.au/i-ach.html

Native bee collecting pollen from a Grassy Bindweed flower. For scale, the flower is 2.5cm wide (Photo: Amy Blaylock)

Provide support for this delicate climber

Grassy Bindweed (*Convolvulus remotus*) is a small native climber with pale to pink flowers and lance-shaped leaves. Climbers are plants that grow up the stems of other plants or structures, meaning they can get more sunlight without having to expend the energy of growing a stem sturdy enough to hold up the weight of all their stems, leaves and flowers. Some climbers use tendrils to aid their climbing, like you see on snow peas or cucumbers using a trellis, or have a particular habit, like ivy burrowing into the cracks of tree bark or buildings to brace for further upward growth.

Grassy Bindweed often twists and grows around its own stems while growing along the ground or up another plant, which reflects the genus name which comes from the Latin *convolvulere* meaning 'to intertwine'. Originally growing across Adelaide and the foothills in tussock grasslands and Mallee Box, Grey box, Blue Gum and Red gum woodlands, grazing, clearing and urbanization have now restricted this plant to protected areas in reserves and parks like Belair and Para Wirra, the recovering grassland on the southern side of Victoria Park racecourse and some private land. These locations also suit another species of bindweed, *Convolvulus erubescens*, which can easily be distinguished by its multi-lobed leaves.

The delicate Grassy Bindweed flowers throughout the year, though mainly in spring, making it a valuable source of pollen for insects. Try adding some to your garden – they don't take up much space.

If you're interested in growing local native plants like Grassy Bindweed in your garden, here's more information about what to buy and nursery options.

References:

- eFlora of SA fact sheet – Convolvulus remotus
- Free dictionary
- It's blue with five petals. 1988. Ann Prescott
- Mangroves to Mallee: The complete guide to the vegetation of temperate South Australia. 2009. Todd Berkinshaw

Common Fringe-myrtle provides nectar and pollen for animals such as this silk bee (Photo: Jeremy Gramp)

It might be common, but it's still a star!

Having just celebrated Australian Pollinator Week, now is a great time to be thinking about how you can increase the number and variety of pollinators in your garden.

One of our local native plants that you might like to consider is the Common Fringe-myrtle, *Calytrix tetragona*.

It is a bushy shrub growing to 3 metres tall, though usually less. It has small, thin leaves that have a spicy fragrance when crushed, however the star of the show is its flowers. From late winter through spring, it produces masses of white to pink star-shaped flowers approximately 1 cm in diameter. There are often so many flowers that it is difficult to see the leaves.

These flowers attract a range of insect pollinators, including native bees, flies, beetles and moths.

A key identifying characteristic of this plant, which is very obvious after the petals have dropped, is the long fine red bristles of the sepals. Sepals are modified leaves which are part of the flower, protecting the petals when the flower is a bud.

Common Fringe-myrtle, as the name suggests, is common throughout southern South Australia and also other states from Western Australia all the way round to southern Queensland.

It is found in a wide range of habitats including heath, mallee and open forest. It's relatively easy to grow, so well worth considering for your garden. You might also like to check out our Plants of the Adelaide Plains ID chart to discover other suitable local native plants.

Reference:

- Prescott, Ann (2012) It's Blue with Five Petals - Wildflowers of the Adelaide Region

Satin Green Forester on Slender Smoke-bush in Morialta Conservation Park (Photo Rob Wallace)

Smoking out the Forester

The Slender Smoke-bush (*Conospermum patens*) is a small, slender, herbaceous plant growing to about one metre in height. It flowers from spring through to summer. The flowers, which form dense heads, are furry and blue-grey or purple and white. They form at the end of long stems which are covered in sparse leaves. The leaves are thicker at the base of the plant. These plants generally grow in heathlands with well drained sandy, gravelly soils; however, some species grow near the edge of swamps.

The word *Conospermum* literally means cone seed, which refers to the cone shape of its seed. Slender Smoke-bush is in the Proteaceae family and is related to Banksias, Grevilleas and Hakeas. There are 53 different types of Smoke-bush in Australia, six of which are grown for the commercial flower market.

They are pollinated by flies, bee flies, native bees, ants and hoverflies, and possibly the Satin-green Forester Moth in the photograph, although the size of the Forester may affect its ability to collect the pollen. European Honey Bees steal nectar from the Smoke-bush without gathering pollen as they are too big to crawl inside the flower tube, unlike smaller native bees which collect pollen from within the tube. The Honey Bee inserts its proboscis into the flower from the outside and takes the nectar.

Next time you are walking in open heathland look out for these dainty attractive flowers and see whether there are any Foresters nearby.

Ants are normally poor pollinators because they produce pollen killing secretions in their bodies. However, Smoke-bush species in Western Australia have pollen that is resistant to the secretions, so ants have become useful pollinators of this group of plants.

References:

- Flowers for Everyone
- McQuillan, P et.al, 2019. Caterpillars, Moths and their Plants.
- Native smokebush plant adapts to allow for ant pollination, researchers find (ABC)
- Seed Notes for Western Australia No. 12 Conospermum.
- VIC FLORA Conospermum patens

The species name petalocalyx refers to the ring of sepals looking like petals (Photo: Jeremy Gramp)

You're unbe-leaf-able!

International Plant Appreciation Day is Thursday 13 April and it's a perfect time to bring a new plant into your world. Twiggy, bushy, spikey or prickly - they may not all be showstoppers, but they all serve a purpose to someone or something in their ecosystem. Whether it be providing shelter and food, or filtering the air, water and soil that they reside in, plants are simply wonderful.

Endemic to southern Australia, the Paper-flower (*Thomasia petalocalyx*) is one of these amazing plants. It is a low spreading shrub, providing habitat and attracting beneficial insects.

From August to November, you may see small sprays of star-shaped, mauve-coloured flowers covering the branches. The colourful papery segments of the flower are actually strongly veined sepals. There are five sepals and five petals to each flower, but the petals are minute and barely noticeable.

The fruit is a three-celled capsule, which mature quickly and split open when ripe to release the small black seeds, several from each cell. Parts of the seed offer food to ants, which helps aid dispersal.

The Paper-flower's leaves are wrinkled, oblong-shaped and grow 2-4cm long. Interestingly, the leaves, branches and stipules are all covered in small brownish hairs giving the plant a soft furry appearance. They grow happily alongside a wide range of native understory plants, keeping a healthy balance to our bush habitat.

So, let's celebrate plants. Happy International Plant Appreciation Day!

To find out more about other local plant species, check out our Native plants of the Adelaide Plains identification chart.

References:

- plantselector.botanicgardens.sa.gov.au/Plants/Details/3190
- www.anbg.gov.au/gnp/gnp8/thom-pet.html
- Bonney, N. (2003). What Seed Is That? A field guide to the identification, collection and germination of native seed in South Australia.

The phyllodes resemble the leaves of the European Myrtle (Photos: Jeremy Gramp)

What'll you plant this year?

The United Nations has proclaimed 22 May the International Day for Biological Diversity to increase understanding and awareness of biodiversity issues. A key feature of this year's campaign is encouraging everyone to undertake a list of 22 Actions.

One of these actions is 'Plant (native) trees, shrubs and plants', which is perfectly timed for us here in Adelaide because the planting season is just beginning.

One plant that you might like to consider, particularly if you live in the areas of the Green Adelaide region with higher rainfall, is the Myrtle Wattle, *Acacia myrtifolia*. It is naturally found in a variety of vegetation communities from open forests and woodlands, to open scrub, in areas receiving 500 - 1200 mm annual rainfall.

It is a bushy shrub, generally growing 1 - 2 m high. A distinctive feature is the red tinge on the young branches. The 'leaves' are roughly elliptical in shape, growing to about 10cm in length. Like most wattles, these 'leaves' are not leaves at all, instead they are modified leaf stems that are flattened and broadened. These phyllodes as they are called perform the functions of a true leaf, whilst being more drought tolerant.

Between July and October, it has creamy-yellow flower-heads that attract a number of insect pollinators including native bees. Interestingly, Acacia flowers do not produce nectar. Instead, glands on the phyllodes secrete nectar that ants, bees, butterflies and other insects have been observed feeding on. Birds such as honeyeaters, thornbills and silvereyes also make use of this nectar.

The Myrtle Wattle is a very fast-growing plant, so it's definitely a worthwhile addition to your garden if you are after a relatively quick reward. For ideas on what other local plants to put in your garden, check out our planting guides.

Reference:

- Bonney, N. (2003). What Seed Is That? A field guide to the identification, collection and germination of native seed in South Australia.

Pink-eyed Susan is characterised by its beautiful drooping flowers (Photo: Ken Hurley)

Keep an eye on Pink-eyed Susan

Pink-eyed Susan (*Tetratheca pilosa*) is a beautiful looking native shrub in the family *Tremandraceae* which grows in heathland and dry sclerophyll forest environments.

The genus name *Tetratheca* comes from the Greek '*tetra*' meaning four and '*theke*' meaning case referring to the pollen cavities in the anthers which are often four- lobed or four-celled. The species name *pilosa* means covered in long hairs. It is found mainly in the southern part of the Mt Lofty Ranges, but also in parts of the south-east of SA, NSW, Victoria and Tasmania.

It is an upright shrub growing to approximately knee height which flowers in spring and summer. As the photo above shows, the mostly pink or sometimes white coloured flowers like to hang down and the petals are thin. The centre of the flower has a black squarish block of anthers. The stems are covered in tubercles and the leaves are usually alternate and linear and narrow looking.

The fruit is a brown capsule to about 5mm long and often beaked, with the seeds being dark brown and cylindrical. Seed can be collected from maturing capsules that turn a pale brown; look for dark hard seeds and ensure you have a valid seed permit from the Department of Environment and Water before collecting. To clean and prepare the seed, capsules can be left in a tray to dry for a week. After this the capsules can be rubbed by hand which will dislodge the seeds. A sieve can be used to separate the chaff material.

Pink-eyed Susan is a great attractor of insects. Look out for its pink colours when you're walking amongst our beautiful bushlands!

Reference:

- Its Blue with Five Petals: Wildflowers of the Adelaide Region, Written by Ann Prescott

Trees

Mountain White Gums growing near Norton Summit (Photo: Jeremy Gramp)

High altitude, high rainfall, highly engaging

This Friday 31 July we celebrate Schools Tree Day, where students across Australia plant seedlings and restore thousands of hectares of unique Australian landscape. It is a great way to inspire your students to learn about the local environment while playing an active role in their community.

In recent years two schools in the Adelaide Hills have been focussing their efforts on one of the rarer trees in our region, the Mountain White Gum (*Eucalyptus dalrympleana*). In South Australia it is only found in higher parts of the Mount Lofty Ranges, growing in pockets of fertile soil in areas receiving high rainfall. Although it is rare in South Australia it is more common in New South Wales, Victoria and Tasmania.

It is a majestic tree, with a very straight trunk covered in smooth white bark. The flowers are white, appearing in autumn. In South Australia it can reach heights of 10-43m, while in the eastern states it reaches 60m tall. Because of this it is not really suitable for home gardens, however the schools mentioned above have been active in trying to restore the Mountain White Gum throughout their communities. They have collected seed and propagated seedlings to provide to local landholders to assist their revegetation efforts. One of the schools is also revegetating a site on their school property with Mountain White Gums.

Have you thought about how your school might celebrate Schools Tree Day? Planet Ark has developed a range of lesson plans and activities to inspire you.

If you are interested in learning more about the trees throughout our region, we have a series of identification charts available for you to download. There are specific eucalypt charts as well as general tree charts, covering areas including Grey box woodlands, Mallee box woodlands, Manna gum woodlands and Stringybark forests. All the charts can be found on the local native plants section of our website.

Reference:

- Nicolle, D. 2013. Native Eucalypts of South Australia

Cup Gum is well-suited to gardens in high rainfall areas (Photo: Paul Asman and Jill Lenoble)

My Cup Gum runneth over

Schools' Tree Day is on Friday 30 July, and whether it's possible to get outdoors and do some planting or not, there's plenty of learning to be done about some of the amazing plant species native to South Australia and why they are so important.

This week, to celebrate the occasion we wanted to feature one such plant - the Cup Gum or *Eucalyptus cosmophylla*. This is an eye-catching tree, deriving its species name from the Greek *cosmos* (meaning "ornament") and *phyllion* ("leaf") due to its large, tapered leaves which are considered quite ornamental. It has cream flowers that rarely age to pink, produce large amounts of nectar and attract bees and birds, which are of course vital to our urban landscape and play a key role in pollination for many plants.

If you are planning to add to your garden, this species can a good choice of tree because, apart from attracting pollinators and a variety of native birds, it's a smaller species of eucalypt which only grows to between three and eight metres tall, so it won't crowd out your understorey plants. It also spreads to form a reasonably sized canopy about 5-10 metres across, which can help provide shade where it's needed.

Do make sure to check with your local nursery before you select it though, because it isn't a particularly drought-tolerant tree, so it will do best in areas with high rainfall. As an idea, in our region this species is most commonly found around the southern Mt Lofty Ranges.

References:

- https://dn.com.au/Native_Eucalypts_of_South_Australia_pages/Native_Eucalypts_of_South_Australia_Eucalyptus_cosmophylla.html
- https://www.gardensonline.com.au/GardenShed/PlantFinder/Show_3266.aspx
- https://spapps.environment.sa.gov.au/SeedsOfSA/speciesinformation.html?rid=1808
- https://www.tandfonline.com/doi/pdf/10.1080/0028825X.1979.10432566

The distinctive Brown Stringybark, gumnuts and a White-throated Treecreeper foraging for insects. (Photos: Rob Wallace, Jeremy Gramp)

What's brown and stringy?

Friday 29 July is Schools Tree Day. Each year, more than 3000 schools participate nationwide in environmental activities including tree planting, seed collection, bush regeneration or site maintenance. The day can also include a visit to a previous planting site to carry out mulching, watering and weeding.

One of the more identifiable trees in our region is the Brown Stringybark, *Eucalyptus baxteri*. As the name suggests, this tree is covered in rough, coarse, stringy bark.

It is restricted to higher rainfall areas, such as the Mount Lofty Ranges; growing on well drained, fairly poor soils that are sandy or gravelly. It can grow to 15m tall, however on really exposed sites it can be more shrub-like only reaching about 2m in height. The trunk is often multi-stemmed.

Brown Stringybarks are sometimes confused with the other species of stringybark that we have in our region, the Messmate Stringybark. A great way to tell them apart is to look at the fruits; commonly called gumnuts. Messmate Stringybarks have a wine glass shaped fruit, while Brown Stringybark fruits are rounded with a protruding four-sided cross-shape on top. It looks like the slot for a Phillips head screwdriver.

Stringybark forests and woodlands are important habitats for a number of animal species, including the endangered Southern Brown Bandicoot which uses the dense understorey of the woodland. Another animal that you might be lucky enough to see on the Brown Stringybark is the White-throated Treecreeper. They seek out ants and other invertebrates in the fissures in the stringy bark. They forage by spiralling up the trunks and larger branches, and when they reach the top, they head to the base of a nearby tree and start again.

How are you planning on celebrating National Tree Day this year? Planet Ark has developed a series of free resources to get you started, including lesson plans and activity sheets.

Reference:

- Nicolle, D. 2013. Native Eucalypts of South Australia

Swamp Gum provides important habitat for a range of wildlife (Photo: M Fagg)

An eggs-quisite eucalypt

Drawing on the themes of World Water Day March 22 and National Eucalypt Day March 23, we're going to feature a distinctive South-east Australian eucalypt that thrives in low swampy valleys, creek lines and poorly drained plains.

Commonly known as the Swamp Gum, *Eucalyptus ovata* is a single-stemmed, primarily straight tree growing 5-15m tall, with rough and dark bark on the base of the trunk and lower branches, and smooth whitish upper limbs shredding in strips. The leaves, true to its Latin scientific name are ovate, lanceolate to egg-shaped, with a glossy green colour, texture of leather and often wavy edges. The leaves range in size from 7-14cm long and 2-5cm in width. Small buds in groups of 7 produce a beautiful display of white dense clusters autumn through to spring. Fruiting occurs throughout the year.

The tree provides important habitat for a diverse range of wildlife including koalas, possums and birds, and its extensive root system helps to stabilize soil and prevent erosion, improving water quality in the surrounding ecosystem.

The Swamp Gum is susceptible to threats such as habitat loss and climate change, reflected by its vulnerable conservation status in Adelaide, the Mt Lofty Ranges and Kangaroo Island, and near threatened conservation status in the South-east region. It is crucial that we continue to study and appreciate the importance of this species in the natural world and work to conserve and protect it for future generations. See if you can spot a Swamp Gum flowering over the coming months!

To find out more about local native plant species, check out our Native plants of the Adelaide Plains identification chart.

References:

- Native Eucalypts of South Australia, Dean Nicolle, 2013
- Mangroves to Mallee, The Complete Guide to the Vegetation of Temperate South Australia, Todd Berkinshaw Greening Australia, 2009

Ecosystem processes

White-bellied Sea Eagle: Endangered in SA but not listed nationally (Photo: Steve Walker)

Threatened Species

Did you know that Monday 7 September is National Threatened Species Day? There is so much to know about threatened species and so many opportunities for students to inquire about and research this incredibly important topic. After all, the more we understand about threatened species, the more we can do to help protect them.

One of the first things to note is the definition of a threatened species. The internationally recognised IUCN Redlist defines seven conservation statuses, from Extinct through to Least Concern. Any species falling into the three categories of Critically Endangered, Endangered or Vulnerable is considered to be a threatened species. You can find out more about this on the IUCN website.

When a species is listed as threatened at a state level, it means it's protected under state legislation (in South Australia this is the National Parks and Wildlife Act 1972). Nationally threatened species are listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. There are numerous reasons for listing a species, including population size and geographic range.

Interestingly, a single species might be listed as threatened nationally, but not at a state or regional level, and the same is true in reverse. For example, the White-bellied Sea Eagle (Haliaeetus leucogaster) is listed as Endangered in SA; however, in most other states its population is more secure and therefore at a national level it is not listed.

So, what can we take away from all this? The key message is that every ecosystem is different and the species within it all have a role to play. Removing just one species can have far-reaching impacts on the whole system, so it is up to all of us to look after our native biodiversity as best we can. Protecting threatened plants can be undertaken in a number of ways, including through revegetation and conservation, while protecting animal species also involves creating and preserving habitat. We also need to control pest plants and animals that might compete with our precious natives for resources like food, shelter, sun and water.

Learning about which species are threatened and why is the first step in taking action to conserve them. So, why not start now?

Peppermint Box Grassy Woodland (Photo: Ben Simon, Goolwa Wellington Local Action Planning Group)

Communities under threat

September 7 each year marks National Threatened Species Day. It's a time to reflect on the species we've lost and an opportunity to learn about what's threatened around us and how we can protect what remains. We often think about individual plants and animals as being threatened, but did you know that entire ecological communities can be listed under the Environment Protection and Biodiversity Conservation Act 1999? In SA, we sadly have 11 ecological communities listed as threatened. One of these, Peppermint Box Grassy Woodlands (PBGW), is found in the Green Adelaide region and is listed as critically endangered due to a significant decline in area and integrity.

Endemic to South Australia, PBGW are characterised by open to dense woodlands with a tree canopy of low trees. The understorey is dominated by native grasses and herbs with scattered shrubs. Mosses, lichens, leaf litter and bare ground are common and important features of the ground layer. Many plants and animals of the ecological community are grassy habitat specialists or woodland-dependent species. For this reason, previously undisturbed sites are important refuges for species sensitive to cultivation and fertilizers; such as orchids, and soil-dwelling invertebrates, reptiles and amphibians. Historically, PBGW were cleared for cropping and used for grazing. Key threats to the ecological community include clearing, grazing and weed invasion. Other threats include road and rail maintenance activities, recreational activities, impacts of climate change and the effects of habitat fragmentation.

So, what can be done to protect these important sites? Landowners, both private and public, are working together to stop further decline and restore recoverable areas. Recovery actions can include protecting remnant sites, weed control, removal of pest animals and excluding continuous grazing from remnants to allow for natural regeneration from soil-stored seed. Regeneration and revegetation of areas around remnant Peppermint Box Grassy Woodlands can expand and connect existing remnant areas.

Do you know what other species and ecological communities are threatened in South Australia? If you're interested in your local plants and animals and how you can help protect them, you might like to view our plants and animals resources.

This year's theme for World Wetland Day is Wellbeing. Oaklands Wetland (Photo: Craig Arnold)

Wetlands and Wellbeing

On 2 February we acknowledge World Wetlands Day. Known as the Earth's kidneys, wetlands are a source of fresh and clean water the world over. They support habitat for a biodiverse range of plants, animals and insects. Wetlands are integrated into cultural and spiritual aspects of life for Indigenous Australians and once were common features across the Adelaide Plains. They provide several ecosystem services including flood mitigation, storing carbon and increase biodiversity through habitat provision. The environmental processes active in wetlands demonstrate the interrelated functions that form, maintain and support an ecosystem. As such, they are an important place for research and education as well.

We are fortunate in the Green Adelaide region as we have several urban wetlands that can be explored and enjoyed. Over the last twenty years there has been an increase in 'constructed' wetlands, in part stemming from the city's experience of water crises during the millennium drought (2001-2009) and in expectation of Adelaide's shifting climate changing patterns in rainfall. Where once we paved over the old natural wetlands across the city in the 1900s for houses, roads and gardens, we are now bringing them back to capture, treat and store water in underground aquifers as part of a Water Sensitive Urban Design approach.

Constructed wetlands are designed to mimic the benefits of natural wetland functions. They are shallow and extensively vegetated and use enhanced sedimentation, fine filtration and biological uptake processes to remove pollutants from runoff. In addition, they may also include infrastructure such as trash racks, flow or diversion structures, gross pollutant traps and reed beds, such as those at the City of Salisbury. Excitingly, Adelaide's constructed wetlands are also supporting the reintroduction and rewilding of species that are critically endangered, such as the Southern Purple-spotted Gudgeon in Oaklands Wetlands and the River Torrens.

These metropolitan wetlands also provide space for recreational activities, allowing visitors to walk, play and cycle. It's no wonder that this year's theme for World Wetlands Day is Human Wellbeing. Why not take a visit with your students and explore one of Adelaide's wetlands using the Green Adelaide Aquatic Macroinvertebrates Teacher Pack and Wetland Birds Teacher Pack?

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