Australia's National
Science Agency

Wild Files: Wattles

CSIRO National Science Experiment: CSIRO Wild Watch

Wattles, as they are more commonly known in Australia, belong to the *Acacia* genus. Wattles are the largest genus of vascular plants in Australia and include the national floral emblem.[1]

Some Acacias are economically important for their timber and other wood products, such as firewood, plywood, and fodder, and in the perfume industry. *Acacias* are an extremely important plantation species in the tropics. They grow fast and can thrive on sites that have been degraded by other unsustainable activities.

Black wattle has fern-like true leaves, Spearwood (*Acacia* doratoxylon) has long narrow phyllodes and Flat Wattle (*Acacia* glaucoptera) has cladodes. © rachelduckherd (left), chrislindorff (centre) and arthur chapman (right) via iNaturalist

Wild locations

Wattles are found throughout the world with over 1,000 known species in Australia alone. For more than 25 million years, wattles have grown on land now known as Australia. They have adapted to all of Australia's extreme environments and many species have evolved resistance to fire, salinity, drought, alkalinity and disease. Wattles are found in all states and territories.[2] You can find them in coastal to sub-alpine regions and in high rainfall and arid inland areas. Wattles are easiest to recognise by their blooms with many flowering in late winter.

Characteristics

Wattles come in all shapes and sizes and have an enormous diversity of floral, leaf and plant forms. Their diverse characteristics have made classifying them difficult. All wattle seedlings start out with fern-like leaves.[3] Some wattles, such as the Black Wattle (*Acacia* mearnsii) retain these feathery fern-like leaves for their lifetime, but a large group of wattles ditch leaves in favour of what are called phyllodes.[4] Though they do the photosynthetic work of a true leaf, phyllodes are instead flattened leaf stalks which look like leaves.[4] Phyllodes are thought to be an adaptation to dry conditions. They lose less water than true leaves, enabling wattles to spread to the drier parts of the Australian continent.[4]

Wild CSIRO research

Researchers at the Centre for Australian National Biodiversity Research (CANBR), a joint venture between the Australian Government and CSIRO are using the latest in DNA research and modern taxonomic tools to uncover the origins of *Acacias*.[3] Researchers are tracing biogeographic (where species are located) trends within *Acacia*, to find out why some closely related species may grow in one part of the country while close relatives grow in another part of the country. Knowing how different *Acacia* species have evolved to live in certain areas can provide researchers with valuable insight into why certain species grow where and why.

Contributions to CSIRO's Collections

CSIRO's Australian Tree Seed Centre (ATSC) has collections of *Acacia* species from throughout Australia and PNG. Seeds are sent to many different sorts of users, including scientists studying taxonomy and other researchers in Australia and all over the world.The ATSC is currently working with the University of Tasmania to investigate whether wind can carry the pollen between trees: it is widely thought that the pollen is too heavy to travel far, but maybe in some strong wind events, some pollen does transfer. Researchers at ATSC also assesses what kind of seed crop a population will have later in the year based on how heavy the flowering is year to year. This helps guide as to which population we may collect seed from in any particular year.

CSIRO scientists say,

Did you know that growing a tree is not as simple a placing a seed in soil? Different tree seeds require different pre-treatments. 'For the propagation of many *Acacia* species, we boil the seeds to trigger their germination,' Tasha James from CSIRO's Collections says. 'This is affectionately known as making "*Acacia* tea." We even use tea strainers to hold the seeds. We test seeds regularly using a variety of seed germination techniques tailored to each species.

Seeds lead to living giants,' Tasha says. 'Many of our species are large forest trees that begin as one tiny seed in a handful of thousands. Trees such as these are not only incredible lifeforms themselves but also provide habitats for other plants and animals.'[5]

Wild trivia!

- Golden Wattle seeds went to the International Space Station in 2020 for seven months to see how microgravity affects plant growth.[6]
- Each denomination of the new Australian bank notes features a different species of native Australian wattle.[4]

1. Wattles, genus *Acacia* - Australian Plant Information
2. Revealing the secrets of Golden Wattle - CSIRO
3. Displaying the *Acacia* family tree - CSIRO
4. *Acacia* didn't know: five fantastic facts about Australia's wattles - CSIRO
5. Wild Collection 2025 CSIRO Publishing, Andrea Wild
6. One giant leap for Aussie Golden Wattle - CSIRO

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Wild Files: Terrestrial Snails

CSIRO National Science Experiment: CSIRO Wild Watch

Terrestrial snails are snails that live on land. They can be found everywhere. In Australia, some species of snails cause a range of problems, damaging crops and harming the environment, while other species are beneficial and are indicators that a particular biome is thriving.

Snails are excellent at surviving long voyages. They can retreat into their shells and stick to all kinds of surfaces, including shipping containers, boxes, cars and plants. Snails also carry parasites which can be dangerous to a wide range of creatures, including humans. It is important to wear gloves when handling live snails.

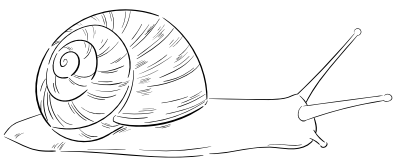
Because they are so good at travelling undetected, many species of snails that we find in Australia have arrived from overseas. Invasive snails can be a huge problem, contaminating and damaging crops, and costing the grain industry over $170 million a year in reduced harvests.[1]

Close up of invasive snail species Theba pisana in the field. This species has a globular shell. They contaminate grain crops and can affect harvesters. © CSIRO

Wild locations

Terrestrial snails are found all around the world, with approximately distinct 35,000 species,[2] over 1,000 of which are native to Australia.[3] An additional 65 species of land and freshwater snails and slugs have been introduced to Australia.

Many species of snail are believed to be undescribed, and there are many things that are unknown, including the exact spread of invasive species in Australia. Getting a stronger understanding of where invasive species of snail have spread will help us find ways to reduce their impact on crops and local environments, as well controlling the spread of disease and parasites.



Characteristics

Terrestrial snails have a wide variety of different characteristics. Snails have a shell that protects their organs and helps to protect from predators. Damage to their shells can be repaired by the snail over time. Snails create mucus to help prevent their bodies from drying out and will seek out damp environments.

In the wild, they have a varied diet which can include lichen, decaying plant matter, and living plant matter. Some snails are even predatory and feed on other snails, slugs or worms.

Wild CSIRO research

CSIRO Research is investigating ways we can keep snails from damaging crops without using harmful pesticides. This research includes identifying things that snails are attracted to or repelled by. CSIRO scientists have tested snails in the laboratory to identify their colour preferences, placing the snails in an arena with different coloured strips, which revealed that snails are attracted to the colour red! Once these preferences were identified in the lab, they were tested again in the field and found that snails preferred red over black[1].

Contributions to CSIRO's collections

While the National Research Collections Australia do not collect snails, many of the parasites that they can carry are collected as part of the Australian National Insect Collection, which collects some non-insect invertebrates in addition to millions of insects. Gathering more data helps to find any exotic snails in Australia that we don't know about, to help us target snail parasites better.

CSIRO scientists say,

"We want to find out where snails are so that we can track exotic snail invasions and their interactions with native snails." says Bethany Perry from CSIRO and the University of Canberra. "This is because invasive snails are big pests in gardens and farms, and they also carry parasites and pathogens which infect humans, animals and plants. We will use the data collected in this project to help us track snail invasions and know where to collect them in order to work out whether the pathogens in the invasive snails are local or exotic. Also, whether exotic pathogens have transferred to local snails. This will tell us which snails we need to be careful of and which ones to stop at the border".

Wild trivia!

- Native Terrestrial snails can be found on all continents except Antarctica. But there is a species of sea snails native to Antarctica.
- Snails are often associated with modern French cuisine, but they have been eaten all over the world, going back over 10,000 years.
- A snail's shell continues to grow as it ages, by adding more material at the opening. This means the inner most part of a snail's spiral shell was made when the snail was at its youngest.

1. Snail away: push-pull factors moving molluscs - CSIRO
2. Land Snail - Britannica
3. Introduced snails in Australia - Australian Museum

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Wild Files: Lichen

CSIRO National Science Experiment: CSIRO Wild Watch

Lichen (LYE-ken) is one of nature's most fascinating life forms! Lichens are formed when a fungus and an alga (singular form of algae) live closely together and help each other survive.[1] This relationship is called symbiosis.

Together, they form a living partnership that grows on tree bark, rocks, fence posts and even concrete! One particular species of lichen from the genus *Xanthoria coomae* can be easy to spot thanks to their characteristic vibrant yellow to orange colour and their ability to live in many different environments.

Wild locations

Various lichen species can be found all across Australia. CSIRO scientists are especially interested in *Xanthoria coomae*, which have been found and recorded in most states in Australia, including New South Wales, Victoria, South Australia and Western Australia.[2] This species of lichen has been recorded in Northern New South Wales, but there have not been confirmed sightings of the *Xanthoria coomae* in Queensland - yet! For those living in Queensland you might be the first to spot this eye catching lichen.

A close-up image of a vibrant yellow lichen situated on tree bark. A symbiotic partnership between fungus and alga! © CSIRO

Dr. Cécile Gueidan observing lichen growing on the bark of a tree using a hand-held magnifying glass. © CSIRO

Characteristics

Lichen grows in a wide range of shapes and forms and can be classified under three main growth forms: Crustose – flat and crusty, foliose – leafy or lobed, and fruticose – shrubby or branching.[3] *Xanthoria coomae* lichen is easy to spot and has a range of visual characteristics. Its leafy, lobed structure is often bright orange or yellow in colour. It grows on tree bark and can be quite common on non-native trees in urban areas.

At the centre of the lobed structures, small yellow-orange cups can be seen. It is in these little cups that tiny fungal reproductive units called spores are released into the environment. There, these fungal spores will find their preferred algae and grow to form a new lichen structure. In nature, lichen is eaten by a range of various animals from small invertebrates to reindeers. [4]

Wild CSIRO research

Dr Cécile Gueidan, a lichenologist at CSIRO, leads research into lichens using modern DNA analysis to understand how different species of lichen are related. Historically, scientists have named lichens based on their appearance and the chemicals they produce, but Dr Gueidan and their team of scientists have revealed that, sometimes, lichens that look different based on their texture, colour or chemical reactions may actually be genetically identical.[2]

Using DNA techniques in the laboratory, the researchers identified what were once thought to be two different species of lichen, Trapelia Pruinosa and Trapelia Rosettiformis, were identical species. [5] The two species look similar until you get very close. "They seemed to differ by the texture of their upper surface, the size of their spores and the presence of calcium oxalate crystals," says Dr Gueidan. "But our DNA data showed they are likely to be a single species." Understanding how lichen species are related to each other using DNA techniques helps scientists make sure they're naming and grouping them correctly. This is called taxonomy. Taxonomy is important because it helps us all understand biodiversity, discover useful things in nature, protect endangered species and make better decisions for the future.[5]

Contributions to CSIRO's Collections

The Australian National Herbarium (ANH) is one of the largest plant collections in the country, providing important information on native plans and weeds in Australia. The ANH's collection holds more than 100,000 lichen specimens. [6] The specimens are dried and stored carefully and are utilised for research.

Collecting lichen helps us answer a lot of questions about them and means that we have specimens available to help us study the potential medical uses of lichens.

Dr Gueidan and their team are currently investigating the bioactive properties of lichen extracts, and whether they contain antibiotics to be used in medical research. Lichens produce unique biochemicals which are used to help the species survive by deterring predators, fighting off bacteria and surviving extreme conditions. These biochemicals have potential to be developed into new medicines for humans.

CSIRO scientists say,

"Lichens play important roles in many ecosystems, contributing to soil formation and nutrient cycling, helping to retain moisture, and providing food and habitats to various animals. They are also good indicators of environmental health, as they are very sensitive to air pollution." according to Dr. Cécile Gueidan.

Dr Gueidan has spent years researching and studying lichen and continues to find mystery and wonder in these magnificent life forms! "Although the word 'symbiosis' suggests lichens are an equal partnership, the fungi may actually be farming the algae," she explains. The algae use sunlight to photosynthesise and make sugars, and the fungi absorb these sugars as food. They have a ready source of food, as long as the sun is shining. [3]

Wild trivia!

- Lichens are tough and can survive in freezing temperatures, in direct sunlight and in dry conditions. Some lichen even grows in Antarctica.
- Lichens are very sensitive to pollution and their presence (or absence) is used to measure air quality. Their presence is a great sign that your local air quality is clean![7]
- The orange pigment in lichen acts as a natural sunscreen, protecting the alga from harmful UV rays.
- Dr Cécile Gueidan and their team are testing lichen samples to see if it can survive on the moon!

1. Hidden Wonders: Exploring the Enigmatic World of Cryptograms
2. Atlas of Living Australia: Xanthoria coomae
3. Variations in mercury concentration within and across lichen Xanthoparmelia spp. individuals: implications for evaluating histories of contaminant loading and sampling design – CSIRO Publishing
4. CSIRO Wild Collection 2025 CSIRO Publishing, Andrea Wild
5. The Importance of appropriate taxonomy in Australian mammalogy –CSIRO Publishing
6. The Natural Research Collections Australia - CSIRO
7. Lichen Morphology – The British Lichen Society

Australia's National Science Agency

Wild Files: Egg Cases of Sharks, Skates, & Chimaeras

CSIRO National Science Experiment: CSIRO Wild Watch

Sharks, skates, chimaeras belong to the class Chondrichthyes (kon-drik-the-ez). This class name comes from the Greek language, chondr meaning "cartilage" and ichthys meaning "fish," because their skeletons are made of cartilage rather than bone, like your nose.[1]

Some chondrichthyans reproduce by laying eggs in a protective case. These egg cases are tough, strong, stretchy, and protect the baby animal as they develop outside the mother's body. After hatching, their egg cases wash up on beaches where they may be mistaken for seed pods or strange sea creatures.[2] Scientists want to know more about egg laying sharks and their cousins and are calling on citizen scientists to find and record egg cases found on Australian coasts.

A Crested Hornshark egg cased in the Australian National Fish Collection[2]. ©CSIRO

Wild locations

Chondrichthyan egg cases are designed to anchor to the seafloor or attach to a structure like rocks or seaweed. They can be found washed up on beaches, tangled in seaweed, or even floating in shallow waters. They are often carried by ocean currents and deposited along the shoreline, especially after stormy weather.

There are at least 37 species of sharks and skates that lay eggs, and their cases can be found from Nightcliff Beach near Darwin to Half Moon Bay in Victoria.[3] The best places to search are sandy, rocky or pebbly beaches, tide pools, and areas with lots of seaweed debris.

Helen O'Neill, CSIRO Australian National Fish Collection biologist, holding an egg case she has found on a beach in Hobart. ©CSIRO

Characteristics

Also known as mermaids' purses, egg cases come in many different shapes and colours. They range from cream and butterscotch to deep amber and black, and between 4 to 25 centimetres long.[4] They can be smooth, have ridges, curling tendrils, or simple appearance. Many of these features have evolved over time to increase the survival of the pup inside the case. Most chondrichthyans anchor their egg cases to rocks, kelp, or coral to increase their chances of survival. Port Jackson sharks have corkscrew-shaped egg cases designed to wedge into rocks.[2]

Incubation time ranges from a few months up to three years, depending on the species. By the time an egg case washes up on a beach, the embryo has likely already hatched or died prematurely. Some are preyed upon by creatures like sea snails, who can bore holes in them and suck out the contents.

Contributions to CSIRO's Collections

At CSIRO Australian National Fish Collection in Hobart, scientists are matching egg cases to the species that laid them to learn more about that animal's behaviours. Each different species' egg case has a unique design that is helpful in identifying which shark, or their cousin that egg case belongs to. CSIRO researchers borrow egg cases from other collections, museums, and aquariums around the world and use their own specimens collected to assist them with the identification process.[2] Citizen scientist who record sightings of egg cases on beaches and coastlines in their local areas contribute to the research being done to identify which egg cases belong to which species, with some species still unknown.

Wild CSIRO research

CSIRO scientists study shark egg cases to better understand how sharks reproduce, where species live, where their nurseries are located, and how to better protect them. Egg cases provide valuable information about the life cycle of egg producing sharks, skates, and chimaeras, helping scientists identify breeding and nesting grounds which are extremely important for species survival.[4]

CSIRO aims to deepen scientific knowledge and promote conservation of Australia's diverse population of sharks, skates, and chimaeras to ensure their populations remain healthy.

CSIRO scientists say,

Helen O'Neill, CSIRO biologist, says, "I love the huge diversity shown in chondrichthyan egg cases. Shaped like a vase, a corkscrew, a spindle or a rectangle; with long winding tendrils, sticky attachment fibres or short, sturdy horns; a smooth surface or ridged - the diversity is huge! To the point where you wouldn't recognise them as an 'egg' at all. The unique features of each egg case have adapted to suit their habitat and laying technique - be it entangled in seaweed or coral, wedged between rocks or 'glued' to a muddy sea floor - the morphology of each egg has been perfected over millions of years to optimise survival, and it has certainly been successful, with sharks predating the evolution of trees and dinosaurs, and surviving five mass extinctions."

Wild trivia!

- In rare cases, sharks in captivity have laid eggs that hatched without a father, a phenomenon called parthenogenesis.[2]
- Depending on the species and water temperature, incubation inside the egg can take a few months to three years![5]
- Not all sharks lay eggs, only about 30-40% of sharks are oviparous, meaning they lay eggs.[5]

1. Chondrichthyes – Characteristics, Classification & Examples – Biology Notes Online
2. Join the hunt for shark egg cases – CSIRO
3. CSIRO joins great shark egg hunt and wants citizen scientists' help logging weird beach finds – ABC News
4. Calling all citizen scientists: hunt for shark egg cases launches in Australia – CSIRO)
5. CSIRO Wild Collection 2025 CSIRO Publishing, Andrea Wild

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Wild Files: Australian Ericaceae

CSIRO National Science Experiment: CSIRO Wild Watch

The *Australian Ericaceae* (eh-ri-KAY-see-ee), or Epacrids for short, are a group of native shrubs known for their spiky leaves and spectacular flowers which bloom in winter and spring.

Their flowers are rich in nectar and provide a source of nutrients for birds, insects and small mammals during the cooler months. Globally the Ericaceae family is large, with over 4250 known species across 124 varieties, making it the 14th most species-rich family of flowering plant! [1]

Wild locations

Ericaceae are found in heathlands, woodlands and alpine regions across Australia, and species of Ericaceae have been located across the world (except from Antarctica, the arctic, central Greenland and Central Australia)[1].

Some species of *Australian Ericaceae* are highly localised, for example, in Western Australia there is a significant concentration of the Epacridoideae (a subfamily of the Ericaceae) of 181 named species across 17 varieties in the southern part of the state around the Stirling Ranges and Mount Lesueur regions.[2]

Characteristics

Identifying an *Australian Ericaceae* is straightforward if you know what to look for. [3]Ericaceae are typically shrubs, and one of their key features is that the underside of their leaves has several parallel lines.

Their flowers come in shades of white, pink or red, and are shaped like bells, cups, or plates. Many species also have very pointy leaf tips and can be sharp to touch! *Australian Ericaceae* thrive in nutrient-poor and often acidic soils and withstand harsh environmental stresses like drought. If you encounter a plant with three or more of the above characteristics, it's likely an Epacris (*Australian Ericaceae*)!

Pictured is an *Australian Ericaceae* featuring white flowers in full bloom against a blurred background. © CSIRO

Wild CSIRO research

Dr Helen Kennedy a botanist at the Australian National Herbarium researches the evolution, genetics, taxonomy and ecological roles of the Australian Ericaceae[4]. Dr Kennedy led the study on the plant group (genus) Melichrus, which had not been revised in over 60 years.[5] By analysing the data and DNA sequences from 548 samples across 110 populations, Dr Kennedy and her collaborators found eight new species and redefined existing ones too! This research helps scientists understand the evolutionary history of the Ericaceae.

CSIRO scientists say,

"The *Australian Ericaceae* ('Epacrids for short) are spiky but spectacular! ... Many Epacrids, with their spiky leaves and plentiful nectar, create a safe place for wildlife to rest and feed in the cooler months." says Dr. Helen Kennedy, a botanist at the Australian National Herbarium[3].

Dr Kennedy also emphasises the role and importance of citizen science, "Recording sightings of Ericaceae on iNaturalist is a great way to contribute to biodiversity science. As a researcher, I use iNaturalist to help locate populations of plants that I am interested in studying."

Contributions to CSIRO's Collections

The Australian National Herbarium, part of CSIRO's National Research Collections Australia, is home to thousands of Ericaceae specimens. These collections of Ericaceae plants help scientists learn how different species are related, where they grow, and how to protect them. They also give useful information to people who look after the land and nature.

Researchers like Dr Kennedy use these collections to study and locate populations of Ericaceae for fieldwork and genetic studies.

Close-up of a vibrant bunch of pink *Australian Ericaceae* flowers with pointed petals and lush green leaves in the background. © CSIRO

Wild trivia!

- The pink variation of Epacris impressa, known as the common heath, is the floral emblem of Victoria.
- Heat and smoke play a vital role in seed dormancy, which then triggers germination after bushfires.[6]
- The Epacris also acts as a bioindicator, meaning their presence can signal the health of an ecosystem.

1. Ericaceae Juss. - Austral Heaths – Atlas of Living Australia
2. Phytogeography, Biology and Conservation of Western Australian Epacridaceae - Oxford academic
3. Epacris and Relatives (Ericaceae) – Australian Native Plant Society (Australia)
4. Australian National Herbarium – CSIRO
5. Morphological and molecular evidence for major re-circumscriptions in and eight new species of Melichrus R.Br. (Ericaceae subfam. Epacridoideae) in eastern Australia - CSIRO Publishing6
6. Heat shock, smoke and darkness: partner cues in promoting seed germination in Epacris tasmanica (Epacridaceae) – Australian Journal of Botany

Australia's National
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Wild Files: Riccia

CSIRO National Science Experiment: CSIRO Wild Watch

Riccia (rich-ee-uh or ric-see-uh) is a genus, or plant group, of liverworts.[1] Liverworts are a group of small, ancient plants that don't have roots, stems or leaves. Instead, they grow as flat, leaf-like structures that absorb water and nutrients from the surrounding environment where they grow on.

Riccia plays a vital role in ecosystems as first colonisers, by protecting soil from erosion, helping maintain moisture and supporting plant life that grows around it. Some *Riccia* plants can float in water and are used in aquariums as oxygenators, keeping the water healthy for fish and other aquatic life. Oxygenators are aquatic plants that release oxygen into the water through photosynthesis, where plants use sunlight, water and carbon dioxide to create oxygen.

Wild locations

Riccia liverworts grow across most parts of Australia. They typically grow in moist, open environments, particularly in Mediterranean-type regions across the southern states. They are also found growing in the harsh monsoon tropics across northern Australia. [2] You can also find them growing in pools, on bare, damp soil patches or clearings that are prone to flooding during wet seasons.

Typically, *Riccia* species grow in semi-arid, or dry environments. They form thin layers of living material in desert soils helping to reduce erosion and retain moisture. [1] *Riccia* is also used as biological or ecological indicators. If you see *Riccia* growing, it's often a sign of a healthy soil ecosystem.

Riccia Plant with distinctive green leaves and brown spots. © CSIRO

Characteristics

Riccia liverworts are small and often go unnoticed. Their features are distinctive if you know what you're looking for!

Riccia are small, flat and usually green. They're less than a few centimetres in length and grow in a 'rosette' or fan-shaped pattern. The thallus, which refers to the body of the *Riccia*, is 'Y' shaped due to the way the plant branches. The underside of the thallus has 'rhizoids' which are tiny root-like hairs that anchor the plant and helps with water absorption. *Riccia* liverworts come in a variety of colours from bright green to bluish green.

Wild CSIRO research

At the Australian National Herbarium (ANH), part of CSIRO's National Research Collections Australia, CSIRO scientists like Dr Chris Cargill and their team are working to document, study and protect plants like *Riccia*. Liverworts (including *Riccia*), mosses, hornworts, lichen, slime moulds and fungi are all classified under the group called cryptogams. The ANH has over 300 000 cryptogam specimens in their collection.

Contributions to CSIRO's Collections

The Australian National Herbarium (ANH) is home to an ever-growing collection of *Riccia* specimens.[3] Preserved, dried liverwort collections support scientists in answering questions about plant diversity and classification. Scientists can also use these collections to identify new or introduced species and monitor changes in plant populations over time.

The Australian National Herbarium also supports researchers working in conservation biology and land management to assess strategies to support and protect *Riccia* species that are endangered or threatened. The ANH collections can provide historical maps of where *Riccia* species grew before their populations were impacted by habitat loss or environmental change through the Australasian Virtual Herbarium (AVH). The ANH is like a time capsule of Australia's biodiversity!

CSIRO Scientists say,

Dr Chris Gargill says, "*Riccia* maybe small plants but can have a big impact in the environment, in particular in those semi-arid and arid environments, where soils are precious and the top layers are easily eroded and blown away. *Riccia* is one of the early colonisers of bare soil and as it grows as a flat plant across the soil it helps to conserve the soil surface. But *Riccia* plants are also beautiful plants, sometimes forming multiple circular patterns across the soil surface in colours of pinks and greens in some species. Also, the large spores produced by these species are important in distinguishing between species and form beautiful patterns seen in detail through scanning electron microscopy. So, I study *Riccia* both for its beauty and for its importance in the environment."

Wild Trivia!

- *Riccia fluitans* is a species of *Riccia* that is aquatic and can float on the water's surface. It is used to provide shelter for fish and oxygenate the water. It is also a species which has been introduced to Australia, probably through the aquarium trade and may become a weed in our waterways. Australia does have native semi-aquatice species, such *Riccia multifida* or *Riccia luticola*.
- Liverworts like *Riccia* are amongst the most ancient land plants. Liverwort existence dates back more than 400 million years.

1. Temperate Botany and AI Identification Tools: Phylogenetics and taxonomy of liverworts and hornworts – CSIRO
2. Taxonomic revision of Riccia (Ricciaceae, Marchantiophyta) in the monsoon tropics of the Northern Territory, Australia – Australian Systematic Botany – CSIRO Publishing
3. Australian National Herbarium- CSIRO