BUSHLAND NEWS

KATANDRA BUSHLAND SANCTUARY NEWSLETTER
Spring 2024

Greetings from Katandra
Katandra's 2024 Open Season continues every Sunday until the end of October, 10 am to 4 pm.

There have been some impressive floral displays in the Sanctuary over the last few months. These include *Acacia ulicifolia* (Prickly Moses), *Leionema dentatum* (Toothed Phebalium), *Oxylobium ilicifolium* (Holly Pea), *Pultenaea flexilis* (Graceful Bushpea), *Hibbertia dentata* (Twining Guinea Flower), *Dendrobium speciosum* (Rock Orchid), *Olearia tomentosa* (Toothed Daisybush) and the wonderfully perfumed *Pittosporum undulatum*. More recently the purplish flowers of *Prostanthera denticulata* (Mint Bush), *Dianella caerulea* (Blue Flax-lily) and *Patersonia glabrata* (Flag Lily) have been seen.

Scientific studies have greatly improved our understanding of the Australian bushland. Concepts like the uniqueness of the Australian biota, why fire is important to many plants, pollination mechanisms, the incredible relationship between plants and mycorrhizal fungi and many, many more. The scientific process is sometimes misunderstood, resulting in a misunderstanding, and often misuse, of findings. The article inside this edition of Bushland News takes a closer look at the scientific process and how it is used to advance our knowledge.

Please note there has been a change in Katandra's email address. It is now katandrainfo@gmail.com

You can also contact us by phone 0431857407 or via the Contact Us page on the Katandra website.

We look forward to seeing you at Katandra.

David Seymour

Australia's Unique Biota

Australia is home to a wide range of flora and fauna, much of which is not found anywhere else in the world. Scientific investigations suggest that this uniqueness is due to the length of time that the Australian continent has been separated from the other land masses around the world. Details of the explanation of this uniqueness can be found in the scientific theories of "***Plate Tectonics***" and "***Evolution***". These two theories are good examples of how the processes of science can improve our understanding of the world around us. They both began as ideas proposed to explain observations before developing through the scientific process.

When the idea of "continental drift" was first proposed, many considered it preposterous. How could continents possibly "drift" around the world? Over time, as more evidence was collected, details of how this process could occur became apparent, developing into the now widely accepted theory of "*Plate Tectonics*" in which the surface of the Earth is composed of a series of plates which move about.

The concept of evolution, the idea that living things change over time, was not invented by Charles Darwin. Darwin did, however, propose a mechanism by which evolution could take place in his (at the time) highly controversial theory of "*Natural Selection*". Advances in the field of genetics and our understanding of inheritance and DNA have provided details that now see evolution as a widely accepted theory.

The Scientific Process

The word science comes from the Latin word '*scientia*', meaning "knowledge, awareness, understanding". Science, however, is much more than this, it is a process that develops knowledge, awareness, understanding – a process often referred to as the '*scientific method*'.

Examples of Australia's unique fauna found in Katandra. Above - a Powerful Owl and Lyrebird. Below left – a Swamp Wallaby and an Eastern Pygmy Possum

The scientific method involves a series of steps.

1. Making careful observations
2. Using deductive reasoning to create a hypothesis* to explain these observations.

* *A hypothesis is a proposed explanation made using limited evidence as a starting point for further investigation.*

3. Use the hypothesis to make predictions
4. Testing these predictions through experimentation.

If the experimental results do not agree with the predictions, then this shows that the proposed hypothesis is flawed. The flawed hypothesis may just require some adjusting or it may need to be discarded completely.
If the experimental results agree with the predictions, this does not mean that the hypothesis is "proved", simply that this experiment did not show the hypothesis to be incorrect.

5. With better understanding from the experimental results, further predictions can be made using the hypothesis (or adjusted hypothesis) which can then be tested by further experimentation. This cycle of testing predictions by experimentation continues indefinitely. Scientists share information to allow others to attempt to independently verify findings by replicating experimental results and evaluating conclusions made.

No amount of experimentation can ever "prove" a hypothesis to be correct. At best the hypothesis can be supported by the experimental evidence. If the hypothesis is well supported by a lot of experimental evidence the hypothesis may become to be referred to as a "*theory*" or even a "*law*".

Science – Good or Bad

Albert Einstein once famously said '*No amount of experimentation can ever prove me right; a single experiment can prove me wrong*'.

This is where science can be easily misunderstood. It is often said that the "science is settled" on a well-accepted theory, but "settled" is not proved – science never claims proof, except when evidence can prove a theory is NOT correct. Einstein's '*Theory of Special Relativity*' is settled, but it is still (and will always be) only one bit of evidence away from being disproved.

When discussing certain topics some members of society, who are ignorant of the scientific process, often demand "proof" and so use this "lack of proof" supplied by science as an argument against the science involved. This lack of proof is then also often taken as a good reason to not take action on issues, despite the fact that the relevant science is well settled. Deliberate misinformation and unfounded claims that well researched evidence is corrupt is also used as an argument to deny good science.

The quality of the science depends on the quality of the research and evidence. High quality research requires resources of time and money which are not always readily available. There is often competition within and between scientific institutions for these finite resources. When good quality evidence is not available, the void is often filled by misinformation or pseudoscience.

Pseudoscience consists of statements, beliefs, or practices that claim to be both scientific and factual but are actually incompatible with the scientific method – for example claims that are not testable or that rely on confirmation bias.

Junk science is done to support a preconceived notion, unlike proper science which sets out to test the veracity of the notion. It involves spurious or fraudulent data, research or analysis – often done to push a political, legal or financial agenda. Junk science is not always easy to identify. For that reason, members of the general public, not directly involved in the research process, need to be consciously aware of the source of any claims or information provided and the possible reasons why this information is being provided.

One of the issues highlighted during the recent covid-19 pandemic was the time needed for proper science to occur. Particularly early in the pandemic, people wanted information before ample evidence was available and properly analysed, so ideas were spread before the science had been properly carried out. This need for information helped spread of much of the misinformation and disinformation that occurred. Similar issues can arise when researchers prematurely release findings before the proper science process has been completed, say for example, in a race to be the first to publish such findings. In these examples, the issue is not with science or the scientific process, the problems are caused by those, either knowingly or unknowingly, engaging in unscientific practices in the name of science, and in the way in which society values and rewards proper science.

It is also important to remember that scientists don't always agree. There is often more than one possible explanation for an observation. This is why work is peer reviewed and replicated. As new evidence comes to light, some ideas are supported and strengthened, others fall by the wayside.
Science does not pretend to know all of the answers, but when given time, and the science is carried out correctly, answers given are well supported by authentic evidence. Science is not perfect, but it is the best process we have to advance our understanding of the world around us and to improve our quality of life.

Boronia mollis (above) and Pultenaea flexilis (below) in Katandra. The genera Boronia and Pultenaea are both endemic to Australia

KATANDRA BUSHLAND SANCTUARY
Foley's Hill, Lane Cove Rd, Ingleside NSW
Department of Lands Reserve No 86487
Founder: the late Harold Alfred Seymour
Managed by Katandra Bushland Sanctuary Trust.
Phone: 0431857407

OPEN: Every Sunday: July, August, September, October
HOURS: 10 am — 4 pm
ADMISSION: $5 donation

KATANDRA BUSHLAND SANCTUARY TRUST
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Secretary: David Seymour
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(Cover Design by the late Walter Cunningham)

Enquiries: phone - 0431857407,
email - katandrainfo@gmail.com
or via the Contact Us page on the Katandra website

Katandra website -
katandrabushlandsanctuary.com

DONATIONS

Donations to Katandra to help maintain the Sanctuary can be made by direct deposit. Katandra's bank details are below

Account Name –
Katandra Bushland Sanctuary Trust
BSB – 082132
Account No. - 509347998

PUBLIC OPEN DAYS 2024

Each Sunday of July–October
10 am – 4 pm

Picnic tables are available for use should you wish to bring along a picnic lunch to enjoy in the Sanctuary.

DIARY DATES 2024

SANCTUARY MAINTENANCE 2024
Maintenance days are generally once a month from March to November.

The schedule of days for 2024 is currently under review. Dates for the maintenance days will soon be available on the Katandra website.

Volunteers are needed
If you can assist on maintenance days or with welcoming visitors to Katandra on open days, please phone 0431857407
