

Hidden Vale *Tails*

– HIDDEN VALE WILDLIFE CENTRE NEWSLETTER –



"Grumbles"

Scan the QR
code to watch
Hidden Vale's
Grumbles in action



Neither rat nor kangaroo

– the amazing rufous bettong

For almost 200 years, rufous bettongs (*Aepyprymnus rufescens*) (Gray, 1837), have been called rat kangaroos. The first drawing of one, dated 1791, (bottom left) definitely made them look like rats! Thankfully, photography allows us to see just how adorable rufous bettongs are! Grumbles (pictured) is one of the bettongs currently at the Hidden Vale Wildlife Centre.

Just as there are 'rat exterminators' today, from 1877 until 1930 there were 'rat kangaroo exterminators'. A series of laws, known as the Marsupial Destruction Acts, put a bounty on marsupials like rufous bettongs in Queensland and New South Wales.

The exact number of rufous bettongs killed during that time is not known. In New South Wales alone, more than 2.8 million 'rat kangaroo' pelts were turned in. Nor do we know the true extent of the complex impact that this loss of millions of digging animals had on the environment; or how many animals remained after culling. In fact, almost 100 years later, we still don't know how many rufous bettongs are left in the wild.

We do know there were only 12 reported sightings in Queensland in 2019. This is why research into these potoroids is so important, and the focus of work as part of the Hidden Vale Project.

Read more about our research and the Hidden Vale Project inside this edition.

The Hidden Vale Wildlife Centre is a collaboration between the Turner Family Foundation and the University of Queensland into the study and research of native ecosystems and wildlife.

Further information is available at turnerfamilyfoundation.com.au and hiddenvalewildlife.uq.edu.au



Hidden Vale Wildlife Centre celebrates three years with research showcase

The Hidden Vale Wildlife Centre was officially opened in March three years ago. To mark this anniversary, a Research Showcase was held at the Centre on March 19—just before social distancing guidelines came into full effect.

It was an opportune time to take stock of the achievements of the Hidden Vale Project so far, and refine our direction moving forward. Research staff and students presented impact reports to the Turner Family, senior UQ staff, and key stakeholders. Details of the student research projects can be found at hiddenvalewildlife.uq.edu.au/research/projects.

Given a PhD project usually takes at least three years, the showcase also marked the first full 'research cycle' for our first PhD student, Meg Edwards. Read more about Meg in our researcher profile on page 7.

Although the COVID-19 situation dictated a reduced crowd size, the showcase was a great success with students and staff commenting that they now have a better appreciation of where their research fits into the bigger picture of the Hidden Vale Project.

As just one example illustrating research impact, the Hidden Vale team has presented over 30 conference papers globally since the inception of the Project. This shows evidence of the spread of the Hidden Vale Project story, building our collective reputation, while fostering crucial collaborations and partnerships. A full list of conference presentations and peer-reviewed publications is included in the [2020 Hidden Vale Project Research Impact Report](#).

The Project's wider impact was never more obvious than in the wake of Australia's devastating bushfires, when our expertise was sought by leading wildlife conservation groups across the country. The Hidden Vale team was asked to advise on the best methods of wildlife reintroductions incorporating unique technology developed through our research as part of the Hidden Vale Project. For an entity still in its infancy, this speaks volumes about the positive impact and reputation we are cultivating.



1. Research Manager Julia Hoy presenting at the showcase
2. David Stent thanking researchers for their contributions
3. Students Shania Watson, Ciara O'Brien, Emily Hedger and Alex Munro

The Hidden Vale Project: the difference we make

The Hidden Vale Project is a collaborative conservation initiative between the Turner Family Foundation and The University of Queensland (UQ).

The Turner Family Foundation's long-term vision is to support resilient functioning ecosystems across our network of properties and the broader region, where key species and processes are restored, land use is sustainable and people are connected with nature.

UQ's vision for the Hidden Vale Project is to develop innovative and globally significant solutions for wildlife management and conservation, using the Hidden Vale Wildlife Centre and surrounding ecosystems as a model.

The Wildlife Centre is owned and managed by the Turner Family Foundation, which grants UQ a long-term license to use the state-of-the-art facilities. The Centre is used for a wide range of research, teaching and engagement activities, and it also serves as a base for conservation activities at Hidden Vale.

Forming the backbone of the Hidden Vale Project are three large private properties: Hidden Vale, Spicers Peak Station and Mount Mistake. These properties span a total area of 8,367 hectares, with 4,500 hectares having perpetual Nature Refuge status. The properties support a diversity of wildlife, regional ecosystems, habitat types and land uses, and are a veritable science laboratory for undergraduates, postgraduates and the broader research community, where innovative solutions can be developed for real world problems. Current land uses

on the properties include cattle grazing, mountain biking and other ecotourism activities.

The vision for these properties is central to the overall Hidden Vale Project vision, where conservation and human land use are managed in balance to ensure the protection and enhancement of ecosystem condition in perpetuity.

UNIQUE CIRCUMSTANCES

A set of unique resources and circumstances combine to allow this vision. These include:

- the Hidden Vale Wildlife Centre facilities
- co-location with large private land areas that are regionally significant in size, with multiple land uses and large tracts of remnant vegetation
- easy proximity to the greater Brisbane metropolitan area
- an enduring, unprecedented partnership between the Turner Family Foundation and UQ involving funding and access to land, as well as other teaching, research and restoration partnerships.

PROJECT MISSION

Through research, ecological restoration and education the Hidden Vale Project seeks to build an enduring legacy to:

- maximise captive wildlife management to improve in-situ conservation
- deliver a scientific underpinning to captive management, restoration and land management
- connect people with conservation
- develop innovative and globally significant solutions for wildlife conservation and restoration using the Hidden Vale Project resources as a model.

RESEARCH IMPACTS

The following examples demonstrate how funding through the Turner Family Foundation is increasing research capacity and impact at the Hidden Vale Wildlife Centre.

Trail cameras and associated equipment

Trail cameras are the most commonly used research equipment within the Hidden Vale Project and are deployed in field-based and captive studies. It has been demonstrated that the value of research outcomes improves greatly by increasing the number of trail cameras deployed. Research funding through the Turner Family Foundation allowed the Hidden Vale Wildlife Centre to buy more than 60 trail cameras with associated equipment. This directly translates to more robust and reliable research outcomes.

Wildlife traps and associated equipment

Wildlife traps are an essential tool for ecological and captive research. Students and researchers at the Hidden Vale Wildlife Centre can access a large quantity of traps, ensuring their research is not restricted by the availability of equipment. These traps are stored at the Wildlife Centre and will support future research projects.

Wildlife tracking equipment

One of the biggest downfalls in traditional wildlife release research is limited post-release data. This is primarily due to the high expense of wildlife tracking equipment. With the support of research funding through the Turner Family Foundation to purchase a range of VHF and GPS tracking equipment, Hidden Vale students can gather the most reliable results and contribute to an important area of wildlife science.





Student training

In addition to the wide range of training available to Hidden Vale students, funding is also available for specialised training, one-on-one statistical advice on site at the Wildlife Centre on a monthly basis, and attendance at presentations by guest speakers. These valuable opportunities allow Hidden Vale students to further develop and enhance a wide range of skills to achieve greater research impact.

Specialised research equipment

Hidden Vale students are encouraged to be innovative and bold when designing their research methodology. Often this requires highly specialised research equipment. Without research funding, access to such equipment would not be possible. Not only does this deliver for today's students, but the research equipment becomes a valuable asset for use by future students and staff at the Wildlife Centre.

Laboratory analyses

Undertaking laboratory analyses is often expensive, but yields highly valuable research outcomes. In some research studies, analysis of wildlife samples can be cost-prohibitive. Hidden Vale students have the opportunity access additional research funding to support this important laboratory work.

Conference attendance

Effective science communication and collaboration are important aspects of the research student journey. Hidden Vale students are supported to attend and present at conferences. This is an important part of the individual students' development and helps to increase awareness of the Hidden Vale Project and its impact.

Social support program

Hidden Vale students come together regularly to share the trials and tribulations of their research journey. Every second month they enjoy a morning tea at Spicers Hidden Vale Retreat, alternating with a more structured training session in the Wildlife Centre. This program allows students to discuss their progress and increase their overall awareness and involvement in the wider Hidden Vale Project. Wildlife research is often challenging and, with long hours of fieldwork, can also be isolating. The Hidden Vale social support program encourages vital connections and provides support to individuals which translates to stronger research outcomes across the board.

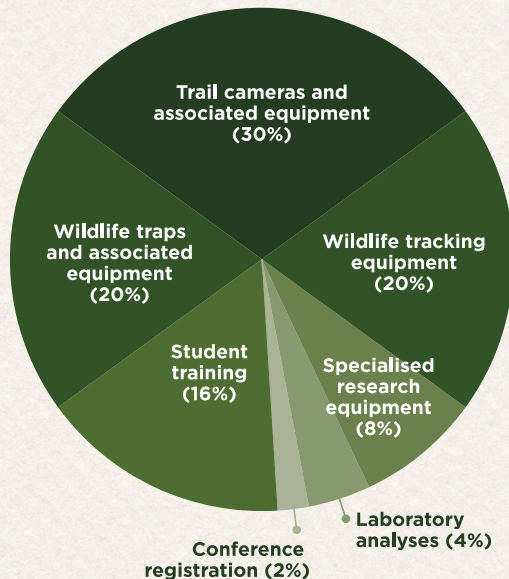
Research Support Program



Research support funding provided to the Hidden Vale Project by the Turner Family Foundation is designed to have greatest impact for the greatest number of students. Features of the program include:

- Top-up scholarships of \$7,000 per year for three years for a total of six PhD students at any one time.
- Access to 8,367 hectares of real-world research-focused land and land uses, with research support of vegetation mapping, land use data, LiDAR data, fieldwork tablets, and long-term research sites.
- Access to a purpose-built state of the art captive wildlife research facility, with a range of camera-equipped enclosures, research rooms, laboratories and a fully equipped veterinary clinic.
- Desk space and office equipment within the postgraduate room at the Wildlife Centre.
- Access to a wide range of research equipment including cameras, traps, and vehicles.
- Eligibility to apply for quarterly research funding of up to \$12,000 in total available each round (\$48,000 per year) to be split between a range of research projects as determined by the HVP Research Committee.
- Access to one-on-one statistical advice and training with a highly experienced statistician on site at the Wildlife Centre one day per month.
- Social support program and research training program as well as access to one-on-one general research support and advice from a Foundation-funded, UQ Research Manager based on-site at the Hidden Vale Wildlife Centre.

RESEARCH GRANTS



Applications open

HIDDEN VALE CONSERVATION TOP-UP SCHOLARSHIPS

Turner Family Foundation research support funding encompasses top-up scholarships of \$7,000 per year for three years for PhD students. This generous support makes PhD positions within the Hidden Vale Project highly sought-after, and directly contributes to an increase in research impact by reducing financial pressure, and intensifying focus on achieving research milestones. Applications close 31 December 2020.

Further details can be found at:

scholarships.uq.edu.au/scholarship/hidden-vale-wildlife-conservation-top-scholarship

INTERNAL RESEARCH FUNDING SCHEME

As part of the Turner Family Foundation's ongoing commitment to fostering high impact research within the Hidden Vale Wildlife Project, funding is provided to support postgraduate research projects, and staff research. This funding is made available on a quarterly basis to current Hidden Vale research students and staff only. Around \$80,000 has been provided for equipment, fieldwork expenses, laboratory analyses, conference attendance and specialist training. The next round closes 18 August 2020.

Contact hvw.enquiries@uq.edu.au for more information.



INTERNATIONAL YEAR OF
PLANT HEALTH
2020



Research Spotlight:

Designing condition multi-metrics for surrogates of biodiversity

Vegetation and fauna habitat monitoring is essential to modern land management at every scale. However, conservation and land managers rarely have the time or resources available to undertake thorough monitoring of the flora and fauna they are responsible for protecting.

Vegetation condition assessments (or condition multi-metrics) have been developed to provide a quick and simple tool to assess vegetation condition by analysing attributes that act as surrogates for biodiversity values. These tools help land managers as an alternative to intensive, technical and time-consuming fauna and flora surveys. However, metrics are often fraught with deficiencies, may deliver inaccurate results and can be immensely difficult to design in a way that accurately reflects ecosystem integrity. Their accuracy in explaining the nature of faunal populations in particular is poorly understood and potentially significantly limited.

EXPECTED OUTCOMES

Disentangling the complex relationships between vegetation condition assessments and faunal populations will allow us to improve upon them and make them more effective conservation management tools. This research will contribute to developing long-term condition monitoring programs that can assess trends and help manage impacts of human land use on biodiversity values in multi-use landscapes.

Research level: Honours

Student: Thomas Lally

Advisors: Associate Professor Peter Murray and Dr Megan Brady



Researcher Profile:

Meet Megan Edwards

PhD Candidate, School of Agriculture and Food Sciences

"My research focuses on how Australian native mammals react to introduced predators such as cats, dogs and foxes, using the northern brown bandicoot as a model species."

I have always loved animals! My real obsession with wildlife began when I was a teenager on holiday in South Africa, in 2007, going on safari every day. When I had the opportunity to study Wildlife Science and go to South Africa as part of my degree, I naturally jumped at the chance!

I completed my Bachelor of Applied Science in 2013 at the University of Queensland, and in 2014 returned to South Africa yet again to complete my Honours fieldwork at a remote reserve called Mogalakwena River Reserve, located in the north. I trapped small vertebrates such as rodents, shrews, lizards, and frogs for approximately six months to determine diversity of the small vertebrate community on the reserve. Then, in 2015, at the end of my Honours, my supervisor, Associate Professor Peter Murray, told me about an exciting opportunity that I could potentially be involved in – the Hidden Vale Project.

I started my PhD in mid-2016 as the first PhD candidate at the Hidden Vale Wildlife Centre. My research focuses on how Australian native mammals react to introduced predators such as cats, dogs and foxes, using the northern brown bandicoot as a model species.

I captured wild bandicoots and brought them to the Wildlife Centre to do my research. They were among the Centre's very first residents. I trained the bandicoots to use microchip-automated doors to access safe refuge in a nestbox. This meant that only my microchipped bandicoots were able to enter the nestboxes, keeping them safe from predators such as cats and foxes.

I began testing how the bandicoots reacted to introduced predators such as cats, foxes and dogs. I used a variety of predator cues such as taxidermied animals, predator faeces and even live predators (a pet dog and cat)! These experiments occurred mostly at night, given the bandicoots' nocturnal nature. After testing how they initially reacted to predators, I trained the bandicoots to avoid the predators by running away and hiding. Finally, I tested how the bandicoots responded to the predators after training, to see if they had changed their behaviours. Then, I released the



bandicoots back to the wild, and tracked them to see if their training influenced their survival.

Throughout my PhD journey, I have been fortunate to attend a number of scientific conferences, both in Australia and internationally, and been the recipient of a few small grants that have helped to fund some of the equipment for my research.

The large aviaries at the Wildlife Centre, the research support, and funding such as the Hidden Vale Wildlife Centre Conservation Top Up Scholarship and the Hidden Vale Research Support Funding were vital for my research. These have allowed me to concentrate on my research, and not be concerned about finding alternate sources of funding.

Now that I am nearly finished my PhD, I hope to continue researching Australia's mammals, and will be looking for post-doctoral research positions!

Read Meg's journal articles and conference papers here: hiddenvalewildlife.uq.edu.au/profile/868/meg-edwards

Trapping & bird watching

Undergraduate teaching at the Hidden Vale Billabong



If you have visited the Hidden Vale Billabong, you may have seen evidence of teaching activities around the Billabong, with lines of flags planted close to square concrete pavers. The flags allow us to easily locate the concrete pavers that protect the metal lid at the top of a 'pitfall trap'.

A pitfall trap, as its name suggests, is a hole into which animals fall once the entrance is open. The 'pit' is actually a 50 centimetre long, 15 centimetre wide PVC stormwater pipe buried into the ground. It has a cap with holes at the bottom to allow water to drain but not allow animals to escape.

Pitfall traps, of different sizes, are used all around the world to survey small mammals, reptiles and amphibians, and even invertebrates such as ants and crickets. Pitfall traps are sometimes used in conjunction with two other types of traps: metal box traps – in Australia these are typically aluminium 'Elliott' traps 33x10x9 centimetres – used for capturing small mammals; and bigger wire cage traps used for catching animals such as cats, rabbits and brush tail possums.

Each year more than 90 first-year students – part of UQ's *Australian Terrestrial Vertebrates* course – are taught how to use these different traps, identify and measure animals and release them. The data they collect is also used to inform Hidden Vale Project staff about the abundance of animals living in and around the Hidden Vale Billabong, and informs better conservation management decisions.

Most of these students are studying Wildlife Science although each year students studying Veterinary Technology, Environmental Science, Ecology, Zoology and Agriculture do this course as an elective. As well as students from Australia, the course has attracted international students from countries including Singapore, Hong Kong, China, Japan, Korea, the United Kingdom, the United States, Columbia, Philippines, Taiwan, Netherlands and Sri Lanka.

Based on trap records for the past five years, students have caught many Fawn footed antechinus', Eastern Chestnut mice, Common brush tail possums, two species

of bandicoots, Common planigales, and Slender tailed dunnarts. They have also recorded a range of native frogs, decreasing numbers of cane toads and house mice, a few Brush tail phascogales and squirrel gliders, a feral cat and a Torresian crow.

Each year, students also do two mornings of bird observations at the Billabong where they learn to use binoculars to identify and record the abundance and diversity of birds. If you are interested in birds, the Hidden Vale Billabong's bird hides are proving to be excellent observation sites. Students' sightings have included large flocks of birds such as Fairy martins, Double-barred finches, Wood ducks, Pacific black ducks, Rainbow bee-eaters, Rainbow lorikeets, Peaceful doves, Striated pardalotes, Silvereyes, Swamphens, Welcome swallows and Torresian crows. Birds seen only occasionally include the Black-faced monarch, Brown goshawk, Figbird, Galah, Grey and Pied butcher birds, Olive backed oriole, Sacred kingfisher, Shining bronze cuckoo, Spangled drongo, Varied sittella, Blue-faced and Yellow-faced honey-eaters, Scarlet honeyeater, Leaden Flycatcher, Little rufous shrike thrush, and the White-browed scrub wren.

Since the restoration of the Billabong in 2019, increasing numbers of 'new' water birds have been spotted, including the Buff-banded rail, Australian white ibis, Great egret, Hardhead, Hoary headed grebe, Little Cormorant, Red-kneed dotterel, Pelican, White-headed and White necked herons, and Yellow billed and Royal spoonbills.

From these activities, students have the experience to be 'job ready' to undertake fauna surveys using a range of techniques after they graduate. Students have said that learning about wildlife at Hidden Vale and the Billabong in particular 'gives them the opportunity to see and work with native Australian wildlife that most people never see', 'is great to get real-world experience' and 'it is fantastic to see our native wildlife in the wild'. It's also providing a rich record of native wildlife sightings and helping the Hidden Vale Project to continue to improve land management techniques.

Out & About

Ranger Stacey and the Totally Wild team paid a visit to the Hidden Vale Wildlife Centre to film Honours student Shania Watson's research on the Brush-tailed phascogale. If you missed it, here's a link:

10play.com.au/totally-wild or search 10 Play Totally Wild Season 26 Episode 27 (tiny.cc/ufbzoz).

You can also read more about Shania's Honours research at: hiddenvalewildlife.uq.edu.au/project/situ-use-microchip-automated-devices-wildlife.



A PhD student and vet Charlotte Tinsley, Ranger Stacey, Honours student Shania Watson and PhD student Meg Edwards in the field.



COVID-19 has thrown up plenty of challenges for our research team. After many Zoom calls, they decided to make it interesting by dressing up as Australian wildlife. Can you pick the odd one out?

Supporting Australian wildlife

The Turner Family Foundation is a not-for-profit environmental organisation established by Jude and Graham "Skroo" Turner and their children, Matt and Jo.

The Turners have a passion for preserving Australia's flora and fauna, and the Turner Family Foundation is their vehicle to promote positive environmental outcomes on their landholdings and more broadly.

Hidden Vale Tails is published half-yearly. It shares the work of the Turner Family Foundation and the Hidden Vale Wildlife Centre.

Below left to right: Matt, Jude, Jo and Graham Turner.



To find out more about the Turner Family Foundation visit www.turnerfamilyfoundation.com.au