Inquiry into Crocodile Control and Conservation Bill 2025

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Crocodile Control and Conservation Bill 2025

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[redacted]

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To: Committee Secretary
Health, Environment and Innovation Committee
Parliament House
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1. Introduction

Similar to earlier versions of this draft legislation, the Crocodile Control and Conservation Bill 2025 will increase the probability of crocodile attacks on people and impact the overall health of Queensland waterways.

More than sixty percent of the clauses in this Bill are exactly the same as previous versions. In fact, it is such a lazy and sloppy attempt to recycle old draft legislation that the Explanatory Notes refers to the Department of Environment and Heritage Protection – the department has not been called that since 2017.

However, it is the new, poorly-designed parts of the Bill which make this proposed legislation even more dangerous than previous efforts.

Again, the Introductory Speech and Explanatory Notes is very selective in its use of statistics and contains many inaccuracies and 'fake news'. The Bill's authors again say they have consulted widely but have not contacted Queensland researchers who have carried out the world's longest continuous study of crocodilian behaviour – Australia Zoo and the University of Queensland.

As in previous submissions, I will outline why this Bill increases the risk of crocodile attacks, correct the many inaccuracies and dangerous assumptions in the Introductory Speech, Explanatory Notes and draft clauses. I will also submit a number of recommendations at the end of the submission which will improve human safety in crocodile habitat and the conservation of this important species which is supposed to be the intended purpose of this Bill.

I would like to appear before the committee, if my diary permits, or alternatively request that another Australia Zoo representative appear before the committee hearing.

2. Background

As in previous submissions, I would like to firstly outline Australia Zoo's record on crocodile research and conservation for the information of the Committee members.

Steve Irwin began crocodile research in the 1980s, and his capture and study techniques remain world's best practice to this day. Australia Zoo, in partnership with the University of Queensland (UQ) and Australia Zoo Wildlife Warriors, now manage the largest and most successful crocodile research project in the world.

Each August, a team of crocodile experts, scientists and conservationists travel to the Steve Irwin Wildlife Reserve Nature Refuge on Queensland's Cape York Peninsula to conduct world-renowned research which has fundamentally changed our understanding of crocodiles. For example, we have discovered that crocodiles can spend more than seven hours underwater; we've unlocked secrets regarding their diet, vital information on their movement patterns, and much more to aid in the conservation of these incredible apex predators. A large focus of the research project is also to educate those that share the crocodiles' habitat and improve the safety of humans and crocodiles.

This world-renowned research involves:

- Tagging and tracking crocodiles in the Wenlock River and Ducie River with Acoustic technology, GPS Satellite transmitters – over 270 animals have been tagged
- Monitoring crocodile behaviour, their movements and physiology
- Vital research uncovering the distances crocodiles move, their ability to return to their home range after relocation and revolutionary findings on their ability to remain submerged, and their behaviour during flood events
- Australia Zoo's longstanding partnership with UQ dates back more than 20 years. Professor in Zoology in the School of the Environment, Professor Craig Franklin, and his UQ scientific research team, the collaborative annual croc research trip with the Irwin family and Australia Zoo is going from strength to strength.
- Acoustic Telemetry is used to track the estuarine crocodiles in the Wenlock River. Once captured, an acoustic tag is surgically implanted into the crocodile. These acoustic tags send a signal to 50 receiving stations set up on the length of the Wenlock River and some surrounding water bodies. These signals are logged and when analysed enable us to discover how the crocodiles are using the river and interacting with each other.
- Another exciting part of our research on the Steve Irwin Wildlife Reserve Nature Refuge is isotopic analysis. Isotopic analysis identifies markers in bloods/muscle/bone to give us an insight into what makes up the natural diet of the estuarine crocodile and just how important their roles are in their natural environment.

- This is just the tip of the iceberg for us as there are many questions that remain unanswered. All this information is critical in learning how to successfully manage our wild crocodile populations, and most importantly, keep people safe.
- Each research trip to the Steve Irwin Wildlife Reserve Nature Refuge continues to break new ground in crocodile research globally and is central to managing the co-existence of crocodiles and people.

3. Crocodile Research Focus

The research team continue to capture new crocodiles to provide additional data for the project and recapture crocodiles we've been following for the past 17 years. From recapturing crocodiles that have been tagged and living in the river, we're able to ascertain diet, examine environmental drivers for movement and behavioural patterns of individual crocodiles with a focus on temperature, and deploy satellite-dive transmitters to look at long-scale movements and diving behaviour.

We also aim to continue our research with other predatory species living in the river, which involves deploying acoustic tags in animals such as bull sharks, whip-tail rays, golden catfish, spear-tooth sharks and barramundi.

4. Educating local communities

Each year, the Irwin family not only take part in the conservation and research work on Cape York but they venture into local schools in Weipa to conduct talks with the children, to educate them on how to safely live alongside crocodiles. The Irwin family also conduct community talks to educate and inform the local communities. It is the Irwin family and Australia Zoo's belief that individual culling and relocation are not effective ways to manage crocodile/human co-existence; rather, research and educating people are the key.

5. Misleading claims contained in the Crocodile Control and Conservation Bill 2025

There are a number of incorrect and misleading statements in the Explanatory Notes and Introductory Speech including the fact that:

The Bill's authors put a heavy emphasis on the number of crocodile sightings recorded on the Department's app as reliable evidence that crocodiles had 'infested' our rivers when these figures often include a large number of sightings of a single animal, thus inflating the overall number.

The authors have deliberately ignored the results of the Queensland Estuarine Crocodile Monitoring Program which has shown a very modest increase in the state's crocodile numbers.

The statistics used are not consistent as some figures include Northern Territory numbers when it helps the authors' purposes but these are ignored when they don't further their argument.

It is stated that Queensland has a 'fast-growing crocodile industry'. The reality is that the number of active crocodile farms have been declining in the past decade and with some of the existing farms relying on tourism offerings to remain viable.

The Bill states that "The Northern Territory crocodile industry can be easily replicated in Queensland". All the current research shows that the limited availability of crocodile nesting sites in Queensland severely restricts the annual increase and spread of crocodile populations. The lack of nesting sites also detrimentally impacts the viability of Queensland crocodile populations. The Bill assumes landholders and other members of the public will have the power to kill crocodiles on their land when no such legal right exists.

The Bill will increase the probability of crocodile attacks, not decrease it

Through our research of crocodile movements and the probability of crocodile-human interactions, the removal of crocodiles, either through trapping or culling, will instead increase the likelihood of crocodile attacks as people believe the lie that once a crocodile is removed from a waterway then there will be no crocodiles.

Research has consistently shown that when a crocodile dies or is removed, then another crocodile immediately comes in to take over that territory. Because of this reality, the Bill will not eliminate or even greatly reduce the risk of crocodile attacks.

This Bill goes beyond previous iterations by removing all reference to 'rogue' crocodiles. Previous draft legislation referred to the removal of all 'rogue' crocodiles or those which displayed threatening behaviour towards humans. Instead, this Bill proposes to establish 'zero-tolerance zones' where all crocodiles are proposed to be removed.

Crocodiles have developed over thousands of years as the ultimate ambush predators – the whole reason they have existed for so long is they have evolved to be covert and invisible in their natural habitat.

In estuarine environments, visibility is extremely limited and crocodiles are virtually undetectable underwater. Research (*The intrinsic properties of an in situ perfused crocodile heart*, Franklin & Axelsson,1994) has shown crocodiles can slow their resting heartbeat to enable them to stay underwater for periods of up to seven hours to enhance their ambush abilities.

Yet this Bill will magically identify and remove all crocodiles from large sections of our waterways, while preventing other crocodiles from entering these zones. This is also going to be achieved without any extra government resources being expended as the Queensland Crocodile Authority (QCA) has to operate within the current budget allocations of the Department of Environment, Tourism, Science and Innovation.

Our peer-reviewed and published research, some of which is attached to this submission, notes that large male saltwater crocodiles (greater than 2.5m) can travel hundreds of kilometres in the six-month breeding season from September to February in search of unattached females. (*Home Range Utilisation and Long-Range Movement of Estuarine Crocodiles during the Breeding and Nesting Season*, Campbell, Dwyer, Irwin & Franklin, 2013). The dominant males tend to remain close to their breeding females which also have localised movements. Therefore, crocodiles removed from the waterways are easily and quickly replaced by roving crocodiles in search of partners.

Terms like 'zero-tolerance zones' will engender complacency amongst Queenslanders and tourists as the expectation is that the government has removed the risk of a crocodile attack occurring as the Queensland Crocodile Authority is supposed to be vigilantly and thoroughly removing or killing all crocodiles within 48 hours over large swathes of our waterways.

The Bill also proposes to establish crocodile sanctuaries or reserves for crocodiles removed from the ''zero-tolerance zones". Translocating crocodiles presents even more danger of crocodile attacks – and not because relocated crocodiles become more dangerous as stated in the second reading speech. As our ground-breaking experiment found in 2004 that when a 4.5 metre male crocodile, was relocated from the west coast of Cape York to the east coast of the Cape, it swam back to its original location – a distance of over 400km in under 20 days. It may have made the trip quicker except it had to wait at the tip of Cape York for the prevailing currents to change in order to continue its journey.

In further research (*Predicting the probability of large carnivore occurrence: a strategy to promote crocodile and human coexistence,* Campbell, Dwyer, Wilson, Irwin & Franklin, 2014), the probability of human-crocodile contact increases between September to December, at night and during a high tide. Is the QCA going to increase their patrols in the many 'zero-tolerance zones' during these high crocodile movement times and at no increased cost to the Queensland taxpayers?

Despite tough terms like 'zero-tolerance' and 'prioritising human life', the authors of this Bill can not give any guarantees about the risk of further crocodile attacks if this Bill is implemented. It is quite telling that in the debate on a previous version of this Bill, the Safer Waterways Bill, on 2 April 2019, the Member for Hill said:

> *"It (crocodile attack) is always going to be a risk. People will always get a false sense of security and swim after crocodiles have been removed and still get taken by a croc. That is what it was like in the seventies, eighties and nineties. There was always that little bit of risk, but we didn't have to worry about seeing all these croc signs and we did not have to worry about swimming in that nice little saltwater creek. It was never a concern. That is all we are trying to achieve – that is, to bring it back so it is an acceptable risk."*

This statement is so reckless, ill-informed and dangerous on so many levels it is difficult to know where to start in order to refute it.

Why should we assume people will always swim after a crocodile has been removed? If people are clearly made aware of the risks associated with swimming in crocodile territory, no sensible person would willingly swim in "a nice little saltwater creek".

It seems the Member for Hill is more upset and worried about crocodile warning signs than the possibility of crocodile attacks.

Promising to have zero-tolerance zones and the removal of crocodiles within 48 hours of any sighting will surely only increase the false sense of security, especially when the Member for Hill admits there is always going to be a risk.

What does the Member for Hill consider to be an "acceptable risk"? Is it one death due to a crocodile attack every year or a death every second or third year? Despite all the drastic provisions for crocodile culling in this Bill, the Member for Hill concedes that more deaths are inevitable.

If this draft legislation is implemented and another death occurs, will the Member for Hill be contacting the family to say; "Sorry but the death of your son or daughter was within the acceptable limits of risk"?

Based on the evidence provided and the Member for Hill's own admission, it is clear that simply removing crocodiles will not mitigate the probability of attacks on humans continuing. The Bill proposes to kill thousands of crocodiles which will only continue to engender a false sense of security.

The best course of action is for people in crocodile territory to be "Croc-wise", reduce risk wherever possible and take sensible steps to minimise human-crocodile interaction.

6. Current population surveys show modest increase in crocodile numbers

While such highly emotive words as “infested by crocodiles” and “explosion in crocodile numbers” are included in the Bill’s supporting documentation, there is no Queensland data to justify these claims and therefore justify the need for crocodile relocation, culling or egg harvesting.

The findings from the last Queensland Government’s crocodile monitoring program from 2016-19 showed that growth in crocodile numbers in Queensland was “relatively slow and highly variable”, was “unlikely to reach the same levels as the Northern Territory due to the lack of suitable habitat” and that the rate of growth of crocodile numbers was even slower in the areas of higher human populations due to the current crocodile management program.

In some areas, according to the survey, crocodile populations seem to be stabilising and may not increase much more as the population matures and reaches equilibrium, considering the available food sources and habitat, including the limited suitable nesting sites.

Since then, the Queensland Government has introduced sensible measures, including two new offences for discarding food scraps in a way that may attract crocodiles, and for being in close proximity to a crocodile on land and increasing fines for deliberately disturbing or feeding crocodiles. These measures will help reduce human-crocodile interactions and help prevent the conditioning of crocodiles from associating humans with the provision of food.

Instead of wasting taxpayers’ funds on this Bill, regular population surveys should be carried out to monitor crocodile population trends and gain a more comprehensive picture of Queensland’s isolated and disjointed crocodile populations. This will enable further refinement of crocodile population management measures and further enhance human safety.

7. Crocodile farming and crocodile-egg harvesting

No evidence is given to support the claim that a “a significant and sustainable crocodile industry in Queensland” exists and that this Bill will create “a huge economic opportunity”, especially for Indigenous people.

If there is a huge economic opportunity, why has the number of viable crocodile farms decreased in Queensland in the past decade? This is despite these farms having access to crocodile eggs harvested in the Northern Territory and lax animal husbandry regulations and limited government oversight. It may be due to the market being flooded with product from overseas producers and the real profits being generated from producers focused on the high end of the market - not the basic croc farms or the local Indigenous communities.

I have always wondered why so much effort is put into 2% of our leather market. We are helping a few rich multinationals, not Australians. This also enables an illegal trade of crocodilians. Short of a DNA test on the leather, there is no way to tell if the leather produced is a legally processed crocodile skin or not.

This Bill attempts to place a value on each crocodile but for all the wrong reasons which will only hasten the decline in crocodile numbers.

Under this Bill, greater value is placed on a dead crocodile or one that will be hatched and spend its life in the brutal conditions within crocodile farms. I would urge Committee members to closely inspect the conditions of these farms when you carry out your consultation.

From my experience and as I have stated in previous submissions, these farms are hideously cruel. The hatchling crocodiles are kept in tiny dark boxes with loud rock music playing, 24/7. They only see daylight for a moment when they are thrown a bit of food. Apart from the "high value" crocodiles whose leather will be used to make expensive handbags for rich people – the other older crocodiles go into an overstocked enclosure with a large number of other crocs and the resultant fighting causing jaws, limbs, and parts of tails to be torn off.

The Explanatory Notes also cite the egg-harvesting trial at Pormpuraaw and, while the Queensland Government has not officially released the results of this trial, anecdotal evidence suggests that there has been little financial reward for the traditional owners tasked with the dangerous job of harvesting the crocodile eggs and it has not met any of the stated objectives to date.

The Explanatory Notes also states that: "Evidence *suggests* egg harvesting can help sustain crocodile populations rather than diminish them …"

Given the fact that there are very limited crocodile nesting sites in Queensland compared to the Northern Territory and the isolated nature of crocodile populations in Queensland, the removal of all crocodile eggs from even a small number of nests would have a large impact of the viability and genetic diversity of crocodile populations.

Critics may point to the fact that less than one percent of eggs in a crocodile nest produce a mature crocodile in the wild. However, crocodile egg harvesting of a nest will ensure there will be zero percent of crocodiles from that nest reaching maturity in the wild.

8. Indigenous landholders and 'High End Clients'

This Bill, like previous versions, includes another unsubtle move to introduce cruel hunting safaris with its reference to 'High End Clients' who can 'harvest' crocodiles. This Bill limits the safaris to Aboriginal-controlled land but the intent is the same.

Despite traditional owners having thousands of years' experience of living alongside crocodiles and hunting them for food, the reality of these hunting safaris is that the minimum requirement for the safari participants is to own a gun and hand over some money.

Even with the best of intentions, it is a recipe for disaster and will increase the number of attacks and deaths caused by crocodiles by increasing contact with crocodiles by safari shooters who have limited or no experience with crocodiles.

Additionally, any crocodiles that are injured and escape during these safaris will become more dangerous. If they are struggling to catch their natural diet due to being shot, they may become dependent on other food sources which in turn can increase the human-animal conflict.

It will also increase the unauthorised killing of crocodiles as it legitimises the killing of an animal which is still listed as Vulnerable in Queensland.

We had the recent distressing footage of a three-metre crocodile off the coast of Cape Tribulation which was filmed with a spear/arrow protruding from its head. Without any intervention this animal will likely have a slow and agonising death. With the passing of this Bill, more of these callous acts will occur.

The financial benefits of hunting safaris are also overblown in the Second Reading Speech by the Member for Hill who refers to safari hunting of Nile crocodiles and replicating this in Queensland. While there is some financial benefit for the people organising these African safaris and the whole hunting safari industry in general, a much greater economic benefit is generated by non-consumptive tourism in Africa.

Therefore, more revenue can be generated for local communities through nature-based tourism with a higher price placed on the head of each live crocodile due to the excitement and wonder of seeing a large apex predator in its natural environment.

The economic benefit of shooting a crocodile is achieved once and once only. However, the economic benefit of photographing a crocodile over its lifetime in its natural environment is achieved repeatedly, during thousands of tour events. Apart from crocodile sighting tours in north Queensland, many of the local businesses deliberately take advantage of the fact the region has crocodiles by using them in their name and/or as logos. So much for crocodiles being a drain on the local north Queensland tourism businesses, as the Member for Hill contends.

9. Legal status of native wildlife

Under federal and state legislation, native wildlife is protected from harm which means they are effectively 'owned' by the state. Further, waterways below the high-water mark are the responsibility of government.

Landholders, therefore, do not own any wildlife, especially in waterways, and therefore, have no rights to trade in their products or organise shooting safaris without substantial changes to environmental legislation and the underlying conservation intent of these pieces of environmental legislation.

The only reference to the need for these changes is a brief mention in the Explanatory Notes that states that there "may be some areas of this Bill that may encroach on the Commonwealth Environment Protection and Biodiversity Conservation Act."

The Notes then refer to previous consultation with the Commonwealth Minister who "has indicated a willingness to consider mechanisms that will ensure no conflict between this Bill and the Commonwealth Act."

Australia Zoo has checked with the office of the current Commonwealth Minister for the Environment and no assurance has been given to amend the EPBC Act 1999 (*Cth*) to ensure this Bill is compliant with federal legislation. Again, lazy, misleading and sloppy work from the authors of this Bill.

10. Role of apex predator

The zealots who drafted this Bill ignore the important role of apex predators, like crocodiles, and the effects they have on the biodiversity and the health of ecosystems. As pointed out in previous submissions, research has found in all case studies of numerous apex predators that their re-introduction into ecosystems has led to substantial improvements in the overall health and biodiversity of these ecosystems.

Predators play a key role in maintaining ecosystem integrity in terms of species and genetic composition, ecosystem functions, and long-term stability. Through a process, known as trophic cascading, apex predators in a food web suppress the abundance or alter the behaviour of their prey, thereby releasing the next lower level from predation.

Studies by the Oregon State University, over 50 years, have shown the re-introduction of the wolf has dramatically improved the biodiversity of Yellowstone National Park.

Wolves were able to reduce the populations of elk which in turn gave willows and other trees a chance to take hold along streams, cooling water temperatures for trout and encouraging the return of beaver, whose ponds host long-absent amphibians and songbirds. The Yellowstone Park example proved that damage to a terrestrial food web could be reversed and an ecosystem restored with the return of a single species.

The role of apex predators was further reinforced with research into great white sharks in False Bay, South Africa in March this year. The *"Evidence of cascading ecosystem effects following the loss of white sharks from False Bay, South Africa"* research which spanned more than two decades found the removal of the apex predator triggered significant shifts in the marine food web. The research found that, without the great white sharks keeping other predator numbers down, there was a significant decline in fish stocks.

While no definitive research has been carried out on the direct impact of crocodiles and biodiversity, anecdotal evidence has shown that, where there are healthy populations of crocodiles, there are an abundance of barramundi and other fish species.

Australia Zoo tagging of other species in the Wenlock River will provide useful insights into the health of one waterway which is "infested" with crocodiles.

11. Human safety in Northern Territory

As I have stated in previous submissions, the rhetoric in the Explanatory Notes and the Introductory Speech makes human safety as the primary driving force behind this Bill.

Supporters of this Bill will point to the Northern Territory as a defining example of why this Bill should be passed as NT crocodile management has many of the same elements of this draft legislation.

Apart from allowing croc-egg harvesting (up to 90,000 per annum), NT allows the removal or harvesting of problem crocodiles and has an extensive crocodile farming industry but failed in its bid to introduce crocodile hunting safaris due to restrictions under the federal government's Environment Protection and Biodiversity Conservation Act 1999 (something the authors of this Bill will magically fix as well). Additionally, NT allows the harvest of up to 1200 juveniles and adults. (*Management Program for Saltwater Crocodile in the Northern Territory of Australia 2024-34*).

With the potential removal of such an enormous number of potential predators, one would think the number of deaths and attacks caused by crocodiles would have fallen in NT in recent years! The opposite has happened.

There have been seven deaths in the Northern Territory in the past 10 years with the number of injuries caused by crocodile attacks also trending upwards. Large scale removal of crocodiles in NT has not reduced crocodile-related fatalities and injuries, so why repeat it in Queensland and expect a different result?

12. Lack of enforcement resources

I am also gravely concerned about the ability to police the activities outlined in this bill. Currently, the laws meant to protect endangered species are effectively enforced, even with the combined resources of Police, Fisheries and the Department of Environment. Yet, this Bill proposes that no extra funding will be introduced to monitor and enforce the proposed legislation.

After many meetings with authorities in North Queensland, it is evident that these remote regions are nearly impossible to police. This Bill will open a Pandora's Box and we will be turning the clock back to the dark and destructive days prior to the 1970s. What we have learned through science is the importance of managing crocodile numbers in a way that does not adversely affect the population, as well as managing people to stay safe in crocodile territory. We regularly see crocodiles being illegally killed with no repercussions, even with the support of a $10,000 reward for the prosecution of someone killing a croc (offered through Crime Stoppers).

13. Recommendations

1. That the current State Government funded crocodile surveys be continued and enhanced over several years to gain an accurate picture of crocodile populations.
2. That no interference with crocodile populations either through culling or egg-harvesting be undertaken based on our research conducted with UQ.
3. That State Government release the research gained from the trial into egg-harvesting at Pormpuraaw.
4. That the State Government explore and help fund nature-based tourism ventures for Indigenous communities.
5. That the State Government invest in research to explore the important role crocodiles play in creating healthy waterways.
6. That a comprehensive Croc-wise campaign be properly funded in Queensland and international tourism markets to ensure crocodile-human interactions are minimised.
7. That the Crocodile Control and Conservation Bill 2025 be rejected in its entirety as it is a piece of poorly researched and poorly drafted legislation which would increase the risk of crocodile-related deaths in Queensland.

Dr Terri Irwin AM

Director – Australia Zoo

SCIENTIFIC RESEARCH ON THE STEVE IRWIN WILDLIFE RESERVE NATURE REFUGE

Project Title	Principal Investigators	Status	Description
SALTWATER CROCODILE RESEARCH PROGRAM	University of Queensland and Australia Zoo	Active, annual	For over ten years, Australia Zoo and the University of Queensland have worked collaboratively on the world's largest and longest crocodilian study. The study involves tagging and tracking crocodiles in the Wenlock River with acoustic telemetry and GPS satellite transmitters, to monitor their behaviour, movements and physiology. These findings are critical to managing the co-existence of crocodiles and people. <u>A few of our current focus areas:</u> Nesting behaviour of female crocodiles. Movement tactics in male crocodiles. Crocodile social environments. Isotope analyses to understand dietary shifts. Home range utilisation and long-range movement of estuarine crocodiles.
PALM COCKATOOS ON WESTERN CAPE YORK PENINSULA	Rio Tinto, Australia Zoo and Australian National University	Active	Australia's largest parrot, the palm cockatoo, is now threatened with extinction alongside many other parrot species worldwide. In Australia they only live on Cape York, where they face a variety of threats. In November 2021, the Queensland government moved palm cockatoos onto the endangered list, based on an Australian National University (ANU) research program conducted over 20 years. <u>A few of the current focus areas:</u> Life history of palm cockatoo on western Cape York Peninsula. Breeding success of Palm cockatoo on western Cape York Peninsula. Hollow availability and loss for palm cockatoo in tropical northern savannah and the conservation implications. Palm cockatoo population density and size in the western Cape York Peninsula. This research complements the existing research program being run by Rio Tinto at Weipa. This program is inclusive of long-term external monitoring of hollows, trialling of artificial hollows in rehabilitation, bioacoustic call recording and in-nest monitoring of active hollows to determine breeding success.
BIOGEOGRAPHY, POPULATION, GENETICS AND ANATOMY OF AUSTRALIAN ERIOCAULON PLANT SPECIES	University of Queensland	Active	In Australia, *Eriocaulon* accounts for 34 species mainly in the Monsoon Tropics, with seven of them extending to or restricted to south-east Australia arid region wetlands of the Great Artesian Basin. Of the three main Monsoonal biogeographic regions, Cape York stands out as the least explored for *Eriocaulon* and yet showing slightly higher number of endemics and exclusive species shared with South east Asia. Recent fieldwork on Cape York (Jul 2018) has uncovered an undescribed species, highlighting the under sampling and required field investigations and collections needed across the Cape.

ACHEOLOGICAL STUDIES – THE OLD BERTIEHAUGH HOMESTEAD	The University of Queensland	Active	In 2024, archaeological surveys were undertaken at the old Bertiehaugh homestead site on the Steve Irwin Wildlife Reserve. The work forms part of a wider project to compile an inventory of the archaeology of the Reserve. This study builds on existing data about the site, compiled by archaeologists on previous visits. The principal investigators have undertaken an extensive literature review to shed insight into the history of the homestead (established in 1885), which in turn will be used to determine cultural heritage significance. Surface artefact surveys have been conducted, and small test pits excavated to collect samples for archaeobotanical studies.
ELASMOBRANCH RESEARCH PROGRAM	The University of Queensland, Rio Tinto and Australia Zoo	Active	Studies are continuing on the elasmobranch species that inhabit the Wenlock/Ducie Rivers, with a special focus on the threatened sawfish species and the speartooth shark. Rio Tinto maintains the acoustic array in the Port Musgrave area and along the coastline both north and south of the entrance to the Port. These additional receivers allows for the opportunity to monitor animals (fish and crocodiles) moving out of and into Port Musgrave.
TERRESTRIAL LASER SCANNING OF QUEENSLAND'S CAPE YORK FORESTS AND ECOSYSTEMS	Maxim Foundation	Active	The Maxim Foundation has been working on a novel measurement technique for quantifying above ground biomass (AGB) in forests using Terrestrial Laser Scanning (TLS), which captures 3D point clouds of the forest. Currently there are no carbon data plots on the Cape York Peninsula, presenting a large gap in Australia's national carbon inventory. Such closed forest areas are also very important for the biodiversity of Cape York - the extensive CYPLUS studies on the Cape York fauna, and the 2012 World Heritage nomination both described the gallery forest and closed forest patches as 'species pumps' for the Cape more broadly. This 3D information will play a key role in monitoring and understanding how terrestrial ecosystems are functioning and physically changing due to climate change.
HOME AND HOST: EXPLORING THE BIODIVERSITY AND ECOPHYSIOLOGY OF PITCHER PLANT MICROBE SYMBIOSES IN CAPE YORK'S ICONIC BAUXITE SPRING COMMUNITIES	Flinders University	Ongoing	In Australia, *Nepenthes* only occurs on Cape York and at least two species are protected on the Steve Irwin Wildlife Reserve, where they grow in and around the natural bauxite springs ecosystems. *Nepenthes* have evolved a specialised organ (the pitcher), in which they trap and digest insects as a source of essential nutrients. The pitcher digestive fluid supports a community of micro-organisms, but whether these microbes merely use the pitcher as a home or whether they also provide a benefit to their plant host remains unknown. The study will document previously undescribed biodiversity of microorganisms in the bauxite springs and identify the links between ecological community structure and function.

PREDICTING ADAPTIVE RESPONSES OF AUSTRALIAN NATIVE BEES TO CLIMATE CHANGE	Monash University	Ongoing	The '100 Bee Project' aims to identify variation in thermal tolerance and desiccation resistance in a wide diversity of native bee species spanning the full latitudinal range of the Australian continent, from Melbourne to Cape York.
TAXONOMIC IDENTIFICATION OF CAPE YORK FLORA	Australian Tropical Herbarium and James Cook University	Active	*Casearia sp*, Possum Scrub, is an unnamed and undescribed tree known only from vine thickets on the Steve Irwin Wildlife Reserve. Only three collections from wild plants exist in the collection at the Queensland Herbarium. Flowering and fruiting specimens have been collected to obtain a complete species description for publication.
A2O ACOUSTIC BIODIVERSITY SURVEYS	James Cook University and the A2O Observatory	Complete	The Australian Acoustic Observatory (A2O) is a continental-scale acoustic sensor network, recording for a five-year period across multiple Australian ecosystems. The A2O incorporates 90 sites across seven major ecoregions, including the Steve Irwin Wildlife Reserve. To date, 3.5 years of continuous audio recordings have been made from four stations on the Reserve. The data supports environmental science, including fauna survey and ecological assessment, cross-disciplinary research between ecologists, biologists and computer scientists, citizen science projects, call recogniser development, soundscape analyses, and the exploration of acoustic methods.
BIO-PROSPECTING WITHIN UNIQUE ECOSYSTEMS IN THE STEVE IRWIN WILDLIFE RESERVE	Griffith Institute for Drug Discovery (formerly Eskitis: Drug Discovery and Floristic Nature Bank)	Complete	The Eskitis team collected samples of unique flora from the Reserve that are stored as part of their Nature Bank, a collection of over 200,000 natural products from Australasia. They have undertaken various tests and screenings, in hopes some of the samples will contribute to cures for cancer and other infectious and neurodegenerative diseases in the future.
ASSESSMENT OF THE ABUNDANCE AND DISTRIBUTION OF SPECIES OF SAWFISH	Sharks and Rays Australia (SARA)	Sporadic	In 2015, Sharks and Rays Australia started an assessment of the current distributions and abundance patterns of species of sawfishes in Far North Queensland and the Cape York Peninsula. Additionally, they aim to elucidate the trophic positions and ecological roles of six of estuarine and euryhaline elasmobranchs within their coastal and riverine habitats in Cape York.
VARIOUS FAUNA AND FLORA SURVEYS	Australia Zoo, CSIRO and Queensland Museum	Ongoing, as required	Assessments and identification of the biodiversity of the Steve Irwin Wildlife Reserve, including vegetation communities, birds, mammals, orchids, molluscs, fish, insects, arachnids, frogs and reptiles.
THE MOVEMENT ECOLOGY AND HABITAT PREFERENCES OF THE ENDANGERED SPEARTOOTH SHARK, GLYPHIS	Australia Zoo, University of Queensland and CSIRO	Complete	The speartooth shark (*Glyphis glyphis)* is a poorly known euryhaline shark with a restricted distribution in estuaries and coastal waters in northern Australia and New Guinea. Due to shark rarity, small geographical range, and susceptibility to human threats, *G. glyphis* is listed as

GLYPHIS, IN THE WENLOCK RIVER, NORTHERN AUSTRALIA			Endangered by the International Union for the Conservation of Nature. The overall aim of this study was to detail the habitat preferences including use as nursery habitat, and movement ecology of *G. glyphis* in the Wenlock River, Australia, to improve knowledge of this species and to inform conservation management practices. In Queensland, *G. glyphis* is currently known only from the Wenlock and adjacent Ducie Rivers.
THE EFFECTS OF DIFFERENT FIRE REGIMES ON MICROBATS HABITAT AND ACTIVITY	University of Queensland	Complete	Fire is notably becoming more intense, frequent and widespread due to climate change. In northern Australia, inappropriate fire regimes have been implicated in mammal declines, yet nothing is known about how different aspects of fire regimes affect bats in this region. This study aimed to determine how fire intensity, associated with seasonality, affects insectivorous bats on a local scale.
ASSESSING META-POPULATION CONNECTIVITY USING CULTURAL DIVERSITY IN THE DECLINING AUSTRALIAN PALM COCKATOO (*PROBOSCIGER ATERRIMUS*)	Australian National University	Complete	Vocal dialects have been well studied in songbirds, but there have been fewer examples from parrots. The Australian population of palm cockatoos from Cape York Peninsula in far north Queensland has an unusually large vocal repertoire for a parrot. Most calls are made during their unique display ritual, which also includes a variety of postures, gestures and the use of a manufactured sound tool. This study aimed to quantify the geographic structural variation of contact calls within and between six major populations of palm cockatoos in Australia, as well as the extent to which frequently given call types are shared.
NORTHERN QUOLL PRESENCE ON THE CAPE YORK PENINSULA	University of the Sunshine Coast	Complete	Using camera trapping and remote hair collection to define the population size, habitat preferences, genetic ecology and population viability of a regional population of the northern quoll, *Dasyurus hallucatus*.
HYDROLOGY OF THE BAUXITE OASIS	University of Queensland and James Cook University	Complete	One of the world's largest bauxite deposits is located in the Cape York Peninsula, North-East Australia. Little is known about the hydrology of these remote bauxite deposits. This multidisciplinary study used remote sensing, hydrochemistry, and hydrodynamics to analyse the occurrence of several large oases in connection with the bauxite plateaus. Across this vast region, otherwise dominated by savannah, these oases are sustained by permanent springs and support rich and diverse new sub-ecosystems (spring forests) of high cultural values to the local indigenous population.

Publication List

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2. Baleeiro, P & Jobson, R 2023, 'Eriocaulon insectum, a new species of Eriocaulaceae from Cape York,' *Telopea Journal of Plant Systematics*.
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4. Cooper, W, Crayn, D, Joyce, E 2023, 'Aglaia felli W.E. Cooper & Joyce (Meliaceae), a new species for Cape York Peninsula,' *Australian Journal of Taxonomy*.
5. Barham, K, Baker, C, Franklin, C, Campbell, H, Frere, C, Irwin, T, Dwyer, R 2023, 'Conditional alternative movement tactics in male crocodiles,' *Behavioural Ecology and Sociobiology*.
6. Baker, C, Frere, C, Franklin, C, Campbell, H, Irwin, T, Dwyer, R 2021, 'Crocodile social environments dictated by male philopatry', *Behavioural Ecology*.
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9. Broken-Brow, J, Hitch, A, Armstrong, K & Leung, L 2020,' Effect of fire on insectivorous bat activity in northern Australia: does fire intensity matter on a local scale?', *Australian Journal of Zoology*, published 7 December 2020.
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