



# thylacinus



VOLUME 45 » No. 4

2021

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## FROM THE PRESIDENT Chris Dryburgh

Well, what a journey 2021 was! It has been a really difficult time for our industry and all of us in the frontline of the tourism and animal care sectors. I want to really highlight the ongoing hard work of the incredibly dedicated volunteer committee who still maintain the cogs of the ASZK even through the chaos of Covid. Yet through the weight of all these burdens, your Committee has continued to provide the same professional development opportunities to our network of Members.

Here are a few of the milestones we have achieved this year;

- We have welcomed a new Committee for the current term, with several new faces.
- We have received a field update from Kangaroo Island Land for Wildlife following our Bushfire relief package in early 2020 to assist in the time-critical recovery work conserving the Critically Endangered and endemic Kangaroo Island Dunnart.
- We have wrapped up a Region-wide Bowling for Sun Bears fundraising campaign on behalf of the Sumatran Sun Bear Team. We are still seeing funds come in from around Australia and New Zealand events, and T-shirt sales, and we will collate and announce a total shortly.
- We have just finished up a much-needed website development to host our online Membership portal.
- In November we ran with our first ever fully virtual Conference, reaching far higher attendance than had been anticipated, with over 70 people tuning in for the first session alone! The Conference, while still accepting a couple small tech glitches (mostly on my part!), was very well received, and extended the Commitment of the ASZK's Mission of personal and professional development of keepers. The virtual format of this conference can be viewed as a pilot for future years, and even with an eventual return to in-person attended events, a hybrid virtual event will see further reach and uptake.

Personally, I really want to extend a very sincere thank you, to each and every one of our Committee members, and to each of you as our Membership, for the year that has been, and the year ahead. I hope too, that we are all finding a moment to check in with ourselves, reconnecting with friends and family, and addressing the strain that compassion fatigue may have on carers in our industry, often enhanced through increased stress and challenge. In 2022, we are excited to extend our Membership through a series of Membership Drives, investigate online virtual workshops, host another successful Conference (details to be announced), another Wildlife Photography Competition, finalise electronic Thylacinus, investigate scholarships and awards, hold our annual AGM, and promote the next Bowling For campaign. Looks like the rollercoaster hasn't come to a stop yet, so 2022 promises to be anything but predictable!

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## Kākāriki karaka hand-rearing at Auckland Zoo

Catherine Francescon and Ashleigh Steele, Auckland Zoo

Kākāriki karaka, the orange-fronted parakeet, is one of New Zealand's rarest parrot species with a New Zealand conservation status of Threatened: Nationally Critical. Historically found throughout New Zealand, they are now restricted to the South Island in only a few valleys in Arthur's Pass National Park and Lake Sumner Forest Park in North Canterbury. These cavity nesters are found almost exclusively in beech forest habitat which, in most seasons (a period of high fruit production) helps to increase fecundity. Unfortunately, beech masting also contributes to an increase in pest numbers which negatively impacts wild kākāriki breeding outcomes. This, coupled with habitat loss and limited genetic diversity, places this species in a precarious position.

Intensive management and captive breeding programmes are currently the best tools we have to save this species from extinction. Auckland Zoo has collaborated in a breed-for-release program with Isaac Conservation and Wildlife Trust since 2015, each supplying zoo-bred birds to the Department of Conservation (DOC) recovery programme. Over the last six years, we have successfully bred over 40 individuals for release into the wild. In the most recent season 2020/21, we were faced with the added challenge of hand-rearing a clutch of chicks with respiratory issues.

Following a healthy first clutch, one of our reliable breeding pairs had two deaths in their second clutch. Post-mortem results on the two deceased chicks were positive for aspergillosis, a respiratory fungal infection caused by *Aspergillus* sp. The spores are ubiquitous in the environment and a bird can present with the condition if a high concentration of spores is present, or if a bird is immunosuppressed. This resulted in the decision to remove the remaining chicks for hand-rearing and treatment for potential infection. In past seasons some chick necropsy results have returned with aspergillosis being present, but for the first time this season we were able to remove surviving chicks from the nest and treat them intensively.

As these parakeets are so small (30-50g), it is not possible to test lung tissue samples to determine the presence of aspergillosis. We therefore turned to Veterinary Specialists Auckland (VSA) to utilize their CT scanner. A CT scan cannot ascertain the presence or absence of aspergillosis,



*A Orange-fronted parakeet chick in hand*

however the images can be used to determine if lung tissue appears abnormal. Knowing the history of the clutch and if the lung tissue appears abnormal on the scan, it can be presumed likely that they have a fungal infection. As these tests take time to organise and analyse, we began to proactively treat all four chicks for respiratory illness while hand-rearing. Hand-rearing of this species has only occurred once in the past at Auckland Zoo, so this presented a unique opportunity for staff to be upskilled in hand-rearing and to be involved in the treatment process.

Four chicks were removed from the nest-box at between 23-30 days old. At 23 days chicks are still covered in downy feathers but by day 30 they have developed some green plumage. The oldest chick was the most challenging to transition onto a hand-rearing formula. It was later revealed that this bird was also the only female in the clutch. The three younger chicks were readily taking the formula within a couple of days. All chicks were started on a precautionary oral course of anti-fungal medication



*Hand feeding a chick*

whilst awaiting a CT scan.

The chicks were syringe fed four times daily using Kaytee Macaw formula at 24% solids. As this commercially available formula is not a natural component of their diet, there is risk of compromised digestion. Risks can include crop stasis resulting from over feeding, feeding food too cool or not allowing adequate time for the crop to empty between feeds. Chicks are also at risk from developing yeast infections if food stays in the crop too long. Feeds started at 7am and ended with the last feed at 7pm. This provided a vital 12hour period overnight during which the chicks could completely empty their crops. We were aiming to feed the birds 60% of their body weight but struggled getting this volume of food in their crop. We speculated this was due to parent reared chicks being fed small amounts frequently, as opposed to 24hr worth of food in just four feeds.

Parent-reared kākāriki karaka chicks fledge at around 40 days. During the last week or so in the nest, chicks will be losing weight as they near their optimum flying weight. Knowing the age at which we pulled the chicks and by monitoring their weights, we could see this period of adjusting to flying was about to happen. However, we did not want to put them in a compromised state by additional stress if they were in fact suffering from a respiratory issue. Therefore, we continued supplementary feeding of the chicks to ensure they maintained a healthy weight until we had results from their CT scan, had completed

their courses of medications and had been medically cleared by the veterinary staff. This involved hand-feeding the Kaytee formula in addition to offering fruit, vegetables and seed mix which was readily eaten by all chicks.

The results of the initial CT scans showed two of the four chicks were pneumonia positive. From this point we intensified treatment for likely aspergillosis by adding a twice daily nebuliser treatment with Voriconazole and increased oral medications with the addition of an antibiotic and anti-inflammatory. Unfortunately, during treatment one of the pneumonia positive chicks began wheezing, coughing and presented with severe lethargy. The deterioration in its health in addition to an already poor prognosis resulted in the decision to euthanise. Results from repeat CT scans seven weeks later showed that the inflammation had reduced in the second pneumonia positive chick and were now normal. Treatment for this chick continued for a further 10 days, while the other two chicks stopped medications two days after the scan results. Ten days later during a dry weather spell, the three chicks (who had now completed their respective courses of medications), were moved from small hospital housing at the veterinary department to a larger, planted outdoor aviary. The juvenile kākāriki will stay here until they are released into the wild population this coming summer.

Aspergillosis is and will continue to be present in the environment. As a result of these recent cases we are





*Orange fronted parakeet chick undergoing a CT scan*

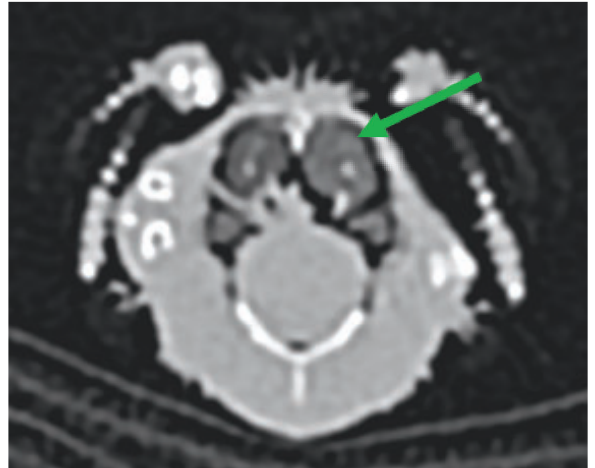
looking carefully at our management of this species, to determine if there are any steps in our husbandry that could be adjusted to minimise potential infection. To date, all prior chicks that have presented as positive for aspergillosis have been parent reared in a nest box. Parents of these chicks were not affected. We have investigated potential triggers including nest boxes (nesting material and internal environment), aviary substrate, food source/presentation and external stressors that could be contributing to the development of aspergillosis.

Future mitigation plans for this coming season and beyond involve intensive management of active nests, where we had previously taken a largely hands-off approach. Plans include weekly nesting material changes and more frequent health checks on chicks (including administering preventative aspergillosis treatment). Cameras will be installed in all active nests to allow remote and frequent observations of nestlings. We will also intensively manage all aviaries; changing substrate surrounding food sources and refreshing it regularly. Potential external stressors like domestic/stray cats moving outside aviaries will be investigated and if confirmed, mitigated by installing electric fences and/or a movement activated sprinkler system around the aviaries.

Much is still to be discovered as to when and why aspergillosis presents in some birds and not others in the same environment. Minimizing stressors and opportunity for *Aspergillus* to thrive is currently our strongest management technique.

***Explanation of CT findings.***

**IMAGE AND ANNOTATION BY: DR. SOPHIE DENNISON-GIBBY BVM&S DACVR**



This is a 2-dimensional image taken from the computed tomography study of one of the affected Orange-fronted parakeet chicks. This image provides a cross-section view through the body at the level of the lungs.

Green arrow: mild asymmetry between the left and right sides with increased attenuation (more white) on the left lung (right side of the image). This indicates less air is present and suggests infiltrates (i.e. infection/inflammation) within the lung. Computer software is used to measure the density of both lungs accurately and thus provides evidence of the difference in densities.

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# Investigating The Effect Of Social Setting On The Behaviour Of Red Panda

*Andrew Hardie, Auckland Zoo*

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## ABSTRACT

The Red panda (*Ailurus fulgens*) has long been a popular species in zoological institutions due to its appealing appearance and reliable visibility, and its adaptability to zoo environments. From a conservation perspective, zoo populations serve an important role in increasing public interest in the species, supporting conservation efforts, and maintaining a genetically diverse assurance population. Auckland Zoo in New Zealand has a long history of maintaining red pandas and currently houses four adults. In the wild, Red pandas are mostly solitary and rarely interact outside of breeding season however, due to limited space and resources it is sometimes necessary for zoological institutions to house red pandas in group settings.

Recently we observed one of our female Red pandas exhibiting some abnormal behaviours - over-grooming of limbs and spending an unusually large amount of time in her nest box. After consulting with relevant experts and undergoing a full health check we were able to rule out any related medical conditions and hypothesised that these behaviours might be caused by environmental stressors. As long-term exposure to environmental stressors can have significant consequences for the behaviour and health of animals, identifying and mitigating these stressors is imperative in maintaining an acceptable level of welfare in zoological settings.

This project investigated whether sharing the enclosure with a conspecific may be a potential catalyst for the abnormal behaviour observed. Instances of over-grooming and avoidance behaviour (time spent in nest box) were recorded and compared between the shared enclosure and after transfer to a more natural solitary setting.

Observations showed significantly reduced occurrence of over-grooming ( $p < 0.001$ ) and significantly less time spent in the nest box ( $p < 0.001$ ) after the panda was moved to a solitary setting. These results suggest the prevalence of the stress-related behaviours exhibited was influenced by the presence of a conspecific.

These behaviours have not previously been recorded to

this extent amongst other Red pandas at Auckland Zoo, therefore it is likely individual personalities determine how they react to different environments and situations. This study highlights the importance of considering individual personalities when making management decisions and how developing an understanding of behavioural patterns can help determine management strategies that benefit the health and welfare of individuals.

## Introduction

The Red panda (*Ailurus fulgens*) is a small arboreal carnivore native to the temperate forests of the eastern Himalayas and southwestern China.<sup>6,7</sup> In the wild, Red pandas are mostly found in solitary settings and although the territories of individuals often overlap, they rarely interact outside of breeding seasons.<sup>4,7</sup> The Red panda has long been a popular species in zoological institutions due to its appealing appearance and reliable visibility, and its adaptability to zoo environments.<sup>21</sup> From a conservation perspective, zoo populations serve an important role in increasing public interest in the species, supporting conservation efforts, and maintaining a genetically diverse assurance population.<sup>9</sup>

In modern zoos, animal welfare is a key priority, and four key factors are often used to assess the welfare state of an animal (environment, behaviour, nutrition, and health).<sup>8</sup> Regular evaluation of these key factors allows us to make husbandry and environmental changes that better reflect the needs of individuals.<sup>8</sup> In captivity, environmental factors such as group structure, climate, noise levels and enclosure size often do not reflect what an animal experiences in its natural environment, if left unmanaged these may result in long-term exposure to environmental stressors which can have significant consequences for the behaviour and health of captive animals.<sup>8,10</sup> Identifying and mitigating these stressors is imperative in maintaining an acceptable level of welfare in zoological settings.<sup>8,19</sup> Often, the most effective way of assessing an animals overall health and wellbeing is through behavioural monitoring.<sup>19</sup> Animal behaviour such as stereotypies or abnormalities, can be indicative of an animal experiencing health, nutrition or husbandry related issues, or if they are situated in an appropriate social environment.<sup>19</sup>



Auckland Zoo in New Zealand has a long history of maintaining Red pandas and currently houses four adults. Recently, we observed one of our female Red pandas (Khela) exhibiting some abnormal behaviours (over-grooming of limbs and spending an unusually large amount of time in her nest box). After consulting with relevant experts and undergoing a full health check we were able to rule out any related medical conditions and hypothesised that these behaviours might be caused by environmental stressors. Increased abnormal behaviour, reduced exploratory behaviour and increased hiding can all be indicators for chronic stress.<sup>12</sup>



Figure 1. Presence of wet, matted and discoloured fur patches indicating over-grooming.

Grooming is an important behaviour that serves a variety of functions across a wide range of taxa. Although primarily used for hygienic purposes, grooming serves additional functions including, stimulation of the skin, thermoregulation, chemo-communication, social interaction, de-arousal, and stress reduction.<sup>15,17</sup> Low stress grooming generally occurs during the transition between a resting state and active state, and is characterised by a methodical and relaxed approach.<sup>14</sup> In Red pandas, natural grooming behaviour is mainly focussed on the forepaws and generally occurs while they are in a tree

shortly after waking or eating.<sup>14</sup> Stress related grooming however, is often characterised by frequent and chaotic activity, and may be used as a way to cope with stress or anxiety.<sup>17</sup> In Red panda, grooming has been identified as a potential indicator of tension or anxiety and may also be used as a strategy to mitigate stress.<sup>1</sup>

Behaviours such as avoidance and hiding can be indicators of fear and stress.<sup>12,16</sup> In wild animals, fear and stress plays an important role in allowing them to avoid predators and other potentially harmful situations but in a captive setting, where animals are free from predators and other dangerous situations, fear and stress can indicate the presence of other environmental stressors, where prolonged exposure can lead to chronic stress and negative welfare states.<sup>12,16</sup>

Husbandry guidelines for captive Red panda recommend that individuals be kept in monogamous pairs or in a solitary setting.<sup>4,5</sup> However, due to limited space and resources it is sometimes necessary for zoological institutions to house Red pandas in group settings. At Auckland Zoo, we have previously grouped multiple females together without any major behavioural issues. At the time of this study, Khela shared her enclosure with her adult daughter Dalha.

Group size and arrangement can have a significant impact on behaviour, welfare and breeding success of individuals. In captive settings, group arrangements can be more flexible in comparison to their wild counterparts due to the absence of environmental factors such as predation and competition for food.<sup>13</sup> However, incompatible groups within a captive environment can have a negative impact on animal welfare, increase stereotypical behaviours and Reduce reproductive success.<sup>20,21</sup> Previous studies of different reproductive Red panda group arrangements found that successful breeding occurred in monogamous and polygamous arrangements but not in polyandrous arrangements.<sup>20,21</sup> Within the polyandrous arrangement, the female spent most of her time hiding and avoiding courtship, as a result, no offspring were produced.<sup>4,20,21</sup> Sexually mature males have been found to fight and compete for territory when housed together, even in the absence of a female.<sup>4,2</sup> These studies suggest that although captive group arrangements can be more flexible than what is found in wild populations, welfare and reproductive success can be compromised if individuals are housed in incompatible group settings.

This project investigated whether sharing the enclosure with a conspecific may be a potential catalyst for the abnormal behaviour observed in Khela.





Figure 2. Khela inside her nest box.

## Methods

This project focussed on an adult female Red panda (Khela) housed at Auckland Zoo, New Zealand. Khela was born at Hamilton Zoo, New Zealand in January 2014 and was relocated to Auckland Zoo in September 2017 where she was paired with a sexually mature male red panda as part of Auckland Zoo's breeding program. At the time of the study, Khela was housed with her youngest offspring, a female Red panda named Dalha who was born in December 2019. Keepers first noticed Khela exhibiting abnormal behaviours in August 2020 and this study took place over an 18 week period from March – July 2021.

Observations were made three times a day at each of the regular feed times (between 8-10am, 11-1pm and 2-3pm). At each observation time, keepers recorded whether she was inside her nest box at time of arrival and if there were any signs of overgrooming (i.e. fresh wet patches on fore limbs or hind limbs). After an initial set of data was collected from the group setting, Khela was relocated to a solitary setting and after weeklong settling period, observations continued. All

data was recorded using the Care and Welfare module available in ZIMS.

The data obtained in this study was analysed using Microsoft Excel. To compare the grooming behaviour and amount of time spent in the nest box between the group setting and solitary setting, a general analysis of variance (ANOVA) was used where social setting was used as an independent variable and the behavioural measures were used as dependent variables.

## Results

Total time spent in the nest box significantly differed between social groupings. Khela spent significantly less time in the nest box while in a solitary setting compared to while she was grouped with a conspecific ( $p < 0.001$ ). Similarly, grooming behaviour was significantly reduced while in a solitary setting compared to the group setting ( $p < 0.001$ ).



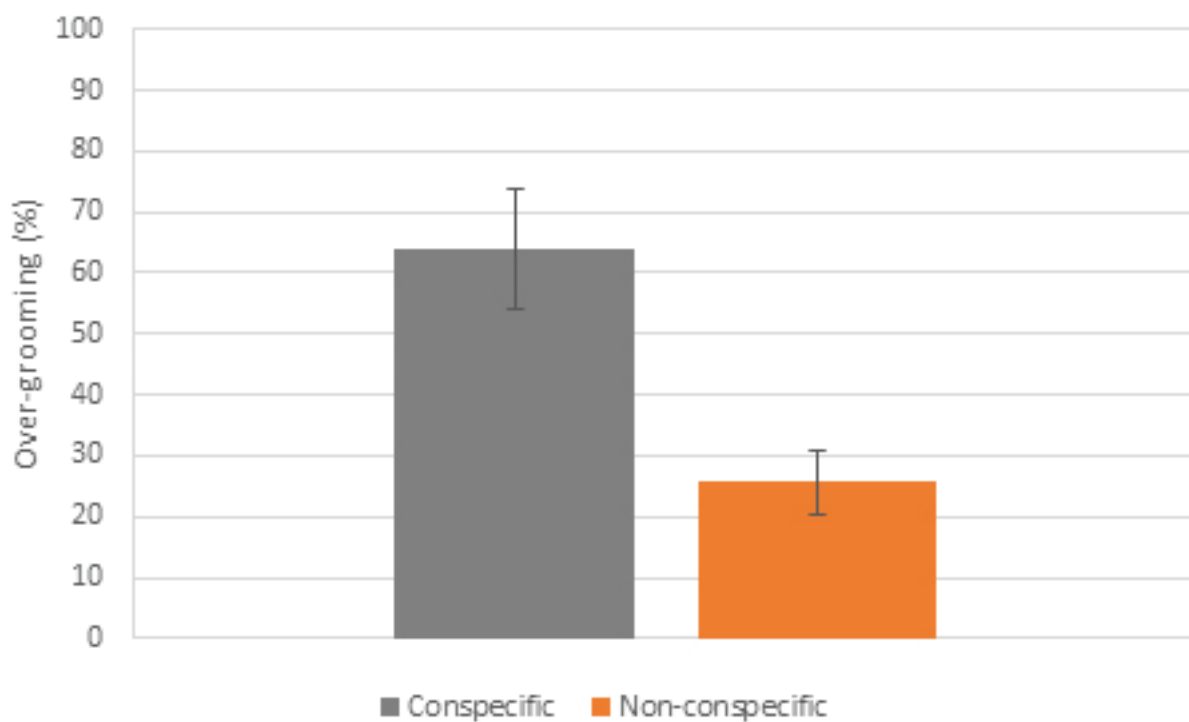


Figure 3. Percentage of observations where evidence of over-grooming was present between the two different social settings. Error bars show standard error.

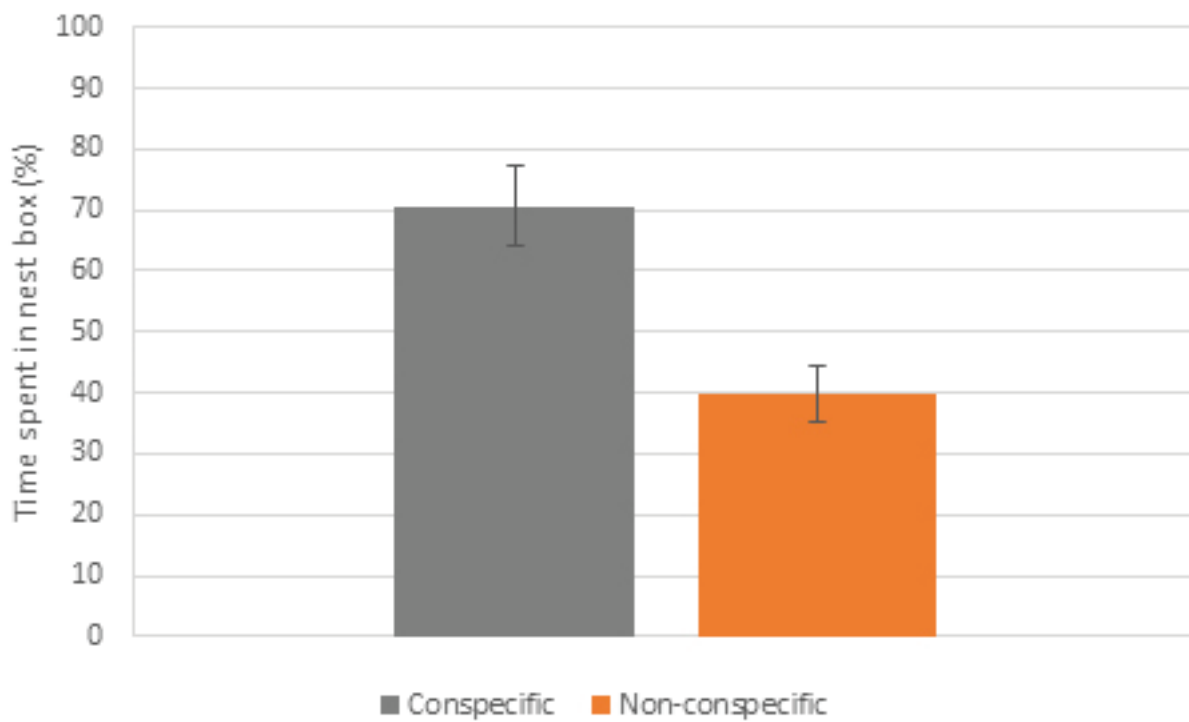


Figure 4. Percentage of day spent inside the nest-box between the two different social settings. Error bars show standard error.

	Conspecific	Non-conspecific	P-value
Time in NB (%)	70.7 ± 6.47	40 ± 4.58	<0.001
Over-grooming (%)	64 ± 9.80	26 ± 5.26	<0.001

Table 1. Effect of social setting on stress related behaviours.

## Discussion

After moving Khela to a solitary setting, the time spent in the nest-box and over-grooming was significantly reduced, suggesting that the abnormal behaviours were stress related and that the prevalence of the stress related behaviours were influenced by the presence of a conspecific. However, an animal's behaviour is not dependent on any one factor but rather is affected by a combination of many environmental, social, nutritional and health related factors, it is not clear how much of an effect the presence of the conspecific has on the stress related behaviours as other environmental factors may have differed between enclosures.<sup>12,19</sup> Additionally, as the stress-related behaviours were not completely removed, it is possible that other stressors remain, although studies have found that stress related behaviours can persist even after the cause has been removed.<sup>11,18</sup> There are numerous other potential stressors that may adversely affect animals in captivity including exposure to unnatural sound and vibrations, temperatures that exceed their natural range, limited space, reduced feeding opportunities, and forced proximity to humans.<sup>12</sup>

It is difficult to identify individual stressors as there is considerable variation in the behavioural and physiological responses to particular stressors and effects of individual stressors can vary greatly between individual animals of the same species.<sup>12,19</sup> Understanding a species natural history and an individual's life history can help us identify and manage sources of stress in a captive environment.<sup>12</sup> Further research is needed to investigate if additional environmental stressors may be having an impact on Khela's behaviour and welfare. These behaviours have not previously been recorded to this extent amongst other Red pandas at Auckland Zoo, this suggests that levels of tolerance and adaptability to their environment differs between individuals, and individual personalities determine how they react to different environments and situations. Therefore, understanding differences in personality and behavioural patterns between individuals is vital in assessing animal welfare and can provide key information about individual's response to changes in their environment.<sup>19</sup> Individuals that exhibit abnormal behaviours are likely to require management plans that are specifically tailored around their personalities in order to achieve positive welfare

outcomes.<sup>19</sup> The ability to assess behavioural patterns in captive individuals can provide insight into the health of individuals and can help determine management strategies that will benefit the health and welfare of individuals.<sup>1,3,19</sup> In this study, it is evident that Khela's individual behavioural patterns indicated that she was housed in an incompatible group setting and by moving her to solitary setting, her overall level of welfare was improved.

Although group arrangement in captivity can be flexible, it is recommended that captive Red pandas be kept in monogamous pairs or solitary.<sup>4,21</sup> If it is not possible to follow these recommendations, other group arrangements are possible but the personalities of the individuals must be taken into account and the behaviour and health of the individuals must be closely monitored to ensure that welfare is not compromised as a result of the unnatural group arrangement.

Maintaining positive welfare in zoos is vital for not only the health and wellbeing of captive animals but also for creating a positive visitor experience.<sup>16</sup> Studies have shown that positive visitor experience helps facilitate learning and increases support for the conservation goals, allowing zoos to be better placed on delivering their conservation and animal welfare goals.<sup>16</sup>

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## ICZ 7th Congress – Call for Papers

The 7th Conference of the International Congress of Zookeepers will be held in Barcelona and hosted by the Barcelona Zoo. You are invited to submit an abstract to present a paper, poster or workshop related to animal husbandry under human care, which focuses on developing animal keeper skills and zoo practice that includes, but is not limited to, sustainability, conservation, safety, husbandry, enrichment, welfare, ethics, training or habitat design. Please send a short description of the poster, paper or workshop along with an explanation of your expertise in this area.

Abstracts for oral and poster presentations should be written in English or Spanish, and be no longer than 600 words in MS Word® format. This event will be bilingual in Spanish and English, and presentations can be held in either language.

Note: if your paper is accepted, it must be submitted in full by the 4th June 2022 to be included in the proceedings. Failure to submit the paper on time will result in your presentation being removed from the program.

Please put 'ICZ Abstract' in the subject line and send to: [papers@iczoo.org](mailto:papers@iczoo.org)

Estimated attendance is 200 animal care professionals from at least 20 countries.

Deadline for abstracts is 4 April 2022.

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# ‘WHEN THE SANCTUARY COMES ALIVE AT NIGHT

*Claudia Schaumann, Animal Keeper and Night Tour Guide*

## MOONLIT SANCTUARY

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Guiding night tours at Moonlit Sanctuary is one of my favourite parts of my job, which I have done for almost seven years now. The experience of a night tour at Moonlit Sanctuary is magical and helps people directly connect to otherwise mostly unknown wildlife in their natural nocturnal environment. As a night tour guide, I can bust common myths, educate people about our conservation programs, and give visitors a ‘once in a lifetime’ experience.

Moonlit Sanctuary Wildlife Conservation Park is situated in Pearcedale on the Mornington Peninsula, just about an hour southeast of Melbourne. It is a family-owned business and has been open to the public since 2001. Up until 2007, it was only open for a special guided night-time experience, which is where the sanctuary got its name from. For the Founder and Director Michael Johnson, this was a childhood dream come true, where visitors could see and experience some rare and unusual Australian animals up close in their natural habitat.

Visiting the sanctuary on a guided night tour is a unique and unforgettable experience, very different to coming during the day. The night tours start after dark between 7:00pm and 8:30pm, depending on the time of the year, and run for about 1 ½ to 2 hours. The groups are kept small with a maximum of 16 visitors. Night tours are offered year-round and are available on all Wednesday, Friday, Saturday, and Sunday nights and on every night during Victorian school holidays. They must be pre-booked, and private night tours are also available. For the tour, visitors are provided with wallaby pellets and small solar-powered lanterns.

During the night tour visitors learn about endangered species and the conservation and breeding programs at Moonlit Sanctuary. The experience includes many different species from wombats, koalas, kangaroos, wallabies, pademelons, owls, dingoes, Tasmanian devils to tiny feathertail gliders, potoroos, and yellow-bellied gliders as well as a close-up encounter with a python. Unlike visiting a zoo and standing in front of a display of animals, here at Moonlit Sanctuary people can interact with wildlife directly. Getting to be up close and personal with the animals is something many people would otherwise never have the chance to do, which makes this



*A guest meets a glider*

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experience so special to our visitors.

Often the first moment of awe for visitors is when we enter through the gate and they are greeted by some of our free roaming kangaroos and wallabies. The friendly Kangaroo Island kangaroos (*Macropus fuliginosus*) and Eastern Grey Kangaroos (*Macropus giganteus*) are first in line to be hand fed by visitors, followed by some of our smaller macropod species like Red-neck wallabies (*Macropus rufogriseus*) and Tammar wallabies (*Macropus eugenii*).

The koalas (*Phascolarctos cinereus*) can be seen at night when they are most active, munching on their favourite eucalyptus leaves. A common myth is that they do get ‘high’ from eating the eucalyptus. I explain that eucalyptus has tannins in it that are toxic for most other animals and humans, but the koalas’ digestive system has adapted to their specialised diet to detoxify the poisonous chemicals in the leaves. Eucalyptus leaves are very fibrous and low in nutrition and that this is the reason why koalas are not very active. They are conserving their energy by sleeping for up to 20 hours per day. One of the most memorable visitor interactions I have had on my night tours was a visitor asking ‘Koala? Is this the animal that can give me the ... the syphilis?’. Suppressing a giggle, I acted professionally and told them it was chlamydia (*Chlamydia pecorum*), which is a different strain to the human one. I explained that koalas can catch chlamydia the same way that people do, but it is not a zoonotic disease and therefore not transmitted from koalas to humans. The relief on their face was priceless.





*Kangaroo meet and greet as part of the night tour*

Our two Tasmanian devils (*Sarcophilus harrisi*) are very noisy when it comes to dinner time. People's eyes widen and they hold their breath when I throw in pieces of rabbit for the sisters 'Tim Tam' and 'Little Kim'. Visitors can experience what it is like when they run up and grab a piece and drag it away or when they sit at the window to eat it by crunching on bones. A truly spectacular moment is when the devils display their ferocious vocalisation from snorts, barks or chuffs to a monotone growling that can develop into blood-curdling screeches, or when they play a game of tug-o-war with their food. The feeding of the Tasmanian devils at night is something that most visitors would otherwise never be able to see. People are mostly surprised that they are unlikely to encounter or be attacked by this shy animal in the wild.

Another highlight of the night tour for any nature lover is when we enter one of our main night enclosures with a mixed species display of endangered gliders and nocturnal birds. The calls from 'Groot', our Tawny frogmouth (*Podargus strigoides*), and the pair of endangered Bush-stone curlews (*Burhinus grallarius*) can sometimes be heard from a far distance. This always gives me a perfect chance to explain that our curlews are successfully breeding here at Moonlit Sanctuary and their chicks will go into a release program. I also love seeing visitor's surprise and wonder when they learn that the Tawny frogmouth is not an owl, but a species of nightjar, and can catch moths with its beak. On approaching the enclosure most Squirrel gliders (*Petaurus norfolcensis*) and the Yellow-bellied gliders (*Petaurus australis*) 'Shy' and 'Tally' are highly active, climbing around the perches and the fences. Both have successfully bred this year and their offspring are just about to leave the pouch to join the night-time experience. When I take the tour to their enclosure, the gliders are all ready for their nectar feed. Visitors can enter the enclosure and interact with them by gently touching/patting them, they can feel the softness of their fur while the gliders are foraging on the nectar from

a bowl that is hung up on the fence. They learn about how the Yellow-bellied gliders incise (bite) in the bark of eucalyptus trees to access the sap, often in a V-shaped scar.

I have found that overseas visitors take a lot of memorable experiences from the guided night tours, and I have received countless instances of feedback saying how much the tour broaden their knowledge of Australian wildlife, past just kangaroos and koalas. Visitors have said they see animals that they never knew existed, like the endangered Spot-tailed quoll (*Dasyurus maculatus*). Many also have joyously told me that they had learned so much more about this

carnivorous marsupial that they'd previously mixed up, such as thinking a quoll is a quokka or a quail.

I delight in informing them about the lesser-known animals at our sanctuary, such as the 'rat kangaroos' which they can see in our walk-in enclosure. The Long-nosed potoroos (*Potorous tridactylus*) and a Rufus bettong (*Aepyprymnus rufescens*) delight visitors in a close-up experience and many are fascinated by seeing a group of these small ecological engineers in action when they are having their night feed. I like to use this opportunity to educate about conservation, and many visitors are saddened to learn that the bettong is extinct in the wild here in Victoria. However, they truly understand the importance of saving endangered species when learning these facts whilst being so close to one here at Moonlit Sanctuary.

One of the most rewarding parts of my job is to educate visitors about the animals and teach them about the threats they face in the wild. They learn that introduced species like foxes or feral cats are significant driver of species extinction in Australia and that habitat destruction and habitat fragmentation have a major effect on our biodiversity. People learn how they can help our native wildlife by supporting conservation programs. People who do not know anything about these animals before they came through the door leave with a connection to them that lasts a lifetime, whilst coming out educated and better informed about all the species they encounter. Lots of amazing connects between animals and visitors happen on a magical lantern lit night tour when the sanctuary comes alive, and this is what makes the night tours so special.

## Martin Boland and Jenna Hollamby Perth Zoo on Volunteering for Madagascar Fauna and Flora.

For World Lemur Day Jenna and I were approached by Perth Zoo media team to talk about our time volunteering for Madagascar Fauna and Flora (<https://www.madagascarfaunaflora.org/>). With Covid-19 restricted travel for the past year and a half, keepers have been confined to Australia shores and unable to participate in conservation overseas. With borders slowly starting to open, Jenna and I thought this was a great opportunity to talk about our past volunteering to inspire people to get back out there and contribute.

- **When did you go to Madagascar?**

18 November to 16 December 2017

Volunteering from the 5 December to 14 December

- **What inspired you to volunteer?**

**Marty** - I had just started at Perth Zoo. Jenna had asked if I wanted to go to Madagascar with her, and she wanted to volunteer while we were there. When I discovered that Perth Zoo supported Madagascar Fauna and Flora who are associated with Parc Ivoloina, it excited me to be able to see first-hand where the funds raised at Perth Zoo go to help overseas. Looking further into the park I was inspired about how many research projects that they are participating in. I was also inspired that such a small zoo out in the middle of nowhere were contributing to regional breeding program for Critically Endangered lemur species.

**Jenna** - I had wanted to go to Madagascar for such a long time, to see lemurs in the wild and to also travel around and explore. Working with animals and having a passion for nature and conserving the natural world of Madagascar is a 'must see', so I always wanted to travel there to check it out. Working with animals, where possible I like to combine holidays with work to get a real feel for the country and the wildlife I have come to see there. I worked with lemurs at my previous place of work and also at Perth Zoo, so I wanted to learn more about the lemur species and learn about their plight in the wild to be able to better pass on their story to people.

- **What did you do there?**

**Jenna** - We travelled around on a wildlife tour for a few weeks, and then volunteered with Madagascar Fauna



*Marty Boland (left) & Jenna Hollamby (left), before night safari looking for nocturnal lemurs. Taken by Marty Boland November 2017*

and Flora Group for a couple of weeks. We travelled around in a bus which was really fun and went to lots of national parks and covered quite a bit of ground, getting everywhere but the west coast and far south. Most of the wildlife is endemic to Madagascar so it was a different world with animals that I will never see anywhere else in the world. Once we got to Parc Ivoloina, which is run by Madagascar Fauna and Flora Group, I conducted behaviour observations on a blue-eyed black lemur (*Eulemur flavifrons*) and her newborn infant to ensure their health as they had seen previous deaths and they wanted to ensure that the infant was healthy and showing all of behaviours of a strong growing individual and that her mother was not neglecting her. The blue-eyed black lemur is Critically Endangered, so every individual counts.

**Marty** - We were offered a few different projects that they needed help with at the park. One of my passions is animal enrichment. I helped with setting up a managed enrichment schedule for a lot of the lemur species. As well as suggesting enrichment ideas for some of the reptile species housed at the park. This was quite hard as only one person spoke broken English and he worked part time as a keeper and part time as a teacher in their education centre. I explained to the best of my ability items such as smeared banana in pinecones for species like Aye-aye. This was so they could utilise their long finger to scrape out the banana, in the manner they find and eat grubs in the wild. For the reptiles I used rope to make a clothes-line through the exhibit. And pegged lettuce/cabbage leaves for the radiated tortoises to eat. Lemurs are a very scent-based species. I explained how utilising perching from one exhibit to another or using perfumes to spray in the exhibits could be used instead of always relying on food-based enrichment.



• **How did that experience shape you as a Zoologist and conservationist?**

**Marty** - As a zookeeper the whole experience shaped me in a way I did not even expect. It gave me an insight into how lucky we are as keepers, as we have access to so many resources to assist us troubleshoot when we have issues. Simple things, such as using plastic bottles and cardboard boxes for enrichment, are hard to come by but in Australia we often have them donated and are free. In Madagascar plastic bottles are a much sought-after commodity. This meant we could not use these items for enrichment, which I found strange. It showed me how much we take certain resources for granted. It tested my knowledge of the species at the park, to try and utilise resources growing in the park, such as cinnamon for scent-based enrichment.

As a conservationist it was the first time, I had ever worked directly with species that had been affected by certain cultural superstitions. In Madagascar local people believe that having a radiated tortoise in their garden will stop people from breaking into their homes. This was so hard while travelling around seeing a species that are critically endangered being kept poorly as good luck charms.

**Jenna** - Madagascar to me was completely different to anywhere that I have travelled before, it was both exciting and heartbreaking to see how easy it was to find some of these critically endangered species as the extent of the deforestation is huge. Seeing lemurs of all different size and shapes from being 30 g to 9 kg, they are such a different species-group. I have such a respect for them as a species, how amazing they are, and being a part of the conservation of these primates is something I am very passionate about and want to contribute further to in the future.

• **What do you want people to know about Lemurs and their plight?**

**Marty** - I want people to know how special these animals are. They are found in one small part of the world, and cover so many different habitats. They can range from the size of a small child down to a tiny mouse. They have the only species of primate in their family group that has a row of nipples and hides their young while they go and forage. If you ever want to know how amazing they are Google the call of the Indri, I've never been more in awe of an animal than that moment of my life.

**Jenna** - They are so unique and endemic to Madagascar that it is vital to ensure the habitat protection, for species such as the Indri. They cannot be kept in captivity as they typically do not last longer than a year. There are a lot of



*Adult female and juvenile blue-eyed black lemur Eulemur flavifrons. Taken by Marty Boland November 2017*



*Marty Boland making enrichment from resources found in the park. Taken by Jenna Hollamby November 2017*





*Radiated tortoise  
Astrochelys  
radiata with  
enrichment  
activity. Taken  
by Marty Boland  
November 2017*

specialised lemur species as well, such as bamboo lemurs which can only survive in certain areas of forest, only in Madagascar so their plight relies on everyone caring not only about them but the habitats they live in.

- **In your own words, how can people help Lemurs (could be about sustainable and ethical tourism practices etc.)**

**Jenna** - Always be a conscious tourist when we can travel again, never have photos with a lemur or any other wildlife, and do not eat, stay, or participate with any hotels or restaurants that keep lemurs. Every person counts and by you standing up and making a difference you encourage and inspire others to do the same, then you as one person can stand with many others for the same cause. Overall increasing the knowledge and talk around lemurs would help them, so many people don't know them or how fascinating they are. There are over 100 (est. about 112) species of lemurs, and they are the world's oldest living primates. They live nowhere else in the world apart from Madagascar so increasing their profile and the threats that make around 98% of lemur species endangered will go a long way to helping them.

**Marty** - Once the world opens again go to Madagascar, participate in sustainable ecotourism. If you can

get up close and hold a lemur, you will most likely be participating in unsustainable tourism. Lemurs unfortunately are taken from the wild for the illegal pet trade. As someone that went to national parks and saw lemurs in the wild, if you're quiet and still they will come very close to you. That experience will be a thousand time more special than any paid experience. You can also support organisation such as Madagascar Fauna and Flora, by coming to Perth Zoo and doing a lemur behind the scenes tour. You can also meet the ambassador species teaching the public about the plight of their wild cousins.



*Greater bamboo lemur Prolemur simus family eating bamboo.  
Taken by Marty Boland November 2017*





• MEET AN ASZK MEMBER •

## Suzanne Szabo

WERRIBEE OPEN RANGE ZOO

**How long and whereabouts have you worked within the zoological industry?**

My career in the zoological industry started on a day back in April 1994 when I volunteered for Werribee open range zoo at the Werribee fair. A week after that day I was offered a position as a casual safari guide. For fifteen years I worked in the safari guide department, starting as a casual then becoming part time and then went on to manage the department for eight years. During that I did dabble in zoo keeping . I moved across to zookeeping permanently in 2009. I have always worked at Werribee Open Range zoo.

**What is your favourite animal and why?** It is no secret I love my cats. At home my favourite animal is my beautiful Burmese girl Moana but I have always loved the cheetah. There is something about the cheetah that is different to all the other cats, maybe it is their appearance and their behaviour, it is hard to pinpoint exactly. Since I have been a keeper I have had the privilege of working with the beautiful cheetah Kulinda and being one of her regular servants. I also now have a love for Servals as I work very closely with them and love their intelligence and again their athleticism.

**What is your favourite thing about Werribee Open Range Zoo?** My favourite thing about WORZ is the people. Every team member is passionate about conservation and playing their part in spreading the message to everyone, whether they are keepers, horticulture staff, works section or those working in the visitor service side work closely together

**What changes or improvements would you like to see in zookeeping?** Since I have started working at the zoo I have noticed the changes in animal welfare and how it has progressed for the animals improved lifestyle. I hope this continues and that in the future each animal considered for the zoo collection be assessed for its suitability and that zoos address all their welfare needs. Zoos need to lead by example to the public in animal welfare

**What is your greatest achievement thus far?** I don't know if this my greatest achievement but I feel proud to have been a part of this example. A few years Kulinda, the cheetah, had a lot of undigested food in her faeces on a regular basis. Our vets were reluctant to do an anaesthesia on her so they asked us to see if we could train her for a blood drawer from her tail without sedation. A Chute was set up for the training so that if the cheetah wanted to leave at any point of the session she could. For one of the training sessions I invited one of our vets to come and assist the training. Kulinda was already quite comfortable with being clipped and having a blunt needle used on her tail so she was ready for the next step of an actual needle being used. What was just going to be a training session ended up actually being a blood draw as Kulinda remained calm with our vet taking blood. It was an achievement that in just a manner of weeks we could take a blood sample with the cheetah remaining calm and allowing the vet to take the blood

**What is your most memorable experience with wildlife?** Many years ago I had the chance to go on a trip to Africa and visit Namibia and stay at the Okaukuejo waterhole. One of the most memorable wildlife experiences was sitting at the side of the waterhole at night, which was floodlit, and watching elephants, giraffe, zebra, a variety of antelopes and black rhino coming in for a drink. I sat there for hours mesmerised by all the variety of animals that came to visit

**What is your most embarrassing zoo moment?** Where do I start, after 27 years in the industry there are many. The servals I work with are hand raised and are not on public display. We do a presentation/talk with them where we walk the serval to the presentation area and then talk through a microphone to the public. We have a safari guide who assists us with the presentation, their duties being letting people into the enclosed space and giving an introduction and a summary at the end. At the end of the presentations I often go around to the visitor entry once I have returned the serval back home. One day I went around to see the guide and he looked at me and burst out laughing and said I forgot to switch my microphone. The visitors got to hear me greet the other serval and chat to her, the guide said he held it together during this but he said he could not stop laughing when he then heard me say "how are you scrunchmuffin" (This is my nickname of one of the servals). He said he could not talk after that and just opened to let the visitors out



## • ASZK • NEW MEMBERS

*The ASZK Committee  
would like to  
welcome the following  
new members*

### FULL MEMBERS

KELSEY ENGLE  
Port Moresby Nature Park

CHLOE RICHARDS  
Sydney Zoo

ASHLEY WOMBEY  
WILDLIFE Sydney Zoo

ADAM CAMPBELL  
Featherdale Wildlife Park

RAYMOND STEPHENS  
Billabong Sanctuary

KATHERINE JONES  
Zoos Victoria

SOFIA MACHADO  
WILDLIFE Sydney Zoo

SAMANTHA JUENE  
HamiltonZoo

DAN KEMP  
Cairns Zoom & Wildlife Dome

BRYAN HUEY  
Rainforestation Nature Park

KYLIE ZAIA  
Featherdale Wildlife Park

ERIN WERNER  
Macadamia Castle

LAURA RANCIE  
SeaWorld

ADAM SWADLING  
Somers School Camp



# Insights into Koala Behaviour

*Madison O’Brien, Elysha West & Renae White  
Maru Koala and Animal Park*

In 2019, Maru Koala and Animal Park was awarded the Des Spittal Scholarship to conduct research on Southern Koala behaviours exhibited in varied contextual environments.

It is commonly known that koalas spend a significant amount of each day resting or asleep (approximately 18-20 hours each day (Lee & Martin, 1988)). The daily cycle of a koala shows us the time of activities (Figure 1.) However there is a notable lack of detailed information comparing Captive, Wild and Free Range Captive Koala behaviour over time.

So we asked ourselves, “What do our koalas do?” Not only during the day but during the night whilst we aren’t there? How are they spending their time when they aren’t asleep and how does this compare to koalas in wild settings or free range captive settings?

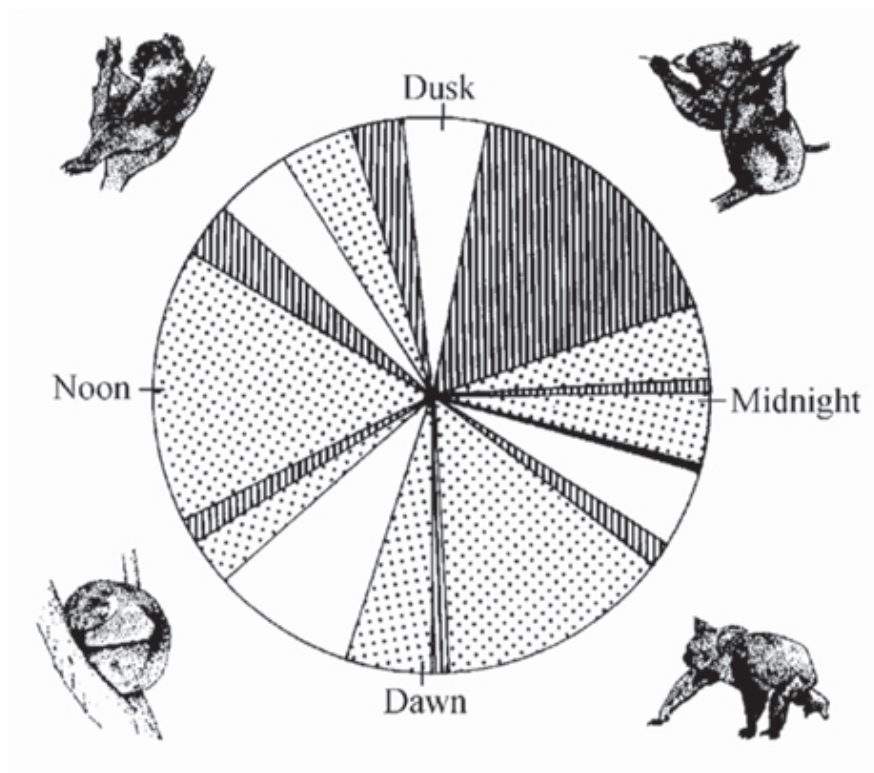


Figure 1. The daily cycle of activity of a koala. Vertical hatched areas signify periods of feeding; stippled areas, periods of sleeping; unshaded areas, periods of resting; and areas shaded black, periods moving between trees (Lee & Martin, 1988).

## OVERVIEW

It was decided that we would observe the following where possible:

- A male and female of varied ages housed in separate enclosures at Maru.
- A male and female housed in the same enclosure (much larger enclosure size, therefore classified as ‘free range captive’) at The Koala Conservation Center on Phillip Island and,
- A male and female found in the wild on French Island.

We would observe the koalas for 24 hours at each setting on two separate occasions. As we would not be able to ensure the wild koalas observed on the second trip were the same as the first, it was decided that we would watch different koalas for the secondary observations at Maru Koala and Animal Park and at The Koala Conservation Center. Researchers would take 6 hour shifts watching the animals and filling out a behaviour chart noting the behaviours observed alongside the following parameters:

- Time
- Weather
- Wind specs
- Height of koala relative from the ground and,
- The position the koala was in

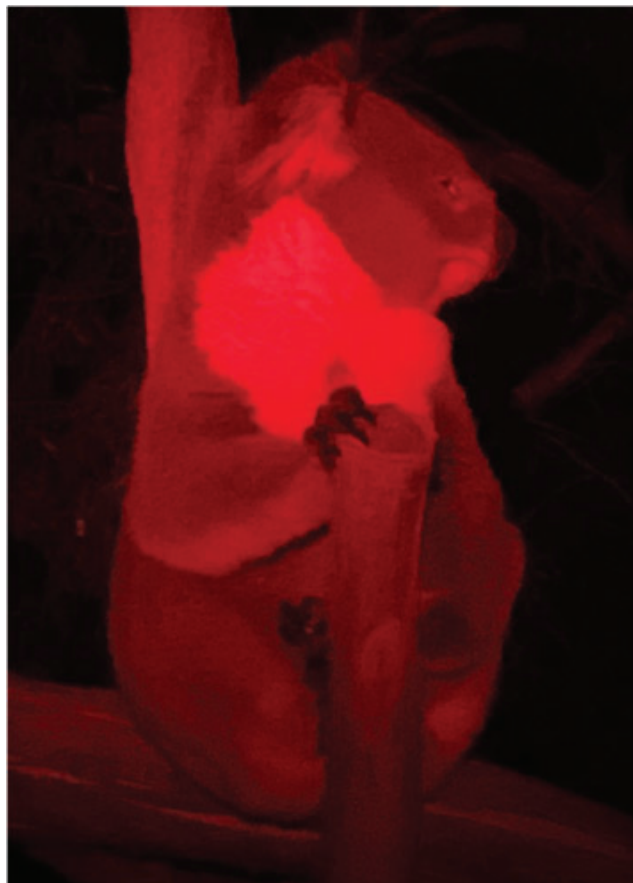
Halfway through our research it was decided that the data sheet being used was causing discrepancies in the results. It was found that the awake behaviors observed did not account for the total awake time, it was also found that in a few instances the time of awake and asleep combined did not tally up to 24 hours, See appendix 1. This is due to human error and therefore the data collection sheet was changed to be more user friendly and reduce incidents of mistakes. We found the second iteration of the data collection sheet to be more precise and allowed for more accurate data collection.

While observing koalas we were looking for any and all behaviors including:

- Duration of periods of sleep
- Duration of periods of time awake
- Scratching and grooming
- Vocalizations
- Time spent walking/exploring
- Defecation/urination
- Territorial behaviors such as scent marking and socializing where appropriate.

Each time a behaviour was exhibited, the time the behaviour began and ended duration of the behaviour was noted. Researchers also noted the approximate height of the koala in the tree or frame and the temperature/humidity at the location using a weather meter. Originally we attempted to take wind speed into account to see if that had any effect on the koala's behavior but unfortunately found the wind meter to be unreliable and thus were not able to get accurate data.

Other tools utilized to help with the data collection also included a trap camera to ensure we gathered images of the koalas during the time of data collection. While very useful during the data collection for captive and free range koalas where we were able to set up the camera in a spot we knew koalas were likely to pass it was less useful



*Figure 2 A free range male koala under infra red torch light*

for wild koalas and thus we took more photos by hand. Infrared head torches were also used during the night to ensure any light needed by the researchers did not affect the koalas in anyway.

## DISCUSSION

One of the primary objectives of wildlife parks is to allow visitors to view our wildlife, whilst also allowing the enclosure to meet the individual animal's needs. In the case of koalas, it has seen enclosures designed in a way that brings our koalas closer to the ground, or taking visitors to greater heights through the use of raised boardwalks and viewing platforms to reach the top ends of the trees koalas utilize. These changes to a koala's natural choice of perching height serve to allow easier keeper access (in some cases) but mostly allow for better visitor viewing. As our captive koala's are to a certain extent placed quite close to visitor viewing areas they are therefore exposed to a range of noises such as visitor and animal, including other external stimuli (e.g. highway and carpark noise), it was expected that captive koalas would possibly experience less sleep time and therefore more awake time. However when comparing the amount of time spent asleep in the three settings overall, there was little variation observed. However, from the data collected captive awake time more closely replicated the data of wild koalas over free range.



Throughout our observations it became apparent that the living styles of all koalas were all quite different. At Maru we generally provide our animals with somewhat thick sturdy fork choices with feeding pots situated below for direct access, with less opportunity for animals to climb higher and onto thinner, more precarious branches with foraging spots. Whereas in the wild it was observed that koalas spent somewhat less time sleeping and resting in the thicker lower parts of the tree and a larger amount of time in the higher sections, where the branches begin to thin out and forage becomes available. Koalas in the free range setting have a unique enclosure that includes fully grown trees as well as forks much lower down with supplemental feeding pots at lower forks, whilst connecting branches have been artificially placed from tree to tree. These free range koalas still spent majority of their time resting in the higher levels of the trees on thinner branches, whilst coming down to feed from the supplemental pots (Appendix Table 1,2 & 3).

While the captive koalas had little choice in height variations (1m – 3m) both free ranging and wild koalas had the ability to climb the entire length of large eucalypts. We noted that the wild koalas increased their height during feeding bouts which is to be expected as the leaf is generally higher in comparisons to the free range/ captive koalas.

Although we overall observed more scratching and grooming in captive koalas than in others, this may have been due to occasional issues properly sighting koalas at certain times. For example the viewing area of free range koalas is limited by where you can walk on the viewing boardwalk, therefore if a koala climbed into a position that was very high, or slightly behind a branch, it was difficult to relocate to properly observe. This was more of an issue in the free range setting than in wild or captive.

Interestingly enough, the smaller the area available to the koala, showed an increase in the amount of walking each individual exhibited. The smallest area being the captive setting, followed by free range and lastly wild. It was discovered that overnight in the captive setting, we saw a large percentage of the walking for males revealed as pacing the fence lines, this may be due to being housed directly next to another male, breeding responses, patrolling territory or could be seen as a stereotypical behavior (Appendix & Figures 8, 10 & 12). Females in the same setting however overall conducted less pacing fence lines, with more movement being undertaken in the perching. It should be noted however that one female did pace the fence line at the expected time that we would begin the morning feed routine for the koalas on site

(Appendix Figure 13). The percentage of time that captive

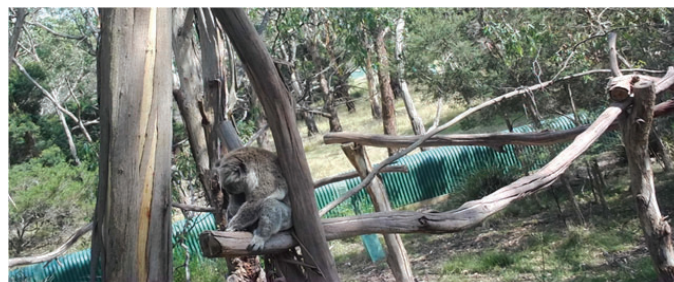


Fig 4. A free Range koala sleeping at the Koala Conservation Centre

koalas spent eating was more comparable to the wild koalas than to the free range koalas, with less than 10% of time spent eating for free range and 10-20% time spent eating for captive and wild. It is unclear why this pattern occurred. It would be expected in situations where leaf is provided (captive/free range) the amount of time would be similar than compared to a wild foraging koala.

Although researchers maintained a very quiet demeanor and stayed at a distance of 5 meters or more away, it was shown that even slight noises such as shifting in the chair was enough to cause koalas to seek out the source of the noise. Therefore these movements and the swapping over of shifts for volunteers may have been able to cause observers effect on the koalas. As seen in Larson 2014 there was a known impact of increased visitor numbers on koala visitor-vigilant behaviors (*Number of nearby visitors and noise level affect vigilance in captive koalas*, Larson, Sherwen & Rault 2014).

It was observed that captive koalas were more active and awake in the later data collection sessions, at the end of the breeding season in February. This may be attributed to an increase in visitor numbers at the park during that time and the proximity of the enclosure to viewing platforms.

This is in comparison to both the wild and free range koalas who spent less time awake in the same time period. Which is expected as noted in Ryan and Whisson's "Free Ranging Koalas", which found energy demands for koalas peak in the early breeding season meaning they are more active at this time (Ryan & Whisson 2013).

It must be noted that during the first wild observations, at around 2am the female koala relocated through a fenced off property where researchers were unable to follow. At this late stage it was unfeasible for the researchers to find a secondary female to continue observing. Therefore data collected on this female was only for a period of 15 hours.

(Appendix 1 Figure 17).

## DISCUSSION

Overall the data collected showed a fairly similar exhibition of behaviour between all settings. There was however evidence that captive and wild koalas spent a more similar amount of time eating that when compared to free range koalas. The amount of time spent on ground level was higher in the captive population, followed by wild and then free range (Appendix tables 1, 2 & 3). There was an obvious increase in scratching and grooming in captive koalas. Further research would be required to see if these patterns continued when observed for longer periods of time.

For future research more variables could be analyzed to see if there is varying composition of muscle in koalas comparing the three living settings, given the difference in perching and fork size/texture, foraging opportunities and the heights that the animals are able to experience.

Overall design of enclosures would also be beneficial to research given that through personal experience and research, koalas viewed in most captive settings tend to have lower perching (perhaps to enhance visitor viewing and ease for keeper access). Many enclosures have connecting branches artificially placed from upright to upright, whilst there is less facilities with enclosures that do not provide horizontal perching and instead require the koala to climb down, walk along the ground and then climb another vertical branch to access a different fork or feed spot.

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*Due to space limitations the appendix's of results are not published in this edition but the Appendix's of full results are available by contacting the authors at Maru at [parkstaff@marukoalapark.com.au](mailto:parkstaff@marukoalapark.com.au) or ASZK web <https://aszk.org.au/wp-content/uploads/2022/01/Insights-into-Koala-Behaviour.docx>*

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Fig 6. A wild female located on French Island

## ACKNOWLEDGEMENTS

ASZK – For supplying the grant, funding and support during the entire process.

Phillip Island Nature Parks – The Koala Conservation Center for allowing us to stay onsite and observe their koalas.

Maru Koala & Animal Park – Ian & Neroli Heffer for allowing research to be conducted on site and providing flexibility with staffing during research periods. Keeper staff, park volunteers and external volunteers for giving up their time to travel to the locations and assist with the data collection.

Chateau Baudin – For picking our group up from the Jetty, providing us with an informative tour of French Island and it's koala population and allowing us to camp on their property to observe the wild koalas present.



## Forerunner Forum - Interviews with Stalwarts of the Zoo Community

### FEATURING DR DAVID KIRSHNER

**•What is your current role at Sydney Zoo, and what sort of work does a typical week involve for you?**

My current role is Animal Care Manager (a.k.a. Curator) of the Reptile Department, which also covers amphibians and invertebrates.

I'm not sure if I have had a 'typical' week as of yet, especially as we went from a zoo under construction to a zoo in pandemic lockdown fairly quickly and consequently everything has been changing frequently since. I do start every day off with a walk through the reptile building before opening, to perform a quick visual health check of the animals, and then have a quick catch up with the team. As a manager, much of my work involves administration (especially, given that we're a relatively new zoo, developing and modifying documents such as operating procedures and protocols), as well as managing and mentoring keepers. There are a fair number of meetings every week, both one-on-ones and with the whole department.

Those are just the default components of my weekly schedule, but I wouldn't be in this industry if I didn't get a chance to deal directly with any animals so on top of the regularly scheduled activities there are random things which pop up, such as helping out with reptiles that need vet attention, making collection decisions relating to health, reproduction and/or general husbandry and training keepers to work with the venomous snakes and crocodile. In addition to this I am responsible for developing and updating the digital interpretive graphics in my area. As much as we're not meant to have favourites, feeding our saltwater crocodile is usually the highlight of my week.

**•You have had a relatively unique experience in having been closely involved in the initial design and construction phases of an entirely new institution, at Sydney Zoo. Could you please tell us about some of the most challenging early days, and some of the more rewarding projects and milestones?**

I joined the Sydney Zoo team over five years ago (I was the sixth employee) and we've been open for only two years, which means I was around for most of the early planning stages. There was nothing but a vacant grass-covered lot when I first visited the Zoo site, so it was literally a green



*David Kirshner with Oombulgurri the crocodile*

field project. Getting to experience a zoo being built from the ground up was a once-in-a-lifetime experience.

The two years of construction were a mixture of heady thrills and absolute panic. I was fortunate enough to have been given the opportunity to design the reptile area, and as much as that was extremely exciting and rewarding it was also very challenging. Not only were there countless tiny details that had to be considered but getting the timing right on all of the interconnecting components was crucial, as any small delay could have had a domino effect on other areas, other people and other deadlines. However, the stress and lack of sleep were countered by the reward of seeing ideas come to life in three dimensions.

In terms of milestones, one of the biggest for everyone was the arrival of the first animals on site, for that was the turning point at which the construction site officially became a zoo.

One of the fun aspects of being part of a small team at the start of a project is doing odd jobs that have little to do with your eventual role, so in the beginning we were



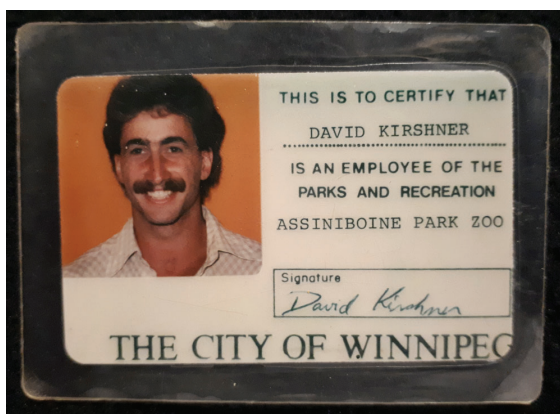
all changing hats on a regular basis (figuratively, not literally, as it was always a hard hat in real life). One of my odd-job roles was producing content to post on social media and as part of that I was documenting the zoo build, which included documenting the arrival of the animals. This meant that I had a front row seat, camera in hand, as animals arrived from all around the world. I also got a chance to help look after some of the new arrivals while they were in quarantine, giving me an opportunity to gain experience with new species as well as work with some old favourites once again.

In the end, the most rewarding milestone of all was the zoo opening in December of 2019, which was an emotional day for everyone involved in the build. Every now and then I'll see a photograph taken during construction and am instantly reminded of how far we've come.

**•Aside from your involvement in Sydney Zoo, when did your career in the animal care industry begin and where has your career taken you along the way?**

My career path has been quite random and convoluted. A few years ago I tried to map it out graphically in a PowerPoint slide for a Science Week talk to students planning animal-related careers. The slide looked like the Flying Spaghetti Monster.

My first zoo job was at Assiniboine Park Zoo in my hometown of Winnipeg, Canada. It was a summer job between my undergraduate degree in zoology and traveling to Australia to do postgraduate studies on crocodiles. In those days it was an almost universal practice that newcomers in the animal care industry started in their zoo's petting zoo/farmyard, so one of my early roles was in Assiniboine Park's version, called Aunt Sally's Farm.



*David's first zoo name tag, complete with mo and mullet!*

After coming to Australia and completing my postgraduate degree I decided to re-enter the zoo world. I had two possible career paths in mind: Continue with animal care, with the ultimate goal of a curatorship in reptiles, or combine my zoology background with my artistic side (I'd been drawing and painting since I was a young child) and pursue a career in graphics and interpretation, as back then most zoo graphics were based on illustrations rather than photographs.

I started with a second zoo farmyard job (aka farmyard apprenticeship 2.0) at Taronga, at what was then called Friendship Farm. I also spent some time in the primate division, working mostly with chimpanzees, but eventually I had to return to Canada to apply for permanent resident status in Australia.

...and that's when my career path started to get a bit convoluted, as I not only jumped in and out of the zoo industry but, when actually working within zoos and aquariums, started alternating between animal care roles and interpretation/graphics positions. The next thirty-something years saw me working as a Park Interpreter in Banff National Park, returning to Taronga as a zookeeper, working as an aquarist at Sydney Aquarium (now Sea Life Sydney) and then running the graphics and interpretation department for the aquarium, being involved in the development of Sydney Wildlife World (now Wild Life Sydney), working as a consultant creating interpretive graphics and videos for a new aquarium in Singapore, returning to Taronga to develop interpretive material for a couple of large projects for the zoo's centenary and then joining the Sydney Zoo team to build Sydney Zoo.

That's the short version, with a huge chunk cut out because there's another question further on that relates directly to it.

**You mentioned your origins in Canada. Could you tell us about your involvement in Canadian herpetology?**

As I came to Australia shortly after my undergraduate degree in zoology I didn't really get involved in Canadian herpetology, unless one counts keeping reptiles at home. One of the major impetuses for me coming to Australia was the province in which I grew up (Manitoba) being one of the most depauperate when it comes to herpetofauna, with only eight native species of reptile. Ironically, though, Manitoba is famous for having the greatest concentration of snakes in the world for a few weeks every year, when garter snakes emerge in spring after overwintering in the Narcisse snake dens.



**You've got a keen interest in monitor lizards, particularly the two species native to the Sydney region. What has your field experience with Heath Monitors and Lace Monitors entailed, and what are some of your findings?**

A little over twenty years ago I started keeping and breeding lace monitors at home and that spurred me on to spend more time out in the field watching wild ones, purely as a hobby, to learn what I could about their biology. I always brought a camera along so I could photo-ID the individuals I was seeing and one of the things I noticed after a while was the incredible stability of the population dynamics (undynamic dynamics, one might say). If adults aren't removed from the population by human activities they can live a long time, so recruitment seems quite slow and low. Almost all of the animals I was watching were established adults when I first saw them and I was still seeing them a decade or more later at almost exactly the same size and looking pretty much the same, except perhaps a bit older.

As they live a long time and do a lot of wandering around during the warmer months, lace monitors appear to develop an incredibly detailed, three-dimensional mental map of their home range, knowing where all of the best spots are for sheltering, basking and finding food. In a forest full of trees they'll quite often be seen repeatedly using the very same fork of the very same tree because it is at a 'just so' angle for comfort and sun exposure. It is the mental map of food sources where things get really interesting, but before I touch on that I need to introduce the heath monitor story:

One year while out on a bush walk I stumbled upon a nesting female heath monitor, which then sparked an interest in reproduction in heath monitors. I guess you might call it a spinoff hobby. It wasn't completely separate from my interest in lace monitors, for although heath and lace monitors evolved from separate monitor lineages and are not closely related, they have independently evolved similar nesting habits as both species lay their eggs in termite mounds. They are the two most southerly monitor species in the world so it's an adaptation to keep their eggs warm through the cool winter months.

I've been fortunate enough to have been able to watch a number of nesting events with several different female heath monitors in the wild and have also seen hatchlings emerge in spring. None of my findings in that regard are new, particularly as there's been a long-term study of this species on Kangaroo Island, but what Kangaroo Island doesn't have is a sympatric second species of monitor and one of my most interesting moments while observing heath monitors was watching a female trying to defend

its nest from a marauding lace monitor. Aside from the fascination of watching nest defence in action (maternal care is unusual in reptiles and back then monitor nest defence hadn't yet been reported in the scientific literature, although I had seen it in my captive lace monitors) the purposefulness with which the lace monitor suddenly emerged from the bush and approached the mound really caught my eye. Rather than stumbling upon the nest accidentally, I got the impression that the lace monitor knew the nest was there and was intentionally targeting it, again an example of the mental map they have of their surroundings. Other observations of lace monitors around heath monitor nests during nesting season seemed to confirm my hunch.

Yet another example of that mental map of food sources has been observed much closer to home. Pandemic lockdowns and a busy work schedule have limited my ability to visit my usual lace and heath monitor haunts for the past two years, but as I moved into a house that backs onto bush three years ago (in the middle of the zoo's construction, because clearly I needed even more stress) I've been fortunate enough to be able to witness a few lace monitor predation events close to home. There's a resident flock of sulphur-crested cockatoos in my gully and in spring most tree hollows in the area contain cockatoo or lorikeet nests. One of the local lace monitors clearly knows exactly where some of these nests are and the best time to check them for eggs or chicks, as I have watched him enter and leave cockatoo nest hollows every spring and have even caught him in the act of removing a cockatoo chick from a hollow. It takes a pretty bold lace monitor to raid a cockatoo nest so I have nick-named him 'Honey Badger'.



*Monitor and cockatoo*

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**Readers are likely most familiar with you through the authoritative reference books you have written and co-authored, monographing the Crocodylian species of the world. Tell us about your books and where they can be purchased.**

I've illustrated and/or consulted on quite a number of books (some of which are mentioned in response to another question, below), but the book of which I am most proud is the one I co-authored with Professor Gordon Grigg: *Biology and Evolution of Crocodylians*. The idea behind this book started a very long time ago, when I was still a student at Sydney University. Gordon was my PhD supervisor at the time and we often talked about working on a croc book together "one day", which later turned into "when I (Gordon) retire". Fast forward twenty-something years, Gordon was then a professor at the University of Queensland and retiring, so there was a big, weekend-long symposium held in his honour. I was seated across from Gordon at the Saturday night dinner event and at one point Gordon leaned over and said, dryly, "I guess we'd better start on that book, eh". We pretty much started working on it the following week.

The 'croc book', as Gordon and I call it, took around seven years to complete, with me mostly working on it in my spare time outside of my zoo and aquarium work. It was a lot of work, but something we did purely out of a fascination for crocodylians and a desire to share that passion with others, so we were happy to see it so well received by our peers and particularly chuffed when it won the 2015 Whitley Medal.

**Biology and Evolution of Crocodylians** is available on the CSIRO website, as well as the usual book outlets such as Amazon, Booktopia etc. There are also copies in the Sydney Zoo giftshop, so if you pick one up there make sure you pop in to say hello!

**Your complete treatment of the diverse and widespread Crocodylians of the world must have taken you to some very interesting locations. Where have been some of your better field observations of these animals, and which species are you still most hoping to encounter in the wild?**

Like most of the readers of *Thylacinus*, I imagine, I almost always travel to see wildlife and whenever I am in a new country or continent I'll endeavour to include the local species of crocodylian if I can. Among the more memorable sightings and/or observations that spring to mind would be: Massive gatherings of yacare caiman waiting out the dry season around drying waterholes in the Brazilian Pantanal, large numbers of Australian saltwater crocodiles gathering to feed on mullet during the king tide, a huge American alligator cannibalising

a smaller individual in central Florida, Nile crocodiles using the famous death roll to pull apart a rotting hippo carcass (in full 'surround-smell') and small Nile crocodiles following a group of cooperatively fishing pelicans to catch the escapees (both in South Africa), Australian saltwater crocodiles using their outstretched arms to herd fish towards their mouths and once even watched an individual saltwater crocodile targeting cane toads, alternatively chomping down and then swirling them around in its mouth, apparently to dilute the toxins before swallowing.

I feel relatively slack (relative to other crocodile biologists) for only having seen around a dozen species of crocodylian in the wild and there are quite a few species I'd still like to see, in particular Indian and Malayan gharials, the mugger crocodile and the west African crocodile. All good excuses to travel again once we're really on top of this pandemic.

**What appeals to you the most about Varanid lizards, and Crocs, gators and caiman? And what parallels can you draw between these two very different groups of reptile?**

Although I could probably write a list of links and parallels between these two groups (crocodylians and varanids), the list would comprise almost entirely of things I learned about both groups long after I developed an interest in them, for my interest goes back to when I was a very small child. It's most likely that back then they just had a particular aesthetic appeal, as I clearly liked long bodied reptiles with longish snouts.

Now, many years later, I can say that both groups are outliers among reptiles, monitors because of their intelligence (which also applies to crocodylians), high metabolic rate and active lifestyle relative to most reptiles, and crocodylians because they are the descendants of archosaurs and therefore have many features and behaviours more aligned with birds (the other living descendants of the archosaurs) than lizards and other squamates. And they're just really, really cool looking.

**Aside from writing the books that you've mentioned, I understand you're also an incredible illustrator and artist, with many of your own works illustrating your latest book 'Biology and Evolution of Crocodylians.' Tell us about your career as an illustrator and some of the other books and works that your illustrations appear in.**

Earlier I described, albeit briefly, my convoluted career path but what I hadn't mentioned was that somewhere in the middle of all that my career took a ninety-degree



turn, for I left the zoo and aquarium world entirely and started working as a freelance illustrator for the publishing and advertising industries. It was originally meant to be a stopgap solution between ‘real’ jobs, something I was planning to do for perhaps a year, but I enjoyed illustration immensely and found myself doing that for 14 years. It’s hard to beat being paid to draw and paint, especially as most of my commissions were of animals. However, eventually I started to feel divorced from my true roots, as mixing within publishing and advertising circles was taking me too far from real, live animals, so I returned to the world of zoos and aquariums. Fortunately, while working as an illustrator I developed a lot of skills which would later prove invaluable with the interpretation side of my career when I re-entered the zoo industry.

While working as an illustrator I got the opportunity to illustrate numerous books on wildlife, both as a sole illustrator or as part of a group of illustrators. These ranged from small books aimed at children to large coffee table books with contributions by well-known biologists in the field and illustrated with a combination of photographs and paintings. Perhaps my favourites were the first set of books on which I worked, a series of four encyclopedias for which I was the sole illustrator (Fishes, Reptiles and Amphibians, Birds and Mammals) and a large book on bears of the world (Bears: Majestic Creatures of the Wild). Although I suspect most of those books are out of print, second-hand copies still pop up on Amazon on occasion.



*A portrait of Maik, Sydney Zoo’s alpha male chimpanzee*

## **Congratulations to the ASZK Photo Comp Winners**

### **Animals in the Wild**

Tyler Galton - Winner

Nicolas Yu – Runner up

### **Enrichment and Training**

Kelly McGannon – Winner and winner of the Peoples Choice Award

Janet Williams - Runner Up

### **Funny**

Freya Stromsvag - Winner

Paul Rushworth - Runner up

### **Artistic**

Tyler Lowe - Winner

Paul Rushworth - Runner up



## CURRUMBIN WILDLIFE SANCTUARY

This year has been a great year for our conservation programs. Most significantly the National Trust of Queensland announced the custodianship of a property in the Currumbin Valley, now known as the Garima Conservation Reserve. This is a 27.5ha property that includes dense subtropical rainforest and bushland. It supports many native flora and fauna species, it includes essential habitat for koalas and is home to at least 13 threatened flora species. This property will also provide opportunities to expand the Currumbin Wildlife Sanctuary's ex-situ conservation programs. We are in the process of building additional aviaries for our Eastern Bristlebird program and Allison Beutel and team are looking forward to the transfer of some of our Eastern Bristlebirds to the new facilities early in the new year. This is an incredibly important step in the program as the Eastern Bristlebird population has now outgrown the facilities available at CWS. We are also working on harness trials for our Eastern Bristlebirds in preparation for future translocations and releases to the wild.

With regards to our Kroombit Tinkerfrog Program, the majority of our tadpoles have now metamorphosed, this is keeping the team very busy establishing daily routines for the 90+ frogs in their care. The new Kroombit Tinkerfrog Ex-situ Facility is on track for the build to begin in early 2022, and with a couple more clutches of viable eggs recently laid, the facility will be essential to provide space

for the upcoming frogs. Our Reptile/Amphibian team and CWS videographer also had the opportunity to head up to Kroombit Tops National Park to participate in the surveys conducted there by the Queensland Parks and Wildlife Service. This provided them with the chance to experience the habitat of the Kroombit Tinkerfrog, and to witness them (and many other important species) in the wild.

The Repturnal Den opened to the public in time for our Fangtuary Halloween event which was a great success! A couple highlights of the Repturnal Den include the Greater Glider exhibit (a first for Currumbin), new room sized elapid exhibits for our Collett's and Spotted Black Snakes and an off exhibit room for our Stimson's pythons where a single sex group lives communally. This room allows us to provide ample space for the snakes to utilise, as well as multiple basking sites. We have found this is a definite improvement for this species when compared to housing each snake individually in relatively small enclosures and are hoping to expand this concept to some of our other reptiles that are off exhibit.

Some of the recent successful breeding in the Sanctuary includes the Bush stone curlew (above), Sacred Kingfisher, Squirrel Glider, Cockatiel, Sun Conure, Black-capped Lory, Satin Bowerbird, Star Finch, Macleay's Fig-parrot, Little Lorikeet, Emerald Dove and of course our Eastern Bristlebird and Kroombit Tinkerfrog.

## DOLPHIN MARINE CONSERVATION PARK

The 2021 Little Blue Penguin (*Eudyptula minor*) breeding season has been an exciting one for both staff and guests, with first-time parents Eric and Shona successfully raising two chicks, both hatched in late June. Now 4 months old, the chicks have been affectionately named 'Willis' and 'Bo' and have integrated well into the colony. They can often be seen swimming and exploring their environment. Staff have been very successful in training and desensitizing all the penguins for voluntary weights. The penguins have quickly learnt to step up onto the scale, allowing staff to get accurate and regular weights for each penguin to ensure their health and welfare. Staff are also looking at the possibility of introducing target training and stationing for the penguin colony.



*Penguin chicks Willis and Bo Photo Credit: Sarah Cahill*

Both the Dolphins (*Tursiops aduncus*) and Australian Sea Lions (*Neophoca cinerea*) have responded well to the introduction of Gelatine as a secondary reinforcer and enrichment item. Staff have been interested to discover that some sea lions took an instant liking to the gelatine, while others needed some conditioning to convince them it was edible!



*Bella enjoys some jello . Photo Credit: Sarah Cahill*

The dolphins demonstrate high interest and enjoyment of the jello, both in session and as enrichment, and the greater variety of reinforcement now available has led to the introduction of a new training concept. In order to increase agency, the dolphins have begun reinforcement choice training. Symbols are used to represent each type of reinforcement – fish, jello, ice, tactile, etc. – and the dolphins are learning to choose which reinforcement they would prefer in that moment. Training staff are hoping to continue this trend of increasing agency with the animals, with ideas such as behaviour choice and session choice options for the future.

Through the past few months a number of New Zealand Fur Seal (*Arctocephalus forsteri*) sightings have been reported off the New South Wales coastline. Dolphin Marine Rescue staff and volunteers have been monitoring a number of these seals along with NSW National Parks and Wildlife and ORRCA Australia. One juvenile seal found its way to a car park, so it was relocated to an appropriate place down the beach. Another fur seal was badly emaciated and had suspected cookie-cutter shark injuries across its body. This seal was brought into Dolphin Marine Rescue for rehabilitation, but its condition deteriorated rapidly and the seal was euthanized.

Dolphin Marine Rescue has been kept busy through winter with sea snakes, muttonbirds and a number of sea turtles requiring rehabilitation. A fishing hook and line was discovered inside the gut of one juvenile turtle, while shreds of balloon were found in the excrement of another – highlighting the importance of raising awareness of plastic and fishing waste in our oceans.



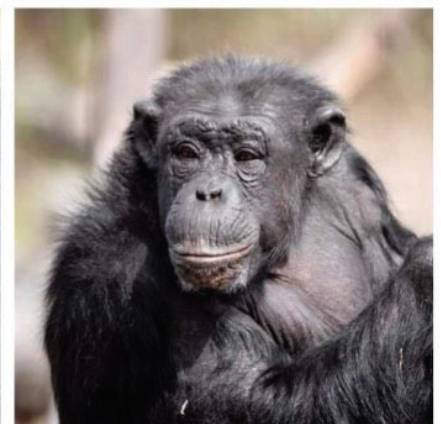
*A rehabilitated green sea turtle at Dolphin Marine Rescue. Photo Credit: Sarah Cahill*

**Sarah Cahill**

## MONARTO ZOO

Galatea one of our female Chimps is finally pregnant!! Her anticipated due date is late March.

Galatea was born at the Burgers Zoo on 24/02/1999, she transferred to Monarto with three of her female allies in November of 2010. Galatea had a new contraceptive implant put in in Jan 2013. On a few occasions Galatea was anaesthetized with the intention of removing the implant but it could not be found. In July of 2019 Galatea had an anesthetic to again look for the implant due to inconsistent cycling/not falling pregnant but it could not be found. At this time a reproductive work up was carried out and Galatea was given a clean bill of health. For the last few years she had been consistently cycling, at age 22 we are all so very excited that she has finally fallen pregnant. Galatea has observed 5 births during her time at Monarto. During her time at Burgers she was noted as a great big sister to her younger sibling. Galatea has shown strong maternal instinct towards both Hope and Zola, at times playing the role of babysitter. We look forward to witnessing her with her own infant.



Late September we had three Lemur pups born to females Debbie and Lilo. The pups continue to do well and it is great seeing how all the other females interact with the youngsters. The Lemur group continues to grow with 7 males arriving from Hamilton and entering quarantine at Adelaide Zoo. We have plans to introduce the Hamilton males to our current males later in the year.

**Laura Hanley | Senior Keeper Primates**

## TARONGA WESTERN PLAINS ZOO *Conservation*

In October 58 regent Honeyeaters were released into a location in the Hunter Valley. 30 birds from Taronga Western Plains Zoo and 28 from Taronga Zoo.

17 of the released Dubbo birds were from our first breeding season.

In the lead up to the release all birds were health checked and conditioned to the release tents prior to transport. The release took place over a week with birds set up in makeshift tented aviaries. This allowed for acclimatisation and a soft release.

30 chicks have fledged this breeding season. (See Right)

Also our conservation unit has been involved in additional releases which have seen 4.4 Plains Wanderers to be released in the northern plains of Victoria.



## Lions

Our young and inexperienced male Lion Lwazi has been introduced to both of our 7 year old females Evelyn and Marion who came from San Diego in 2018.

Introductions have been progressing over the last couple of months with 1.2, with Lwazi who came to us from Werribee and Marion who came from San Diego, observed mating. Introductions to form a cohesive pride with the three individuals continues.

## Ring-tailed Lemurs

This year has seen TWPZ's most successful breeding season for Ring-tailed Lemurs to date. We expected five females to breed, and instead all eight of the females in the troop fell pregnant. International records show it is very unusual for 2-year old females to fall pregnant or birth successfully, but all three of our youngsters had other ideas. We introduced a new breeding male who came to us from Australia Zoo, and he has done very well, which is great given he originally came from overseas and has valuable genetics.

We had 10 infants born to eight mothers (five of whom were first time mums). Unfortunately, an experienced mother lost a set of twins, but we still have eight infants going strong. We look forward to holding a mixed gender troop of 17 animals until our young boys need to be moved to the bachelor group in a couple of years' time.

## Greater One Horned Rhino

Amala our female Greater One Horned Rhino (below) gave birth to a healthy male calf around 1.45am on Sunday 17 October, to sire Dora. The little bull took until 8pm that night to figure out the "milk bar situation" but is now drinking well and Amala is being pretty cautious and protective of him. She is generally a nervous rhino and keepers are working at getting her back into her normal routine as soon as possible.



## Bongo

On the 27 October we had TWPZ's first Rumen fluid transplant. Djembe Bongo had been suffering with digestive issues for many months, and it had been taking a huge toll on her health. It was decided to do a rumen transplant, kindly donated by one of our resident goats, to assist with her gut issues. Prior to the transplant Djembe ruminal fluid was checked and was found to be missing a type of flora that is normally present. Vets extracted some of the rumen fluid from the goat "Diamond" and it was given to Djembe. The whole procedure went very smoothly with no complications and Djembe is up and eating normally, we have also seen an improvement on her faecal output.

## Vale Mutangi

Mutangi Giraffe recently celebrated her 31st Birthday, but this momentous occasion was overshadowed when a week later she presented with a poor appetite, uncharacteristically sedate behaviour and usually sitting down during the day. Pain relief was administered, and her health was closely observed, following which it was noticed that Mutangi had not urinated or defecated in some time, with the exception of one very solid, dry clump of faeces being found in the yard. This lack of digestive movement would likely be uncomfortable and could not be effectively managed without sedation. Given Mutangi's health, welfare and age, the hard decision to anaesthetise and euthanase her was made.

Mutangi was the first calf to be born at TWPZ and leaves behind a massive legacy in the many calves she has mothers, going on to be a grandmother, a great grandmother and great-great grandmother. This legacy extends to the hearts and minds of the many keepers that have cared for her, as well as many thousands of guests who have had the privilege of making the acquaintance of the 'queen' of our giraffe herd.

## Elephants

Gung our 21 year old resident bull has spent increasing amounts of time with the herd recently since Porntip & Thong Dee finished their last reproductive cycles. Sabai has enjoyed this time considerably sparring and engaging Gung providing great interactions for both and the viewing public (opposite page).

Recent tusk trims have been completed for all three males Gung, Pathi Harn & Sabai and now the weather is warming up into another long hot Dubbo summer more fun and splashing in the pools has been observed.





**News by the Keepers of TWPZ**

**TARONGA ZOO**  
*Herpetofauna*

The team within the Herpetofauna Department have had a primary focus on progressing design plans of a new Reptile House as well as a new Bellinger River Turtle facility for our reproductive insurance population. Both large-scale projects are the most advanced redevelopments around Taronga’s reptile and amphibian collection since the opening of the current Reptile House in March 1995.

Projects like these demand an understandable time investment through planning and design, and invariably, allocation of space for a site to be cleared and prepared. As part of this redevelopment, it meant that our adult male Saltwater Crocodile needed to be transferred out of the collection for future work where his exhibit is, and to minimise disturbance to him during adjacent demolition and construction work. ‘Rin Tin Tin,’ (right) at 4 metres and 450kg, came to Taronga in 2005 and has been a favourite amongst many guests since his arrival, with his impressive size all the more obvious when basking on the bank or feeding. A careful plan on his safe and efficient capture was put together, and earlier in November he was a very patient and cooperative crocodile during the catch

which occurred flawlessly. Whilst it is hard to say goodbye to such a long-term majestic and charismatic resident, we are confident that Rin Tin Tin will enjoy the good life in Queensland.



Over the last few months, we have completed the set-up of an additional purpose-built amphibian quarantine facility on-site. Funded by NSW DPIE, this facility was constructed during the early half of 2021, specifically for the Booroolong Frog (pictured overleaf). The genetically distinct northern populations of the Booroolong Frog were at real risk of extinction during the recent severe drought.

By late 2019, it was feared there were merely dozens left, so Taronga staff teamed up with DPIE, the Australian Museum and a knowledgeable local environmental consultant to survey remaining habitat from the dry rivers and salvage remaining individuals for the insurance population. These individuals now reside in the new ex-situ facility at Taronga Zoo.



Chris Dryburgh, and Michael McFadden. Photo credits Michael McFadden and Delvena Leong

## Aus Mammals

Covid-lockdowns and large-scale renovations have imposed some challenges on the Australian mammals keeping team recently. With many animals housed in temporary holding enclosures, it would be easy to tread water until the opening of the new developments. However, we have pushed ahead and successfully bred greater bilbies, feathertail gliders, and ghost bats, all in temporary enclosures.

We also attempted breeding platypus this year, and although not successful in producing young this season, we have gained valuable knowledge and insight to implement next year. We could only attempt breeding platypus with the support of Wildlife Sydney Zoo (WLSZ), who transferred their female platypus Jackie in exchange for one of our males, Mac. This exchange has also seen knowledge shared between the two zoos, as Taronga keepers have regularly visited WLSZ to assist in training their keepers in safely handling male platypus.

Andrew Daly. Photo credit Rob Dockerill



Feathertail Glider with joeys. Photo Robert Dockerill

## • ASZK • MEMBERSHIP STATISTICS

159 FULL MEMBERS

0 FULL PARTNERS  
MEMBERS

26 ASSOCIATE  
MEMBERS

0 ASSOCIATE  
PARTNERS

4 RECIPROCAL

12 CORPORATE

13 LIFE MEMBERS

0 OVERSEAS

1 OVERSEAS  
CORPORATE

TOTAL 215

## Meet the ASZK Committee

Last edition we met the ASZK committee executive. This is Part 1 in our series of meeting our amazing ASZK committee

### Amy Carter (Animal Training Committee Representative)

Amy has been travelling around the globe since 2007 working with a variety of different animal species. As a marine biologist, the majority of her experience has been with marine mammals, both in the wild (rescue, rehabilitation, release, research) and under permanent human care. In addition to this, Amy has worked with many terrestrial species both exotic and domestic, and strives to improve animal management and welfare. As a passionate and enthusiastic individual, Amy hopes to inspire a positive change in behavioural husbandry by sharing the skills and knowledge she has acquired so far during her career and build upon these skills further. For the past 3 years Amy has coordinated the Western Lowland Gorilla behavioural husbandry project at Taronga Zoo, Sydney, as well as for the smaller primates such as White Cheeked Gibbons and Francois Langurs. Currently Amy is taking some time away from the Zoo to go to the UAE to set up a new canine focus project, but will still continue her role to connect the ASZK and ATC in communication.



### Bonnie Doege

I'm a Marine Animal Specialist at Sea World Australia. I've worked with dolphins for the past six years. In that time, I have been fortunate to build some humbling relationships with the animals in my care.



Prior to moving up to the sunny Gold Coast, I completed a Bachelor of Natural Science (Animal Science) and a Bachelor of Science (Honours), worked as a zookeeper at Wild Life Sydney Zoo and Sea Life Sydney Aquarium, and volunteered in the marine department at Taronga Zoo.

I am very excited to have joined ASZK as a general committee member as I value everything the committee stands for. I would love to help encourage and promote shared learning between facilities. I think we can all

agree, it has been a challenging couple of years, so I think it's more important than ever for wildlife parks around the region to work together and support one another.

### Daniel Rumsey

Daniel Rumsey is currently the Head Reptile Keeper at the Australian Reptile Park and has been working in that role for the past five years. Previously, Daniel had worked as a reptile keeper at Australia Zoo and Symbio Wildlife Park. Daniel has a passion for native wildlife in particular native reptile species, in his spare time he enjoys traveling the country looking for wildlife and visiting other zoological institutions. Daniel has been a member of the ASZK committee for the past two years and produces the Cybercinus online journal



### Karen James

Karen has worked at Taronga Western Plains Zoo for 20 years, Zookeeping for 14 of those. She has had the privilege of working with all species held at the Zoo, but for the past 9 years has been the head Meerkat keeper. As a Senior Keeper she currently works with Reptiles, Koalas, Tasmanian Devils, Tortoises Lions, Tigers and Meerkats.



Some highlights of her career include doing a keeper exchange to Virginia in 2014, helping with the construction of 2 Meerkat exhibits at TWPZ and spending 4mths on Lord Howe Island assisting with the rodent eradication program.

Attending her first ASZK conference in 2008 Karen has attended nearly everyone since and presented four times. She has taken an active role in the 'Bowling Fundraiser' and organised many successful events in Dubbo. In 2021 she is helping coordinate the fundraiser nationally with fellow committee member Melvin Nathan. She has been on the committee for over six years.





CONSERVING OUR FUTURE

