

AUSTRALIAN GREEN TREE PYTHONS

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Introduction

Whether Green Tree Pythons are the most desirable snakes in collections or not, no one would deny that they are strikingly beautiful snakes and very different to any other pythons. Australian native GTPs have an interesting history, biology and ecology, and it has been only a few years since they started to appear in private collections, giving keepers the opportunity to learn about their requirements, behaviour and other aspects of their lives in captivity. If it weren't for enthusiastic reptile keepers, we would know absolutely nothing about their reproductive biology and developmental stages, which we now understand in detail. However, there are still huge areas of unknown, poorly understood, even misunderstood facets of this species' biology, ecology, captive management and even, I dare to say, its classification. I have been keeping, breeding and studying *Morelia viridis* for a number of years and I am still learning through observations, literature reviews, discussions with fellow herpetologists and my own experiments. Of course I will never know everything about these snakes, so I would like to take a break at this point and share with you my thoughts, experiences and ideas about these green gems.

I would really prefer to start this article with an historical overview of how Green Pythons entered this continent, when it happened, what determined their current distribution, about their ecology and so on – these things interest me more than keeping and breeding... but...I'll save this for some other time.

Husbandry, standards and ethics

The Green Python or "Green Tree Python", whichever you prefer, is an arboreal species that spends little time on the ground in the wild and the same applies in captivity. For that reason, they should be provided with appropriate furnishings in their enclosure. Perhaps I will contradict the opinions of many, more experienced keepers than I, but I believe that vertical space is more important to GTPs than the floor area of their enclosures. First of all, climbing is a good exercise (essential for any species) and secondly, they need sufficient height to assume their natural hunting (ambush) position. When waiting for prey to go past, they sit on branches with their heads down with an S-shaped neck, just high enough above the ground to reach their victim with a lightning strike. It doesn't mean that we have to feed them from the ground level, they are quite happy to lift their heads and take food even from above, but the ambush position is a natural pose they take up instinctively and they must not be deprived of that opportunity.

I prefer to feed adults and the younger snakes just on dusk, when there is still enough ambient light but the snakes are already awake or just about to wake up. The procedure is no different to feeding any other species, however, rather than leaving the food on the cage floor, I offer it from tongs. As much as I can, I feed them freshly killed rats, occasionally supplementing their diet with mice and day-old chicks. One feed (that is one food item) every 6 – 7 days is plenty to keep them in good condition throughout the summer months, or should I say the "wet season," when they are most active and hungry. The males usually stop feeding in autumn (April/May), just before the mating season and they aren't interested in food until about September or October with the onset of the hot and humid weather. This behaviour can also be seen in enclosures that are heated all year round.

After egg laying, I move the “empty” females into their respective outdoor enclosures and give them a good soaking with a garden hose to wash off the smell of the eggs. This prevents false incubation, which can happen if the females are left where they laid their eggs. Then the fun starts! It’s as if the moms have forgotten how to eat. I sometimes spend half an hour with each female, waving a freshly killed rat in front of her nose to arouse her interest, sometimes I go through this routine for several evenings with no result. They mouth the rat, strike and let go of it and when they finally sink their teeth into the fur and half-heartedly throw a coil or two around it, I have to hold the rat in my hand until it’s half swallowed otherwise it gets dropped. This can be incredibly frustrating and time consuming, not to mention the mozzie bites, but what wouldn’t we do for the girls.

There is not much point explaining in detail how I keep my animals here in the tropics because it differs considerably from the norm and my methods would be of little value to someone living in Sydney or Melbourne. In my “reptile room”, which is an open space, there is no heating, lighting or humidifier. My pythons get what naturally comes around, be it sunshine, rain, wind or even the odd cyclone and they appear to thrive in those conditions. There are far more qualified keepers amongst you who could describe correct housing and husbandry of Green pythons in a temperate climate with cold winters - I am not one of them.

I have always been a great advocate for landscaped enclosures - I think these beautiful pythons deserve it. Yes, they will survive on newspaper in a sterile, white melamine box fitted with a PVC perch (or two if they’re lucky) but such conditions will invariably degrade their natural instincts and modify their natural behaviour. Unfortunately, many keepers opt for these simple, easy to clean interiors because they either have too many animals to look after or too little time because of other commitments such as work, family or other. I was in such a situation once or twice in my life, so I refrain from any criticism. One of the reasons I only keep and breed manageable numbers of only one species is because I am not prepared to compromise my keeping standards.

Keeping adults

Should adult pairs be kept together all year around? If they are compatible breeders, then why not? Keeping two or more of any species of snakes together always presents some risk when it comes to feeding. Particularly ferocious feeders (as many GTPs are) can lunge at the same food item simultaneously, grabbing each other’s head, which can cause serious injuries. My friend Peter Krauss, who has considerable experience with keeping GTPs tells me that it’s not a good idea to house two adult males together in one cage. Apparently they often fight, stress each other and refuse to feed, they can even attack the female if there is one. I listened to Peter’s advice and I haven’t been game enough to try to introduce two males together, although the natives are very docile and they may get on well with each other, I am just not prepared to risk it. There is no problem with keeping adult females together.

I have mentioned the word ‘docile’. Most GTPs have the reputation of being flighty and annoyed when handled, some uncompromisingly vicious, delivering nasty bites at any given opportunity. The Biak race is particularly famous for its bad behaviour and most of the New Guinea wild Chondros will readily bite when disturbed. I haven’t got much experience with non-native captive bred GTPs, so I can’t comment on their behaviour. However, I can say with a great deal of confidence that captive or wild native greens are placid and won’t bite unless your hand is mistaken for food. One has to be careful putting hands inside their cages on dusk or after dark because that’s their hunting time and they react quickly to any movement. Once they realise that your hand is not their dinner, they relax and you can handle them.

Like any other snakes, GTPs should not be handled when they’re close to sloughing.

Actually, GTP's skin (to be shed) is even more delicate because it is much thinner than that of carpets or other pythons.

Sexual maturity

Compared to other Australian pythons, GTPs are relatively slow growing. Although I haven't got enough data to make firm conclusions, it appears that captive bred males reach sexual maturity at the age of two and half years and females at three and half. What's all this about the halves? Well, they hatch in mid October – mid November and the mating season is in May – June, so at any mating season in any year, they have to be X years and half.

I hear from other breeders that they observed matings in two and half year-old native GTPs but I haven't received any follow up information regarding their success or failure. In any case, it wouldn't be wise to even try to breed them at that age as they would be likely to produce a small clutch, small eggs or end up with potentially serious health issues.

Mating

In the wild, native GTPs mate at onset of the dry season, that is from May to the end of June when the day and night temperatures fluctuate most. My captives mate at that time too but it's possible that in a temperate climate, where keepers have to use artificial heating, photoperiod and artificial cycling, the mating season may shift a bit either way. Some American breeders claim to breed their chondros any month of the year (G. Maxwell pers. com.) but I suspect it's because they are breeding Equatorial stock (from PNG or Indonesia) where there are no defined seasons. Our native greens evolved in different climatic conditions, where the 'wet and dry' well as 'hot and cold' seasonal patterns are more pronounced and the particular timing of their reproductive cycle is certainly driven by these seasonal changes.

Having the opportunity to observe their behaviour in almost natural conditions, I have noticed that it's not only the cooler nights that trigger mating but it can also be the very opposite. The season before last, the night temperatures started to drop for about ten consecutive days and I was expecting to see some mating activity. To my disappointment, nothing happened and I was convinced that the non-event was due to the fact that two of the males were going into slough. Then suddenly the weather turned warm and we had a light drizzle overnight. The next morning, all the pairs were hooked up, sloughing or no sloughing. That leads me to the conclusion that there are probably other stimuli such as atmospheric pressure, change in humidity and other factors that may play an important part in triggering their mating activities.

Once it happens, the pairs may mate on and off for several days but the end of the "good times" is usually evident when the partners rest far apart from each other and don't make any more contact. This could be hard to observe in a small enclosure.

Gravid females

Once the mating is over, I relocate the females into indoor, heated cages equipped only with a single perch and a water bowl. The interior of each cage is of darker, neutral colour as I believe the sudden change into white, bright surroundings may stress the snakes. The reason for not having this "maternity ward" landscaped is two-fold: easy maintenance with minimal disturbance to the occupants and easy access for inserting a lay-box later on and checking what goes on inside it. After all, they are housed there for only a short time.

One way to find out if your female is gravid (if not sure) is to offer her some food. If she refuses, it's a sign that she is gravid, if she eats, have a stiff drink and try again next year. Some females display their gravidity, i.e. swollen body, very well but with others, it's hard to tell even a couple of weeks prior to laying. Unlike other pythons, GTPs don't roll onto their sides or show any obvious signs of pregnancy, and even ovulation is sometimes not conspicuous. Ovulation is one or two-day event when the female's body swells up, she perches in rather awkward positions, shifting her coils from time to time giving the

impression that something is wrong. After ovulation the body resumes normal thickness and shape and the female becomes more or less stationary until pre-lay slough, which follows roughly 18 – 20 days later. From that time, we can predict the day of laying with reasonable accuracy – it is within 19 to 21 days (though there may be exceptions). As it gets closer to the ‘big day’, the female’s body takes on a kind of waxy appearance as if her skin is too thick and less pliable. I usually put in the lay-box about one week before the expected date to give the female a chance to inspect this new object in her enclosure and to decide whether it’s suitable for nesting or not. I use polystyrene boxes with damp sphagnum moss for substrate, which dries out in a couple of days but it doesn’t matter. The female spends a lot of time moving in and out of the box but a day or two before laying she’ll settle inside with her body perfectly coiled like a garden hose.

All the books say that the laying affair is an early morning business, finishing just before dawn. It’s not necessarily so. In the last two years, to my surprise, I had two females starting to lay at 8 am, and 9.30 am. Lucky, I didn’t have to go to work!

Taking care of eggs

There are two ways to incubate the eggs; naturally, that is, leaving the mother to incubate the eggs herself, or artificially, by placing the eggs into an incubator. I am sure natural incubation has its charm but there are one or two drawbacks. If one or a few of the eggs go off during the long incubation period, bacteria or fungus may contaminate the rest of the eggs in the cluster and that spells disaster. Another thing to consider is that the female is not going to feed while incubating and this is on top of the three or four months of starvation since mating. By then, the female will be pretty weak and that may be one reason why the wild native GTPs don’t breed every year.

If we want to incubate the eggs artificially, it’s a good idea to have them separated rather than in a cluster. Some females don’t object to removal of their eggs during the laying process, whilst others get angry and bite. I usually wait till 4 or 5 eggs have been laid, gently lift the female’s coils and collect the eggs. The other method is to wait till all the eggs have been laid, remove the female before she tightens around the clutch and peel one egg after the other from the cluster. This requires a fine touch and bit of experience not to tear the adjoining eggs. If you can’t break up the cluster straight after she laid her last egg, it’s best not to try to separate them as the eggs will be truly glued together a few hours later.

Personally, I prefer vermiculite as an incubating medium but the ‘no substrate’ method is just as good if you know what you’re doing. I once had a rather frightening experience; as I pulled the container with eggs out of my incubator to check them, I forgot to remove the cable with the thermometer probe. The sudden jerk caused the eggs to roll into a heap in one corner of the container and I thought the worst had happened. Luckily, all the eggs survived the trauma because they were cushioned by the loose vermiculite. I swore there and then I will stick to this method for the rest of my life.

For the average size clutch I use a 10 litre plastic container with a small hole drilled through the lid for the thermostat probe. I tip 5 litres of vermiculite into the container and then pour 170 ml of water evenly over the surface. No need to mix the medium and water manually; just put the lid on and place the container into to the incubator so it reaches the required temperature before any eggs are placed inside. It pays off to insert the probe and test the temperature controls, to make sure everything is working fine before the big day. Five litres of vermiculite in a 10 litre container means that the bottom half is filled with the medium and the top half is air. I make small depressions into the vermiculite, so the eggs are about 1/3 buried and 2/3 exposed. I don’t open the container at all for the first five days of the incubation because during that time the eggs absorb lots of water and I don’t want to lose any more water through evaporation. After that, aeration of the eggs is done every 4-5 days by lifting the lid and fanning the interior. This is essential to prevent a buildup of CO₂ and to provide the eggs with oxygen. Airing the eggs is even more important towards the end of

the incubation. I don't add any water or wipe off any condensation during the incubation. I used to follow the Maxwell incubation temperature regime but lately I set the thermostat to 31° C and leave it there constantly for the whole incubation period, it seems to work well.

On day 49 I cut the eggs with special scissors that can be bought from the Australian Entomological Supplies (<http://www.entosupplies.com.au>) for a mere \$24.00; I can highly recommend this instrument for cutting any snake eggs, it just makes the job so easy and safe.

As I cut the eggs one by one, I place them into another container with pre-heated sphagnum moss because if the hatchlings come out and roll in vermiculite, it's a mess and besides, they can't move easily on such a loose substrate. The container with the open eggs goes back into the incubator until the neonates come out, which is within the next 2-4 days. Some breeders place perches into the hatch container, so the young ones can get off the wet substrate (and they do). I prefer not to do this because then I would have to unwind the snakes from the perch and that presents a totally unnecessary risk of damaging their delicate tails.

From the hatch container, they go onto the scales for weighing and into their individual containers.

The juvenile stages and husbandry

Being somewhat obsessed with natural materials or perhaps it's my dislike towards plastics, I use bamboo cuttings for perches and sphagnum moss for substrate. It's not only more aesthetically pleasing but the moss tends to retain moisture well and keeps the humidity at the right level. I only spray the neonates every second day before their first slough, which is usually 10 days after hatching. I don't need to spray them after that because where I live, the ambient humidity is substantial and the damp moss helps to keep it right. There is a misconception amongst some keepers that juvenile GTPs only drink droplets of water from spraying. Not true! They drink out of a water bowl just like the adults or any other species of python.

A few days after the first slough, the most strenuous and time-demanding task begins – teaching them how to eat (sort of). Different breeders use different methods and swear by them but I haven't found a 100% reliable method yet. Some individuals will snap up a pinkie first time it's offered, others can stubbornly refuse food for months. It doesn't really matter what time of the day or night you try to feed them or whether you offer the food from above or from below. For no other reason than convenience, I feed my hatchlings in the late afternoon, which means I have to wake them up first. That's easily done by touching their coils with the pinkie held in long forceps, just a gentle nudge or two will do. If the snake lifts its head, flicks its tongue in and out and focuses on the pinky, it's a good sign and just moving the food towards and away from its head is sometimes all it takes to spark some interest. If the snake strikes and takes food from the forceps, it's best to step back and let the snake deal with it without any further disturbance. When it's down in its stomach, then comes the next... and the next... I did say feeding is a time consuming task!

If the neonate pulls his head under or between the coils, you have to work on it harder. A bit of a flick with the pinkie over the body, especially the neck, a bit of a gentle rubbing until the snake gets angry and strikes. Yes, I provoke them into defensive striking. It sometimes takes many hits and misses but once the pinkie is hooked on those sharp teeth, success usually follows. If not, at least the snake had a taste of the food in its mouth and things may go easier next time. Having said that, we must know when to stop the teasing, too much of it can achieve the opposite result.

There are many alternative feeding approaches but basically, if the first attempt fails, try scenting the pinkie with frog, chick down, gecko tails, even fish works sometimes, leaving the food (live / dead) in the enclosure over night, whatever works. Of course, the ambient

temperature in the snake room must be the same as inside the enclosure otherwise when the lid comes off, the change in temperature (and new smells) could be more interesting (or stressing) to the snake than the offered food.

Patience, perseverance and having all the lures (frozen frog, chick, etc.) on hand is the key to success.

After a few feeds, the juveniles start responding to movement and vibrations (lifting the container lid) and the feeding sessions become more enjoyable and rewarding. In the end it's like feeding battery chooks. However, just because a particular snake has had a few successful feeds doesn't mean that all the troubles are over. Sometimes they go off food even after few weeks and the process starts again. With the most stubborn individuals, we have to resort to assisted feeding and as a last resort – force-feeding.

I keep the newly hatched neonates in 2 litre plastic containers that are 14 cm tall and they stay in these for about 3-4 months, depending on their growth. After that, the juveniles are transferred into larger, 8.5 litre containers and at the age of 6 months or so, they go into 20 litre tubs. At about one year of age, I move them into an “outdoor nursery” from where they hopefully find their way to their new owners.

Determining gender

A friend told me that he bought a female Green Python from a reputable breeder and it turned out to be a male. It's not the first time I've heard similar complaints and it's always about females turning to be males, rarely the other way around. When we probe a snake and the probe goes far in, as it should if it is a male, then there is no room for error. Only when the probe goes half way or not far in at all, and we can't make a conclusive decision, can a dilemma arise. To just assume it's a female is a fundamental mistake. When the probe doesn't penetrate easily, it can be due to muscle contractions, inadequate lubrication, poor technique or males may have the hemipenal openings clogged up with old skin. This can happen in particular just before sloughing.

Mistakes of this kind can and do happen even to the most experienced reptile keepers and the only way to be certain about the uncertain is to probe the snake again at another time, preferably after a slough.

As David Wilson pointed out in one of his papers, male and female Green Pythons, *Morelia viridis*, are morphologically indistinguishable. Some may argue that adult males have bulkier heads than females but such a difference is only marginal and unless we have both sexes side by side, it's hard to make a call. Very much the same applies to yellow juveniles. Some herpers are convinced that they can tell the sexes apart by the shape of their heads. Properly conducted, replicated measuring has been done and the morphometric data indicates that there is no significant difference between the sexes. To put it simply – no one can reliably tell males from females by looking at or measuring their heads, even Greg Maxwell confirmed that in one of our discussions. The lengths or shapes of their tails also tell us nothing conclusive, sometimes I wish GTPs were like Death Adders – one look at their tails and you can tell girls from boys.

Having said that, we are currently left with two methods of determining sex in GTPs; “popping”, and “probing”. I said “currently”, because a research is underway (here in Australia) to identify gender by using DNA analysis. This testing is in its infancy but if it ever gets off the ground, it'll be a great relief for breeders and buyers alike.

“Popping” is done by holding the snake upside down around the anal region and pushing the thumb of the other hand from the tail towards the cloaca. By applying a gentle pressure

while slightly bending the snake (to open the cloaca), the hemipenes (in males of course) usually “pop” out. By releasing the pressure, they invert again. This manipulation requires a fine touch and heaps of experience otherwise it can result in spinal injury, particularly in small and fragile snakes such as baby GTPs.

Apparently, the Barkers and other well-known breeders pop GTPs routinely without any “accidents”. I believe practice makes perfect but I have no intention to acquire such a skill through practice. I have reservations about the safety of this method and it needs to be realised that any “accident” may not be immediately evident. Of course, in the case of females, nothing will pop out and the tendency is to push a little harder (just to make sure) as the male’s hemipenes don’t always slide out easily. While popping proved to be useful and safe in many other species, in my opinion, small and fragile snakes should be excluded from this practice.

The other method, more conventionally used, is “probing”. An appropriately sized probe is inserted through the cloacal opening in a posterior direction, and depending how deep the probe enters the genital cavity, it indicates the gender of the snake. I am not going to describe the equipment and technique, it has been well published elsewhere and should not be attempted by novices.

Again, some herpers claim proficiency in probing newly hatched babies, using a piece of fishing line with a burned end (for smoothness) or a similar, thin object. In theory, it’s the same as probing older snakes but the danger lies in that newborn babies have much softer genital tissues that can be easily perforated or damaged in some way. The other concern is that in order to insert the probe, the snake must be sufficiently restrained holding the tail in a straight position to insert the probe, in this case fishing line. This can cause undue pressure on the spine. Green Pythons have very delicate and sensitive to touch prehensile tails, and like any other creatures (including humans), they don’t appreciate having objects inserted into their cloaca.

In my opinion, popping juvenile Green pythons is a very risky practice and personally, I would never buy a snake that has been popped, not even if the Barkers had done it themselves. I am afraid I share the same opinion about probing yellow juveniles. Spinal damage doesn’t always show up immediately and if the genitalia were damaged, we may not find out until the snake reaches sexual maturity. Even then, in case of unsuccessful breeding, we just can’t tell with certainty which partner was responsible for the failure. In other words, it could take 4 to 5 years before we realise that careless probing compromised the snake’s reproductive potential. How long, how heavy or how old a young GTP should be before it’s safe to probe it? It’s a matter of good judgement and the level of personal experience one has with probing. As with popping, probing yellow babies is an equally dangerous practice. The snake should be robust enough so it can be held reasonably firmly and the probe inserted with ease. I would confidently probe a one year-old juvenile, sometimes even younger, depending on their body condition and would always have another experienced person with me to confirm my verdict. If we disagree or the result is uncertain to both of us, I let the other person probe the snake.

Changing from yellow to green

Unlike the Equatorial GTPs, our natives undergo ontogenic colour change (changing from yellow to green) when they are about 8 months old. The timing of this event is not age related; it is triggered by the size of the juvenile. By the age of 8 months, they are about 60 cm long and the change is quite rapid. Some turn green within two days but on the average it takes 7 – 8 days, sometimes longer. Interestingly, this process of changing colour is not synchronised with sloughing.

After the colour change

Some people are suspicious that my GTPs are not pure natives because the yearlings have blue markings on their backs. There is a simple explanation. The brown markings on yellow neonates turn blue after the ontogenic colour change and they disappear completely during the second year of the snake's life. Unlike most other GTP races, the natives change from yellow to green within a few days. The green is initially dark, almost bluish with those blue remains of the neonate dorsal markings. It takes anywhere between one and two years for the dark green to gradually change to bright, lime green so typical of adult native GTPs.

The adult colours and markings are much more conservative than those seen in most of their PNG and Indonesian cousins. The dorsal scales are always bright green but the ventrals can be white, creamy, yellow or even light blue in colour. The vertebral markings are white, yellow or any shade of those two colours. They can be arranged in a continuous or broken line, consisting of a single row of scales along the vertebrae. It's not unusual to see small, regular cross bars or even white speckling all over the dorsal surface. Individuals with yellow bellies may have a few yellow single scales scattered on the flanks but these never form any large or regular patterns, unlike in the GTPs from Biak and other localities. Do adult Aussie natives have blue on them? Yes, and the blue patches can be quite prominent. However, the blue patches or single scales appear randomly on their bodies, never forming regular patterns so typical of the Sorong type. Our natives also lack any black speckling or large white patches as seen in the Yapen and Aru variants.

Captive females tend to turn bluish, sometimes really blue after depositing one or several clutches. This phenomenon is referred to as "hormonal blue", the blue colour often stays for the rest of the snake's life, however, some females revert to green after laying.

In my eyes, the Australian native greens are one of, if not THE most beautiful of all the variants, but because of their little variation in colours and patterns, they probably don't lend themselves to designer morphing.

Until recently, there has been some controversy about the colour of neonates. Whilst many of the PNG and Indonesian populations produce both yellow and red babies, the Aussie greens produce only yellow ones.

Health issues

I regard Green pythons as generally tough snakes and as long as they are kept in the right conditions, little can go wrong. Some keepers are going slightly overboard with spraying and high humidity inside the cages and that can result in water blisters and also scale rot. If it happens to your snake, don't pierce the water blisters; they will disappear with the next slough.

It is essential to keep up the moisture inside their enclosures otherwise they could have problems with sloughing. If the slough doesn't come off in one piece, it must be removed sooner rather than later, either by soaking the snake in warm water, placing it onto a wet bag, or sometimes the remains of the partially sloughed skin has to be removed manually. This can be tricky in juveniles and utmost care must be taken when removing the slough from the tail. If left to dry, the prehensile function of the tail will be diminished and further problems may arise.

Watch out for snake mites! They are a menace on any species but Chondros are particularly sensitive to mite's bites because they have much thinner skin than any other pythons. The little suckers can cause severe damage in a relatively short time.

The biggest worry on everybody's mind is the dreaded rectal prolapsed, as if it was some kind of a Chondro cancer. Why is it prevalent in greens and not in other species? Anyone who watched a GTP defecating would have noticed that they usually suspend their posteriors from a branch before dropping their load, as we expect arboreal pythons to do. If the load is too heavy, the rectum everts out of the cloaca more than it normally would and if the snake is in poor condition (weak muscle contraction) or genetically

predisposed to prolapse, it may not be able to retract the exposed part. Having said that, there is no evidence that rectal prolapse is a hereditary condition - it's just a general assumption.

I tend to think that prolapse, in most cases, is a result of overfeeding, feeding too large food items or a wrong type of food. This topic has been sufficiently discussed elsewhere in literature, so I will leave it at that. It has been suggested that neonates resting on very thin perches could be prone to prolapse more than those with a choice of perches of different thickness. In my opinion, forcing a neonate to rest on a thin perch due to lack of other choice is cruel to start with. However, my neonates have the option of several perches of different thickness and quite often they choose to sit on the thinnest piece there is for days and days, so I don't think this is a potential cause of prolapse.

Some species of snakes eat, then retreat to their favourite resting spot and don't move much until the meal is completely digested and the waste is passed out. When it comes to greens, I don't like to see that. I firmly believe that if the snake moves around, the metabolic process is faster and the body movement also helps in even distribution of the gut contents. A good friend of mine has a female GTP with some history of prolapse, so a few days after each feeding, he takes her out of the enclosure onto the lawn where she defecates. This happens with a remarkable regularity. Exercise is healthy for all animals, including snakes. So, how do we encourage our green darlings to move about? They need some stimulus, which they certainly won't find in a sterile white melamine box with one plastic perch and a water bowl. Snakes get excited by new smells, different surroundings, change in atmospheric pressure, rain, sunshine, whatever - they are inquisitive animals and it's upon us to make their lives interesting.

Are Australian native GTPs less prone to prolapse than the others? I tend to say yes because I have never had a single case of rectal prolapse in my collection but I feel that it has more to do with the size and robustness of the newborn babies rather than their geographical origins. The sooner they get off the pinkies onto fuzzy mice the better because by then they start ingesting bones and fur, ever so important in digestion. What I am saying is; the bigger the neonate, the sooner it will switch to a better diet.

Genetics

This paragraph is short because the only piece of scientific research into the phylogeny of green pythons was published by Rawlings and Donnellan in 2003. This paper suggests that green pythons found in north and south habitats of the PNG highlands have different genetic make up but still conform to one, single species.

To determine phylogeographic distribution, geneticists use mitochondrial genotyping (mtDNA). However, mtDNA is maternally inherited and such analyses will reveal nothing of the paternal site. Furthermore, a hybrid between animals from different populations will not be detected by this method.

That said, the DNA samples from our breeding stock were genotyped, resulting in the haplotypes being grouped within the 'southern clade' (PNG and Australia) rather than the genetically distinct 'northern clade'. To simplify the final analyses, the 'northern' group (DNA samples) were used as an outgroup in the Neighbouring Joining analyses. The resulting tree grouped all the haplotypes from our snakes in the clade comprised solely of Australian mitochondrial haplotypes. This was clearly shown in the histogram (including the samples from males) and the conclusion stated that within these constraints, all the maternal lineages were of Australian origin.

I have no regrets about having our snakes DNA profiled (despite the cost), at least we took that one extra step - but what does it all really mean and is it worth the effort and the cost? Whether you are satisfied with the mtDNA profiling results or not, in the end it comes down to whether or not you trust the breeder. Hypothetically speaking, how can you be sure

that the juveniles you're buying from a breeder are the true progeny of the profiled parents? Yes, their relatedness, or lack of, can be tested by fingerprinting but to do that you would need DNA samples from both parents (and a lot of money) - would the breeder be prepared to give you the genetic material of his / her breeding stock?

Mitochondrial genotyping can't be used to establish relatedness between individuals. To do that, "fingerprinting" or "microsatellite" techniques have to be used, which requires a completely different approach. Although genetic markers for GTPs are readily available, the procedure can be quite costly and not many labs are set up for this kind of work.

The future

The hazy results in establishing phylogeographic distribution of GTPs across their distribution range is at least partially hindered by the small pool of DNA samples and, of course, research funding. Rawlings & Donnellan examined 52 samples from 16 locations, which is not a great amount of material to analyse and compare. Since then, some 200 samples were collected at Iron Range and about 70 from McIlwraith Ranges. These samples lie somewhere in storage waiting to be processed. It represents a wealth of material but unless it's matched with an equal number of samples from all the other localities in PNG and Indonesia, it will be of little help to us.

Needless to say, all GTP breeders are anxiously waiting for the breakthrough in sexing juveniles by examining their DNA. For a moment, I thought we were almost there but then the research came to an abrupt stop. A group of geneticists from the Centre for Cellular & Molecular Biology at Deakin University started collecting sloughs from GTPs of 'known' and 'unknown' gender and the progress was very promising until the usual happened – the funding dried up. Let's hope the guys at Deakin will be able to resume their work and successfully develop this much needed technology.

Conservation

Keeping and breeding Australian native Green Pythons not only gives us the pleasure and privilege of working with these wonderful animals but we are also proud that we are contributing to the conservation of the species. Although our government's fauna authorities don't fully recognise the importance of our role in protecting wild populations against poaching, we are quietly satisfied with our input. The more captive bred GTPs that are available to those wanting to acquire some, the less pressure on wild populations (if there is any).

Many regard successful captive breeding as the pinnacle of reptile keeping, especially since reptiles became a marketable commodity. As many new cross-bred reptiles and different colour morphs are emerging, the hobby of reptile keeping is distancing itself from herpetology. It's inevitable but not necessarily wrong as long as we (and the fauna authorities) recognise the difference between 'fauna' and 'product of herpetoculture'. I trust that at least some of us will remain faithful to pure lines, specific locality morphs and appreciate what nature created, not just what has been created in our incubators.

Please, if you own a native Green Python or two, keep the line pure and do not cross them with non-native types. I feel very strongly about this issue, it's our duty not to bastardise our natural heritage for financial gain - there can't be any other reasons for doing it.

Q&A

Do Green pythons require special care?

Being tropical rainforest reptiles, they need higher temperatures and humidity than species

living in temperate or drier parts of Australia. It's important not to overdo it, as high temps and humidity also provide ideal conditions for fungi and bacteria to grow, hence adequate ventilation is very important. Some keepers believe that the best way to keep GTPs is over a pond of water, in other words, have water in the enclosure instead of solid substrate. It can work provided your enclosure is spacious and tall, but it doesn't work in small cages with poor ventilation. It may also allow the animal to drink water contaminated with faeces.

One perch or several? Is PVC pipe ok?

Definitely more than one, preferably of different diameter and placed at different heights. Plastic pipes are commonly used by many GTP keepers because it's cheap, easy to get, easy to clean and easy to replace. But is it comfortable for the snake to sit on? I haven't asked my snakes but I watched GTPs in other collections slip and slide on those industrial materials, especially when wet. However, once in position, chondros don't seem to mind them.

Do GTPs drink from a bowl or do they have to be sprayed?

They certainly do drink from a bowl, just like any other snake from the day they are born. They will suck up droplets off their scales or the enclosure walls after spraying because it's easy, they don't have to climb down to the water bowl.

Do GTPs need to be sprayed with water?

It depends on the interior conditions of the cage. If there is enough moisture in the air, the snakes don't need to be sprayed but being rainforest dwellers, they quite like the odd shower as long as the water is not too cold. It's particularly important to keep them moist before sloughing.

Do GTPs need a hide box?

Some individuals like to hide in a box from time to time but it's not a necessity. Unlike most other species, chondros rest and sleep wrapped around a branch in the open, even in pouring rain.

My GTP spends a lot of time on the cage floor, is anything wrong with it?

In the wild, Green pythons often descend to the ground in search of food but they always retreat into the canopy or at least into low vegetation before dawn. I would be suspicious if a GTP was resting on the cage floor for prolonged periods of time or too often.

In the wild as well as in landscaped enclosures, GTPs like to rest on a branch sheltered by overhanging vegetation. Maybe hiding under a newspaper on the cage floor is a substitute. It may well give them the same sense of security as a large leaf or a leafy branch would in the rainforest.

How often to clean the cage?

This sounds like a silly question but the answer is straightforward – straight after it has been soiled. As GTPs defecate from the canopy down, they probably never come in contact with their faeces. Although this is a highly speculative concept, we just don't know how sensitive they are and how their system would react to such contact.

How often to feed my snake?

Anybody who feeds Green Pythons more than one food item (of appropriate size) every six to seven days is playing Russian roulette. In comparison, they are a slow-growing species and overfeeding may result in health problems and obesity.

I just bought my new GTP juvenile and it doesn't want to eat.

Yes, that happens quite often and I wish I knew how to resolve this problem. Theoretically, an established snake that had several feeds should continue to feed without too much pause.

There could be several contributing factors such as stress in transit, new surroundings, different photoperiod and even different atmospheric pressure at the new location that may stress the snake. One important aspect that not many keepers pay attention to are new, strange and perhaps intimidating smells exuding from other reptiles kept in the same room. It's like walking into a hospital room or an old pub – the smells just hit you.

I always suggest to people buying a snake from me to take the enclosure as well with the substrate, perch and even bit of a crap in it. When the snake is introduced to familiar surroundings after the journey, it's less likely to stress and usually takes food the next day or so. I am talking about 20 litre plastic container with vents and some furnishings, hardly an expensive gift to pass onto the new snake owner.

Can GTPs be handled?

Some greens are naturally aggressive and able to deliver a nasty bite with their long teeth. Others don't mind being handled but they probably don't enjoy it. The handler must be careful not to put any undue stress/pressure onto the prehensile tail. Never pull a Green Python off its perch by force.