CARPET PYTHONS

David Pearson

Can you imagine losing 50 percent of your body weight in the process of bringing your babies into the world? In most animals, a loss of that amount of body weight would result in death, but for female carpet pythons (*Morelia spilota*) this is their lot. To produce the next generation, they must gorge themselves, starve themselves, lay perfume trails and then spend two months coiled around their eggs to maintain an even temperature.

Mark-recapture and radio-tracking studies of carpet pythons in Dryandra Woodland, Garden Island near Rockingham and other islands has revealed some remarkable insights into the life history of carpet pythons. And it begins with sex. In some carpet python populations in eastern Australia, males indulge in slow motion coiled fights with the winner getting the prize of mating with the waiting female. Not so amongst south-western 'carpets'. Males are much more relaxed and they queue to take their turn with a receptive female, basking on a nearby bush and then moving in to excite the female with seductive tickling using their small pelvic spurs - the only external trace of their ancestors' hind limbs (internally they still have a pelvic girdle). Since adult males are reproductively active every year and females only every 3-4 years, there are lots of interested males for each female.

This carpet python has eaten a tammar wallaby, and is now working on laying down some fat deposits. ***Photo: David Pearson***

Bearing the next generation

For an adult female to be ready to breed, she must have eaten enough prey to lay down extensive fat bodies that will be used to develop the eggs and sustain her during their incubation. When the breeding season commences, she cannot afford to endanger her ova with the risk of injury through grabbing and constricting prey. Instead, she commences a long fast. In late spring when she is finally ready to breed she will move through the bush leaving a pheromone trail, essentially a perfume lure, so that courting males can locate her. Males follow that trail to find her - if she is busy with another male, they may wait or move onto another female. The advantage of the multiple matings for the female is that her progeny will have several fathers and so are genetically more diverse, which increases likely survival and success of at least some of her young.

Once mating is complete, the female will retreat to a quiet place to develop the fertilized ova into eggs. She will typically choose a warm protected site such as inside a log or a rock crevice warmed by afternoon sunshine to lay her eggs. Once the white ping pong ball-sized eggs are deposited, the female coils around them and maintains them at a regular temperature of around 28-30°C. If their temperature drops too low, she may uncoil and bask briefly outside the den or generate heat by small movements (shivering) with her muscles. It takes two months to incubate the eggs and by the time they hatch, she is skinny and weak. As the eggs begin to hatch, the female slips away, her work complete and the hatchling pythons, about half a metre long and weighing about 25g, are on their own.

Breaking her fast

For the mother python, this is a dangerous time. She has lost substantial muscle strength and needs to find and subdue prey quickly as winter is coming and it will soon be too cold for her to digest a meal. If unsuccessful in finding prey, she may die. Some females do manage to survive over the winter, perhaps going without a meal for 12 months!

The growth of the young pythons also depends on finding enough suitable prey. Pythons don't have cutting teeth or limbs to hold food and so are obliged to swallow their food whole. So little carpet pythons eat lizards, geckoes and mice, while larger ones consume birds and large rodents, eventually moving onto larger mammalian prey including possums, bandicoots, rabbits and small wallabies.

Expensive tastes

Their love of such sized prey does mean they can be unpopular with my colleagues that work on such species as numbats, woylies and potoroos, because periodically pythons swallow their study animals complete with their radio-collars! This may become a problem where the level of predation is high enough to limit a population's recovery.

Carpet pythons at Waychinicup National Park have developed a taste for Gilbert's potoroos, a critically endangered species, requiring intervention to reduce their consumption. Pythons are relocated to other nearby habitat when discovered and other ways of locating and capturing them are currently being investigated using some of the information collected during the studies of their life history

Aside from the odd misdemeanour, they are eager consumers of some pest species such as rats and rabbits. While their collective hunger is not sufficient to control such species (after all, rabbits breed like rabbits, and pythons have a much slower and more considered approach to reproduction!), they may delay outbreaks and reduce localised populations of these pests. Many people in country areas have wild carpet pythons living in the roof spaces of houses and sheds and they are an effective deterrent for rats and possums.

Carpet pythons are tolerant of 1080 poison and are unaffected by rabbit calici virus and myxomatosis so they remain in the landscape to 'mop up' rabbits after control operations have been undertaken. Carpet pythons have managed to cope with changes to their diet through the loss of some native species with the arrival of introduced species, but clearing of habitat has seen them disappear over large areas of the Wheatbelt and Swan Coastal Plain.

Carpet python habitat

Pythons need hollow logs and rock crevices for shelter, and in cooler areas, they also require suitably sized hollow limbs in trees. During autumn, pythons will ascend trees and hide in hollow limbs. It is warmer there than in shaded logs on the ground and they will emerge on warm days to bask in the sun on a branch close to their hollow. Young pythons in particular need thick shrubs to ambush their prey of lizards and birds.

To keep carpet pythons in the landscape, it is important to preserve areas of native bush which contain their prey and to retain hollow logs on the ground and hollow limbs in trees for shelter. Maintaining a diverse range of vertebrate prey in the landscape allows pythons to grow (it may take 10 years or more for a female to reach maturity), reproduce and recruit a new generation of pythons to the population. And please take care when driving in late spring! This is when male pythons set out on quests in search of females for mating. The lure of their perfume means the males are not mindful of the dangers of roads and many are killed crossing between patches of bushland.

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Ed: Once described by John Gould as the constant companion of the quokka, there are now approximately 70 Gilbert's potoroos on the planet. Recovery efforts raised numbers from 30 to around 130, but two dry summers and a catastrophic bush fire at Two Peoples Bay drastically reduced those numbers. The Recovery Team is currently assessing a new site for an additional insurance population.

A rarely-seen Gilbert's potoroo (*Potorous gilbertii*). *Photo: courtesy of Gilbert's Potoroo Action Group - Dick Walker*