

## INTERVIEW WITH A RESEARCHER - 2014



### RESEARCH FUNDED BY NATURE FOUNDATION SA

**RESEARCHER: MS SHERRYN CIAVAGLIA, FLINDERS UNIVERSITY PHD STUDENT**

**RESEARCH PROJECT: "RESOLUTION OF SOUTH AUSTRALIAN CARPET PYTHON SYSTEMATICS TO INFORM CONSERVATION MANAGEMENT AND ENABLE THE DEVELOPMENT OF FORENSIC GENETIC TECHNIQUES TO AID PROSECUTIONS INVOLVING CARPET PYTHONS AND HIGHLIGHTS POACHING 'HOTSPOTS'"**

**SUPERVISOR: PROF ADRIAN LINACRE**



Trialling buccal swabbing of snakes as an alternative to the more invasive traditional DNA collection technique of scale clipping  
Photo: H. Dridan

### **What was the aim and purpose of your project?**

My research aims to develop forensic investigative tools for wildlife that are commonly targeted in illegal activities. Australasian carpet pythons are very popular as pets, both locally and overseas and frequently they are the focus of criminal activities, often at the animal's expense. Legislation uses species and subspecies designations, but the science underlying the carpet python taxonomy is not yet conclusive, causing problems when dealing with legislation that relies on these definitions. This project aims to clarify the taxonomic relationships of carpet pythons, while producing the techniques that will enable successful prosecution of criminals. Equally important, the ability to successfully investigate these crimes will help to deter future criminal activity involving these animals.

### Summarise the results of your project.

The carpet python (*Morelia spilota*) is one of eleven species of *Morelia* python and also includes eight subspecies within Australia and New Guinea. As mentioned above, the nomenclature of the subspecies is still debated, causing issues for forensic applications. Two subspecies of carpet python have geographic ranges in South Australia. My results show that the animals residing within these two ranges are most genetically similar to other individuals within the same range. Genetical work shows that from the cytochrome b locus, there is no evidence of interbreeding between these two populations (the ranges of which meet around the Eyre and Yorke Peninsula intersection), but other genetic markers are required to elaborate on this question. The population found in the south west of South Australia is genetically very similar to individuals found in southern Western Australia. The snakes to the east of South Australia are less closely genetically related to each other. The individuals in the north east of the state are most similar to an individual in central west Queensland, while the south eastern populations of South Australia are very closely genetically related to individuals naturally occurring in northern Victoria and south western New South Wales.



L: Traditional slightly invasive DNA sampling technique of taking a scale clipping, which is quite similar process to taking a nail clipping from a human. Photo: H. Dridan

R: mouth swabbing. Photo: H. Dridan

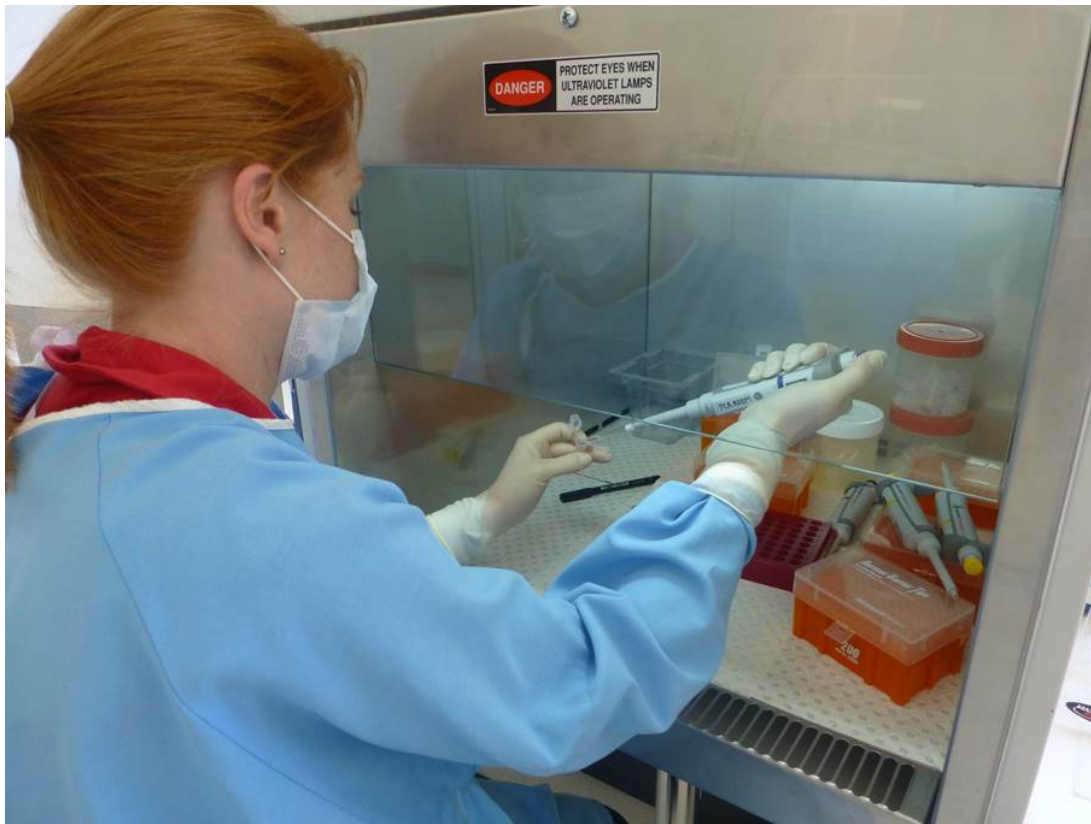
### What is the most exciting thing about this work?

- Snake breeding is popular due to the many different colour and pattern varieties that exist and often breeding involves crosses between species and subspecies this is illegal in many states. Using DNA we can tell whether an unusual looking snake has arisen naturally or is the result of illegal breeding.
- Snake DNA exhibits very similar characteristics to human DNA and I am developing the same techniques we use to identify humans in human forensic investigations for investigations involving snakes.
- Many traditional east Asian medicines involve products from many different animals and plants that have been highly processed and a species identification test is in development

that can identify if a product contains small amounts of carpet python DNA within this cocktail of ingredients.

- There is increasing evidence that wildlife crime is linked to transnational organised crime and snakes are frequently targeted by these groups for direct illegal activities, or to conceal other covert ventures.
- I am fascinated by the ways the different types of DNA found within a creature can give different stories about an individual's ancestors and their relationship with the individuals around them.

“The most exciting thing about my project is the knowledge that I am working to prevent wildlife crime, a facet of illegal activity that does not yet receive the attention it requires, yet is causing devastating and irreversible impacts on our environment. Science is an amazing tool that can help solve so many problems, the possibilities are only as limited as the questions posed. My hope is that the results of the field of forensic wildlife research will transcend current generations and preserve out natural wonders for those who come after us.”



**Sherryn Ciavaglia preparing a DNA test for carpet pythons at the Flinders University Forensic DNA Laboratory run by Prof. Adrian Linacre  
Photo: J Templeton**