



BETTER THE DEVIL WE KNOW

THEIR BITE IS WORSE THAN THEIR BARK. BUT DESPITE THEIR FIERCE REPUTATION, TASMANIAN DEVILS ARE IN TROUBLE. RESEARCH TO HELP SAVE THE CARNIVOROUS MARSUPIAL HAS FOUND THAT WHEN IT COMES TO BRAINS, SIZE DOES MATTER. **JESSICA JURY** REPORTS.

Although it is difficult to determine numbers, scientists estimate that 84 per cent of devils have succumbed to DFTD with more currently carrying the disease. First identified in 1996, DFTD became widespread throughout the population by 2002. In 2009 the Tassie devil was declared endangered. The search for a cure continues, but in the meantime the disease continues to spread throughout the devil population. For the remaining devils it is a doubly downward spiral. The smaller the population, the smaller its genetic diversity, which means when a devil encounters the disease its immune system is virtually incapable of fighting it.

Scientists are now turning to captive breeding to repopulate the species. However, there is concern about the ability of these captive-bred animals to survive once released back into the wild.

Dr Guay and Dr Randall Robinson – from VU’s School of Engineering and Science, and Institute for Sustainability and Innovation – are working with partners Zoos Victoria, the Zoo and Aquarium Association, and Save the Tasmanian Devil Foundation to determine whether the brain size of devils bred in captivity decreases over several generations, thereby limiting their survival instincts in the wild.

Animals bred in captivity with too much human interaction may lose the need to fend for themselves and maintain a wariness of predators. In evolutionary terms, if there is no need to be ‘smart’ to survive, there’s no reason to keep a large brain. In domestic species, it is typical to see a significant decrease in brain size (8 to 34 per cent) compared with their wild ancestors.

“It’s a case of ‘use it or lose it’ when it comes to brain size in these animals,” Guay says. “They need to keep practicing their hunting and awareness of predators. Otherwise, when we release them in the wild, they won’t cope.”

To date, Guay’s research has found that devils’ brain size doesn’t decrease if bred in an enriched captive environment. But he says research showed that with domesticized animal species that don’t need hunt or fend for themselves it is typical to see a decrease in brain size of 8 to 34 per cent when compared with their ancestors.



● Devil facial tumour disease has decimated the species’ population by 84 per cent. (Photos this page courtesy Save the Tasmanian Devil Foundation.)

“THEY MAY NOT BE THE CUDDLIEST OF SPECIES, but devils appeal to a wide range of people and are worth saving for the future,” says Victoria University ecologist Dr Patrick Guay.

In fact, safeguarding the wild temperament of Tasmanian devils (*Sarcophilus harrisi*) is crucial to their survival.

Since European settlement, Tasmanian devils have faced the challenges of road traffic, culling by farmers and habitat loss. But as the media has widely reported over the past few years, what is proving most devastating to the species today is the highly infectious and terminal devil facial tumour disease (DFTD).

DFTD causes tumours to form mostly in and around the mouth, interfering with feeding and eventually leading to death by starvation. Scientists have discovered at least nine strains of the cancer, which means it is evolving, which not only complicates the development of a vaccine but may mean it could spread to related species. DFTD is spread by Tasmanian devils feeding on the same food, fighting and aggressive mating.

● Victoria University ecologist Dr Patrick Guay's research is contributing to saving the Tasmanian devil from extinction.



DEVILS' ADVOCATES – WHY WE LOVE THEM

FARMER'S FRIEND

The world's largest carnivorous marsupial, Tasmanian devils are known as the 'sheep farmer's friend' because they feed on carrion – the decaying flesh of animals – thereby preventing the breeding of maggots and subsequent fly strike in sheep. They are also described as the vacuum cleaners of the forest because they mainly eat animals that are already dead.

OUT-FOXING THE FOX

Devils played an important role in Tasmania 150 years ago, keeping introduced foxes to a minimum and therefore preventing the huge problems that foxes have caused to the ecosystem on the Australian mainland.

SCRATCHING FERAL CATS

Tassie devils help keep feral cat numbers under control, helping protect native birds and animals.

STAMINA TO BURN

Tracking the unique square shaped paw print of the Tassie devil shows they can walk 20 kilometres in a single night.

NO HASSLES

Tasmanian devils may look vicious but they would sooner escape than fight. They do not attack people, although they will defend themselves if attacked or cornered.

EVER THE UNDERDOG

Tassie devils were once widespread across Australia, but the introduction of the dingo 3500 years ago is believed to have caused their extinction on the mainland.

DRAMATIC LOVE LIFE

Tassie devils can be unstoppable in their quest to reproduce. Their mating ritual begins with genial courting but can escalate to violence and domination.

Females will seek a mate that possesses physical strength and dominating characteristics – often attacking males that are too timid. The male will drag the female to his den, where they mate. Once the mating ritual is complete, the exhausted male falls into a deep sleep.

The female – wanting to breed with several males to get the best possible genes for her offspring – will then feign sleep before attempting to sneak out of the den. The male usually catches her and drags her back. But if she is really determined to get away, she will put up a fight.

His research follows trials he previously conducted with the captive-bred stripe-faced dunnart, a small Australian marsupial, in collaboration with the University of Melbourne and Zoos Victoria. The research revealed that when these animals were kept in an enriched environment that allowed them to express normal survival behaviours, they too showed little or no decrease in brain size.

Zoos Victoria is helping Guay by providing funding, co-ordinating devil research undertaken by various institutions and providing the remains of deceased devils from the wild and from Healesville Sanctuary, a major native animal captive habitat 65 kilometres northeast of Melbourne that manages a successful breeding program of more than 90 devils to help conserve the species.

But any long-term future for the Tasmanian devil could lie on a tiny island off the Tasmanian west coast. In August 2012, the Federal Government gave the green light for a release program to be administered at a national park on Maria Island. By the end of 2012, devils will be released on the island under the close but unobtrusive observation of researchers and wildlife experts.

If it proves successful, the next step will be to return the devil back to its Tasmanian homeland, once a cure has been found for the devastating disease or it disappears as mysteriously as it appeared.

To find out more, or to make a donation to help save the Tassie devil, visit www.tassiedevil.com.au