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Better dental care for endangered marsupial

Humans are not the only species to dislike toothache – it turns out that severe dental problems have been plaguing Australia's already endangered captive bilby colonies.

Credit: University of Queensland

To help return the bilbies to better health, the not-for-profit Save the Bilby Fund sought the help of wildlife biologist Dr Steve Johnston, and animal scientist Dr Simon Collins, from The University of Queensland.

Scientists have now gained a better understanding of the bilbies' dental problems and how to treat them using advanced CT scans and 3D printed models.

Dr Johnston and Dr Collins used a highly innovative method of imaging, commonly used in human medicine, to explore the dental pathology of the bilby.

Their focus started with a captive population at the Gold Coast theme park, Dreamworld, comparing these animals to specimens at the Queensland Museum.

'From these scans, we constructed 3D models of the skull and teeth using Mimics Software,' Dr Collins said.

'Our collaborators in the Department of Anatomy & Developmental Biology at Monash University produced real life upscale models of the skull and teeth using a 3D printer.

'The skull models can now be used by veterinary dentists to assess any pathology and develop strategies to remove the teeth safely.'

Dr Johnston and Dr Collins have successfully identified and described the pathology of the captive bilbies and are now looking for the cause of the dental problems.

'We believe the main issue is likely to be associated with the bilbies' diet, but we need to look at more wild animals to be certain,' Dr Collins said.

'The wildlife carers at Dreamworld do a great job of caring for these animals, but we can always improve on our understanding of best practice.'

Increasing bilby conservation in Queensland is now critical, after approximately 150 newborn bilbies were exposed to predators such as foxes and feral cats when a purpose-built bilby fence in remote western Queensland was damaged by floods in early 2013.

Dr Johnston said the technology used in this research was already being put to other uses at the University.

'We are delighted that we can use this advanced imaging technology to not only solve specific veterinary problems, but also incorporate the models into our animal science courses– we plan to implement the new 3D technology as early as next year into our 2nd year anatomy courses at UQ Gatton,' he said

Dr Collins and Dr Johnston have also used the CT scans and models to investigate toothware in the koala and wombat, to describe the vocal anatomy of both species and recently to document the musculo-skeletal system of the salt-water crocodile.

Source: University of Queensland

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