

## Working smarter not harder – finding clues in poo

By Saul Cowen and Wendy Payne

With the ongoing success of the *Return to 1616* project, one of the biggest challenges for the fauna team is keeping tabs on all of the new arrivals as they establish and breed in their new island abode. Thirteen species of animal will eventually be translocated to the island. When you consider that they all have their own little behavioural foibles, keeping track of their 'comings and goings' across a huge island is an enormous task. So, it's a case of working smarter not harder and a new 'bag of tricks' is required! Fortunately, innovative new techniques are being developed that might help.

After an animal has been translocated, radio collars have been traditionally used to find them. However, these can only be used to estimate a single location of one animal at a time. It takes many weeks of tracking to build up a picture of what the animal is doing as it explores its new home. The information gained is critical, but the process of radio tracking is time consuming and labour-intensive.

Enter GPS technology! Just as many cars now have Tom Toms for navigation, GPS (Global Positioning System) tags for animals are now available and the fauna team have put this into practice with the rufous and banded hare-wallabies. This records ALL of an animal's movements creating a more complete picture of an animal's territory, quickly and easily.

Even with this technology, however, if animals wander too far, they can be hard to find with some hare-wallabies travelling 20km! The fauna team have spent days in the field searching for some of these animals doing a Harry Houdini 'disappearing act'. As height gives a signal over longer distance, the team have sometimes had to resort to radiotracking from a plane.

Recent technological advances promise an alternative to plane flights. Drones can search and locate up to 100 animals at once. After a little trial and error, this technology appears to be working well and it's hoped drones will be a part of the monitoring toolkit in the future.



**Above** Michael Johnston using an antenna and a receiver to locate radio-collared animals.



**Above** A hare-wallaby caught blowing a "raspberry" at a camera trap.

Another popular monitoring tool is the camera trap that automatically captures photos of animals passing by. Camera traps are great for finding out 'what' animals are out there. With the help of new research techniques, they can be used to estimate the population size of animals on Dirk Hartog Island, and other islands. However, camera traps have their limitations. Hare-wallabies for instance represent a challenge because these sneaky hoppers are not only shy of conventional cage traps but show a healthy disrespect for camera traps as well. To locate them and estimate their population size on nearby islands, the team use spotlighting which is costly and time consuming.

More recently, the team have been working on a more innovative approach using DNA...from poo! Every time a wallaby leaves behind some poo (or scats to give the more scientific term), they also leave behind cells containing DNA. The DNA in these cells can be used, in the best forensic "whodunnit" tradition, to work out which animal it belonged to. An estimation of population size can be made simply by collecting scat samples within a given area. Although still in the trial phase, the results of this technique so far suggest a promising new, low-cost, easy and efficient tool in the monitoring tool-kit.



**Above** Drones can be used to swiftly collect large amounts of information on collared animals.