Snap happy

GRAEME GILLESPIE AND OTHER NORTHERN TERRITORY GOVERNMENT SCIENTISTS HAVE DEVELOPED A PROTOCOL FOR WILDLIFE SURVEYS USING MOTION DETECTION CAMERAS THAT HAS PAID OFF FOR WILDLIFE MANAGERS.

Photo above: Used with a consistent method, motion detection cameras can provide reliable wildlife survey information. Right: An acquired taste, this crocodile was captured taking a 'selfie' at a motion detection camera. Photos Michael Lawrence-Taylor.

Native frogs and toads are a natural part of the diet of the northern quoll (*Dasyurus hallucatus*), but their appetite for the highly toxic cane toad has greatly contributed to their decline across northern Australia. Elusive by nature, there had been very few sightings of this endangered marsupial across many parts of its former range, including Kakadu National Park. That was until 2012, when cameras captured one scurrying through bushland in the Kapalga region of Kakadu. Dr Graeme Gillespie, from the Department of Land Resource Management, says further surveying revealed a small, but healthy population in the area.

"Since the beginning of our project we've documented about 20 sightings using intensive camera surveying. We also used conventional monitoring methods, but they detected the quolls at a much lower frequency than the motion detection cameras," he said.

An attractive tool

Monitoring animals is a valuable tool in planning how to protect them and their environment. Many of northern Australia's mammals are nocturnal and shy, and without targeted sampling techniques land managers may not be aware of changes in the number or health of these animals.

Interest in camera trapping for wildlife management and research is growing worldwide. Motion detection cameras are cost effective, less labour intensive than other surveying methods and cause minimal stress to animals.

"The camera traps are a highly accessible tool for a wide range of practitioners, including rangers, Indigenous groups and other non-professional ecologist community members," said Graeme.

The cameras record the presence of wildlife at a particular location and time. Used as part of a comprehensive monitoring program, they can help identify the animal species present in an area and detect trends in their populations. They are also a valuable tool for land managers wanting to better understand the impacts of their land management activities. The photographs captured are not only insightful, but often entertaining.

"We have learnt to expect the unexpected when checking on our camera traps; you never know what you might discover, like a saltwater crocodile that took a shine to a camera lure station, that contained peanut butter and oats."

From top: A family of northern quolls, black-footed tree rat, feral cat and a feral pig. Right: Djelk Rangers show a Munguru Munguru Gurindi Ranger the CyberTracker sequence for setting out camera traps.

High standards

In order for groups to collect and share meaningful information, it is important that they use a rigorous standardised method. To meet this need, Northern Territory Government scientists have developed a protocol for wildlife surveys using motion detection cameras, as part of the Australian Government's National Environmental Research Program (NERP).

"During our research, we trialled different arrangements for setting up cameras, until we found a method that consistently gives good detection rates for most species, so other groups can benefit from our experience. There will be a lot of value in groups adopting the same method when they are doing general biodiversity surveys, because then we will be able to compare results from different areas," Graeme said.

Traditional knowledge

The research team worked closely with Indigenous rangers and Traditional Owners in the Warddeken and Djelk Indigenous Protected Areas (IPA) in Arnhem Land to trial and assess the approach. These IPAs have a combined terrestrial area of over 30,000 square kilometres, the majority of which is highly remote and difficult to access. Department Flora and Fauna scientist Alys Stevens says the camera trapping method is an attractive option.

"There are no sealed roads, and most tracks are barely that, and usually only dry-season accessible," Alys said.

"The IPAs now have a meaningful tool which provides results, as well as suits the landscape in which they are functioning, and this can be promulgated as a viable option to other Indigenous ranger groups."

Alys says the method can be largely undertaken independently by rangers and furthers opportunities to spend time on country.

"Wildlife surveys can be designed to connect the socio-cultural goals of landowners. Old and young come together on country and observe and engage with the natural environment in a way that has Western-scientific value at the same time."

Valuable discoveries

The Northern Territory Government has also adopted the method as part of its biodiversity monitoring protocol and it has already delivered promising results. Scientists have been using the cameras to complement monitoring of feral cats to help assess their distribution. Prior to refining methods of camera trap deployment in the Top End, there was very little information on patterns of feral cat distribution. This technology is now helping to shape understanding of the ecology of this invasive species and how it is affecting our native mammals.

"In addition, remote cameras are proving to be far more sensitive at detecting a range of rare species than conventional sampling methods. We have found out that threatened species such as the black-footed tree rat are persisting in several areas of the Northern Territory where they were thought to have disappeared," Graeme said.

The finer details of the method can be found in *A guide for the use of remote cameras for wildlife surveys and surveillance in Northern Australia*, which is available on the NERP Northern Australia Hub website. The guide provides information on the general uses and application of motion detection camera technology for wildlife projects, and the planning and implementation of remote camera surveys across northern Australia.

National Environmental Research Program

NORTHERN AUSTRALIA HUB

FOR FURTHER INFORMATION
Graeme Gillespie — graeme.gillespie@nt.gov.au
www.nerpnorthern.edu.au/research/projects/52