

# Predator Scat Survey 2014

## FACTSHEET: SCIENCE BEHIND THE SURVEY



Collecting a predator scat

**Date:** March-June 2014

**Location:** Eastern Tasmania

**Survey units:** 200-300

### Site selection:

Sites will be selected from those used during Phases 1 and 2 of the first predator scat survey carried out during 2008-2010.

All sites in which fox positive scats were located during the first survey will be resurveyed in 2014.



### Invasive Animals CRC

The survey is supported by funding from the **Invasive Animals CRC**.

**DPIPWE's Invasive Species Branch** is undertaking a predator scat survey to further research on native and invasive predators, and their interactions in Tasmania.

Also known as 'The Great Poo Hunt', the first survey was carried out during 2008-2010 by the Fox Eradication Branch and will be repeated by the Invasive Species Branch during 2014.

Recent advances in genetic technology mean that scat analysis can now identify both **the predator** the scat came from and **the prey** animals found in the scat.

This will provide important information about species distributions and interactions in Tasmania and provides a powerful tool for informing decisions in the management of wildlife conservation and invasive species.

### Research outcomes

The survey is designed to gather information to help locate invasive (introduced) predators such as feral cats, dogs and foxes in the Tasmanian landscape. It will also help assess their impact on native wildlife and the environment.

Scats from native predators such as Tasmanian devils, eastern quolls and spotted-tailed quolls will also be collected and analysed to gather information about their distribution and diet.

### Why collect scats?

Scat surveys are one of the most effective ways of detecting animals that are elusive or in low numbers (or both) in the landscape. Predators may deposit several scats a day and these may persist in the environment with viable DNA for many months.

Scat surveys have become a key component in monitoring programs to identify the presence of invasive predators such as foxes, as well as for monitoring threatened and rare wildlife species in Tasmania.

Scat surveys have a much higher detection rate than methods that rely on sighting or trapping the actual animal itself.

### Scat analysis

All scats collected will be analysed at the Institute for Applied Ecology, University of Canberra using an advanced genetic analysis technique called Next Generation Sequencing.

Previous testing involved Polymerase Chain Reaction (PCR) analysis, which identified if a scat contained DNA from a specific target animal, eg a fox. However, the analysis did not identify other species associated with the scat.

## Next Generation Sequencing (NGS)

NGS enables the direct identification of thousands of DNA sequences simultaneously in a single sequencing run, rather than being limited to a few small DNA fragments through PCR analysis.

It uses an automated robotic processing system to rapidly sequence large stretches of DNA spanning entire genomes. This can reveal many different animals associated with each scat, including the predator that produced it and the prey animals it contains.

This means that each scat collected can now provide a wealth of information about predator and prey species in the Tasmanian landscape, including provenance analysis to identify the populations that animals have come from.

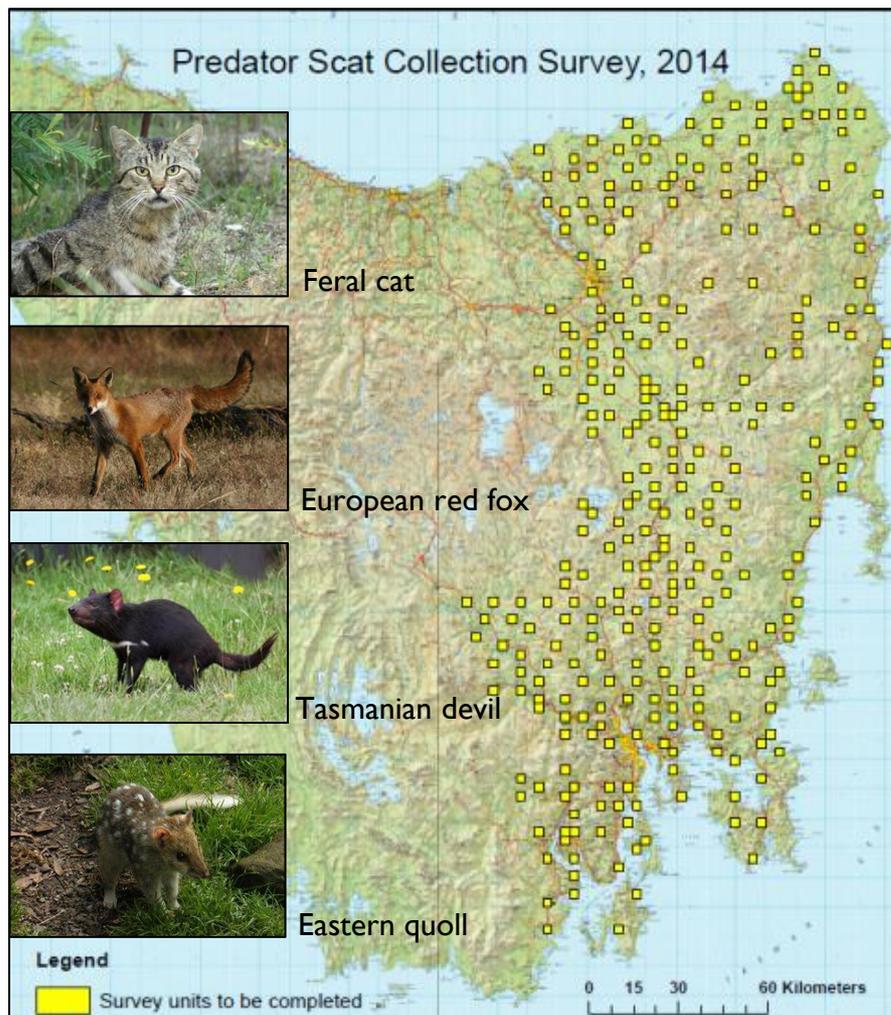
## Prey genetic library

Successful identification of prey species from scats requires the development of a large genetic database of the different vertebrate prey species present in Tasmania.

The Tasmanian Museum and Art Gallery is supporting the development of this database by providing representative genetic samples for the analysis.

## Field ID test

A new field DNA swab test will also be trialled during the survey. This test has the potential to provide rapid predator identifications, possibly in less than 48 hours.



Images: Fox – Chris Cox, courtesy IA CRC; Cat - Daryl Panther; Devil, Quoll - DPI/PWE

## Predator-prey dynamics

The study of food webs, or predator-prey dynamics, provides a deeper understanding of the processes behind ecology and ecosystem functions.

This is especially important where invasive species have been introduced into the landscape and may disrupt the natural balance and threaten vulnerable native species through direct predation and/or competition.

In Tasmania, invasive predators such as feral cats and foxes threaten the diversity of native wildlife. Many small mammal species are especially vulnerable and have become extinct on

mainland Australia due to predation by these invasive species.

With the recent decline of Tasmania's natural top-order predator, the Tasmanian devil, there is a serious risk that invasive predators will increase in abundance and take their place in the landscape. This would have unknown but likely devastating consequences for Tasmanian ecosystems.

## Further information

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