



Save the Tasmanian Devil Program Monitoring Strategy

March 2011

Introduction

This strategy has been prepared by the Save the Tasmanian Devil Program (the Program) to ensure that the activities conducted by the monitoring and management sub-program fit into the overall strategic plan and business plan of the Program.

Context

The Monitoring and Management sub-program supports strategic goals of the Program mainly through activities that contribute to the maintenance of the devils' ecological role and the stabilisation of their populations. These are achieved through:

- Understanding the progression and impact of Devil Facial Tumour Disease (DFTD) on the wild Tasmanian devil population.
- Developing measures to manage the impact of DFTD on Tasmanian devil populations.
- Understanding the ecological consequences of a reduced Tasmanian devil population over the natural range and developing management strategies to minimise negative impacts, including those associated with feral predator populations such as cats and foxes.

Moreover, monitoring of Tasmanian devil populations should be targeted towards:

- Addressing key knowledge gaps in order to develop management actions that deliver effective conservation outcomes for the devils.

Monitoring Framework

The information required to support strategic goals of the Program can be translated into three different monitoring streams described below.

Each monitoring stream contributes information on different aspects of the Save the Tasmanian Devil Program. The first two monitoring streams relate specifically to Tasmanian devils and disease epidemiology. The final monitoring stream addresses the ecological implications resulting from a loss of Tasmanian devils from the landscape. In combination, a complete picture is provided of how Tasmanian devil distribution changes over time and the implications for the broader Tasmanian ecology.

1. Status of devil populations.

A key assumption underpinning the Program is that devils will eventually become extinct on the Tasmanian mainland, primarily as a result of DFTD. With DFTD present in the Tasmanian devil population for fifteen years, it is increasingly important to make informed statements about the status of devil populations across the State including a determination that devils are no longer detectable in areas within their known pre-DFTD range.

Previous long term monitoring has provided information on population responses to DFTD over time. This understanding has been used to model populations at differing stages of disease exposure or prevalence.

Monitoring programs have shown that populations can respond differently following the arrival of DFTD. There are a number of possible explanations for these population responses, ranging from genetic resistance to the evolution of less aggressive strains of tumour. Identifying where and when populations of devils respond in a different way to DFTD can assist in identifying a change in the epidemiology of the disease. More importantly this information could assist in the development of future management actions and planning.

A number of management actions require an understanding of the location of the disease front as it moves through the Tasmanian environment. These include the construction of barriers to prevent the spread, and identifying the risk profile of naturally isolated populations such as Cape Sorell and the south west coast.

Questions addressed in this stream include the following:

- Is there local extinction of any diseased population in Tasmania?
- Are there devil populations that are demonstrating an atypical response to the disease?
- What is the population status of devils across the State?
- Where is the current disease front?

2. Disease Pathology and Evolution.

Recent work by the Diagnostic Services and Research sub-program has demonstrated that DFTD is undergoing an adaptive radiation as a result of subtle micro-evolutionary processes, which could have significant ramifications for the species. DFTD evolution could speed up extinction of devils across the State, or, conversely, could result in less virulent tumour strains that enable persistence of devils.

Monitoring of DFTD evolution requires matching samples from DFTD tumours with devils and locations across the State. Some areas of the State with diseased populations have not been effectively sampled and the collection of additional paired samples from these areas is required to provide a more complete picture of the underlying change occurring in the disease.

Because of the significant potential impacts of DFTD evolution on the Program and the management actions of the Program, monitoring DFTD strains and their differential impacts on populations across the State is a high priority.

Questions addressed in this stream include the following:

- How is the tumour evolving as it moves across the landscape?
- Do different tumour strains behave differently?
- Has there been a change in tumour strains within sites?

3. What are the ecological impacts of a loss of Tasmanian devils?

One of the key challenges facing the Program is to manage the ecological impacts of a reduced Tasmanian devil population across the State. The strategic goal is to understand the ecological consequences of a reduced Tasmanian devil population over the natural range and to develop management strategies to minimise negative impacts, including those associated with feral predator populations such as cats and foxes.

To date, there has been no monitoring activity to assess the likely impacts, which greatly impinges upon the ability of the Program to deliver on its stated goal. Therefore, monitoring of the ecological impacts of reduced Tasmanian devil populations is regarded as a high priority.

Questions addressed in this stream include the following:

- What baseline data can and should be obtained on key ecological parameters in core habitat across Tasmanian devil populations?
- Can we detect changes in these parameters as Tasmanian devil numbers decline?
- Can we monitor and respond to changes in the contribution of other threats to the conservation of the Tasmanian devil?

Integration and Review

An effective monitoring program will provide key information for the development and implementation of management strategies, which ultimately achieve the vision of the Program of *an enduring and ecologically functional population of Tasmanian devils living wild in Tasmania*.

All of the components of this monitoring strategy must be integrated into the development of management actions within the Save the Tasmanian Devil Program. A continual cycle of review and assessment of the monitoring program and projects will be undertaken to ensure they are achievable and relevant to the Program's needs and priorities.

The key questions and focus of this strategy have been developed to ensure planning decisions are based on the most current information available and that new findings are integrated into management actions in a timely manner.

This strategy will be reviewed annually as part of the Program's annual review cycle.