

Save the Tasmanian Devil Program

2010/11 Annual Program Report

Department of Primary Industries, Parks, Water and Environment



The 2010/11 Annual Program Report

The devastation caused by the transmissible cancer, DFTD, on the wild population of Tasmanian devils is a difficult and complex problem. There is currently no cure and no way of diagnosing the disease before it affects the animals. The disease is invariably fatal and the tools available for its management are limited. Despite the challenges, considerable progress has been made in managing the impact of the disease on Tasmanian devils by the Save the Tasmanian Devil Program (STDP; the Program).

This Annual Program Report outlines the Program's performance during the 2010/11 financial year. It includes a description of the Program's direction, governance, the major partnerships and the various collaborations that support our work. The report also includes a summary of the major highlights for the year and key activities for next year. Despite the significant achievements there is still much work to be done; the problem will not be solved quickly and sustained direction and focus are required. This report outlines the scope and magnitude of the effort to save the Tasmanian devil and will be produced each year to inform and act as a record of progress.

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The Save the Tasmanian Devil Program is a nationally significant conservation program for an iconic Tasmanian species. The chief objective of the Program is to ensure “*an enduring and ecologically functional population of Tasmanian devils in the wild in Tasmania*”: an ambitious objective given the magnitude, difficulties and complexity of the problem. Despite the challenges, the STDP is a well organised, well managed and successful program. It has significant community engagement and high expectations. The STDP attracts a wide range of interested parties and has many dedicated and willing collaborators. Enormous effort is being undertaken to help save this species.

The Program’s direction is guided by the STDP Steering Committee which includes representatives from the Australian Government’s Department of Sustainability, Environment, Water, Population and Communities (SEWPAC) and the Tasmanian Department of Primary Industries, Parks, Water and Environment (DPIPWE).

Also included on the Steering Committee are representatives of key organisations involved in the devil conservation effort: the Australian Wildlife Health Network, the University of Tasmania and the Zoo and Aquarium Association (ZAA). The Program relies on several key partnerships including the ZAA, the Save the Tasmanian Devil Appeal and Devil Island Project. A wide range of community support is channelled through our partners. The Program also supports a variety of collaborative activities, particularly related to research into the Devil Facial Tumour Disease (DFTD). Our collaborators include the major universities and medical research institutes of Australia and leading world centres such as the Universities of Cambridge and New York State.

One of the original tasks for the Steering Committee was the development of a Strategic Plan for the Program. The Plan’s specific objectives are to:

- maintain the genetic diversity of the Tasmanian devil population
- maintain the Tasmanian devil population in the wild and
- manage the ecological impacts of a reduced Tasmanian devil population over its natural range

Considerable progress has been made towards these objectives and we now have an insurance population that is growing to capacity and a better understanding of the disease and its affect on the devil population. This Report outlines the advances made in 2010/11 towards our objectives.

I congratulate the Save the Tasmanian Devil Program for the achievements of the last year. The coming year (2011/12) holds a number of challenges and opportunities for us to address as we work with our diverse partners to consolidate the insurance program and continue to investigate the possible translocation of devils to off shore islands.

Dr John Whittington

Chair, Save the Tasmanian Devil Program Steering Committee





The Tasmanian devil is well known to people around the world and has a reputation as a fearsome carnivore that is out of proportion to its actual size. With the extinction of the Tasmanian tiger (or Thylacine), the Tasmanian devil is now the largest remaining marsupial carnivore on the planet and plays a very important role in the Tasmanian ecosystem.

In 1996, a fatal disease was detected in Tasmanian devils, which has spread rapidly through most of the devil population. The Save the Tasmanian Devil Program (STDP) and our collaborators have discovered that the disease, now identified as Devil Facial Tumour Disease (DFTD), is a rare transmissible cancer. There is only one other example of a directly transmissible cancer in wild animals. DFTD has resulted in a decline of 84% in Tasmanian devil numbers; in some areas this decline is as high as 97%. The disease is always fatal and to date no cure or vaccine has been found.

With the threat of this disease taking the Tasmanian devil into extinction, a conference of national specialists was organised in Hobart in 2003 to consider the conservation of the devil. It resulted in a Strategic Plan that has since guided the Save the Tasmanian Devil Program. The Strategic Plan identifies three key objectives that collectively describe the conditions necessary for achieving the Plan's long term vision of *an enduring and ecologically functional population of Tasmanian devils in the wild in Tasmania*. The objectives are to:

- maintain the genetic diversity of the Tasmanian devil population
- maintain the Tasmanian devil population in the wild and
- manage the ecological impacts of a reduced Tasmanian devil population over its natural range

Through the implementation of a diverse range of actions over the past three years, considerable progress has been made towards these objectives by the Save the Tasmanian Devil Program.

The Save the Tasmanian Devil Program has maintained the genetic diversity of the Tasmanian devil primarily through a captive breeding 'insurance' population. An insurance population is a population of disease free animals held in

a way that will sustain them for a long period, providing animals that can ultimately be reintroduced to the wild once the disease is no longer a threat.

Initially it was feared that the disease would spread quickly and extinguish populations as it became established. With this in mind, plans for the insurance population were established, requiring that the Save the Tasmanian Devil Program have a population size of 450 animals by 2014, based on 150 founder animals. Building the insurance population size is not just a matter of acquiring animals; the animals must be certified disease-free, there must be facilities that can house them, keepers to look after them and a breeding program to ensure that the best genetic outcomes are achieved.

There is now an insurance population that will exceed 500 by the end of 2011. This is an outstanding achievement that has relied heavily on our partnerships with the Zoo and Aquarium Association (with 20 participating mainland zoos), Devil Island Project (who have assisted with construction of facilities) and three Tasmanian wildlife parks.

We have also explored a range of innovative strategies for supporting the insurance population. These include the use of Free Range Enclosures (FREs), island translocations and landscape fencing. In doing this we are looking for cost effective ways of keeping Tasmanian devils safely and also maintaining a range of natural behaviours so that they can be released into the wild successfully. We now have over 50 individuals in three Devil Island FREs within Tasmania; and 41 at Devil Ark on the mainland. Another Devil Island will be completed by 2012.

We are also looking at establishing managed populations of Tasmanian devils on islands around Tasmania where the devils will be secure from the disease. A proposal to establish around 100 devils on Maria Island is currently being considered by the Tasmanian and Australian Governments.

Our research has found that diseased mothers do not transmit the disease to their young. This is a very important finding that now provides us with the opportunity of bringing juvenile animals from diseased areas into the insurance population.

A significant component of the Save the Tasmanian Devil Program is to conduct and support scientific



Program staff weighing a devil



research into DFTD and devil ecology in order to better manage both the disease and devils. Several important scientific advances have been made in the last 12 months. For instance, researchers have successfully frozen the reproductive cells of both male and female devils, which could be used to store genetic diversity of devils with important genes and used for assisted reproduction in future captive breeding programs.

Significantly, devils have recently been shown to have a competent immune system, and yet they do not seem to mount an immune response against DFTD. This possibly indicates that DFTD is able to avoid being detected by the devil's immune system – which has implications in our search for developing a vaccine against DFTD.

Devils in populations infected with DFTD have been found to reproduce at a younger age. Further research on free-living devils has demonstrated that devils become increasingly inbred within a few generations of DFTD arriving in a population, probably as a result of reduced dispersal of devils.

The entire genomes of both the Tasmanian devil and DFTD have been sequenced within the last 12 months. A greater knowledge of the genetic diversity of devils across the state has been provided through increasingly refined techniques. A significant recent research project has indicated that there are multiple strains (or 'sub-clones') of DFTD across the state. That is, the tumour itself is rapidly evolving and diversifying. The implications of this important finding will be pursued by further research in the upcoming year.

The Save the Tasmanian Devil Program is monitoring devil populations across Tasmania to determine how far the disease has spread and the impact that it is having on affected populations. This work supports a range of activities including planning for saving populations, managing diseased populations and monitoring any changes in the disease. We annually measure the spread of the disease across Tasmania by detecting the disease front – the point at which disease is first detected in healthy populations. The disease, having started in the northeast corner of the state, has continued to

spread west and south and now affects 75% of the state. Sightings of devils in DFTD-infected areas have generally decreased by 85% and at the original site of infection they have decreased by 97%. However, the good news is that we have not yet seen any local extinction.

Maintaining the Tasmanian devil population in the wild and managing the ecological impacts of a reduced Tasmanian devil population over its natural range is an enormous challenge. Currently, we are planning the construction of a range of fences and barriers that, along with natural landscape features, will significantly slow or prevent the spread of the disease. We are considering these projects in areas that are currently disease-free. We are also looking at removing devils from diseased areas and re-establishing disease-free populations.

We have also looked at the feasibility of reducing the rate of spread of the disease in infected populations. In 2006, we commenced trials of disease suppression at Forestier Peninsula. This work involved regular trapping and the removal of any animals that we found with signs of DFTD. Over the years, we have made significant improvements in our disease suppression methods. However, in an evaluation of the project in 2010 we decided that we were unlikely to achieve eradication of DFTD from the population. As a result we have concluded this work and are looking at other strategies to manage DFTD in the wild.

We have learnt an enormous amount about the disease and the devil over the last three years; and that knowledge is being used to shape the actions of the Save the Tasmanian Devil Program. The emphasis for the Program over the coming years will be on maintaining the insurance population, securing as many DFTD-free devils in the wild as possible and developing ways to manage populations that have suffered the ravages of DFTD. We will also be building the partnerships that support the Save the Tasmanian Devil Program and providing opportunities for community involvement in Tasmanian devil conservation efforts.

The Save the Tasmanian Devil Program



The Save the Tasmanian Devil Program is an initiative of the Tasmanian and Australian Governments and was established in 2003 as the official response to the threat posed by DFTD.

The Program is delivered by the Department of Primary Industries, Parks, Water and Environment (DPIPWE) through activities supported by that Department's Resource Management and Conservation Division and the Biosecurity and Product Integrity Division. The specific activities are grouped under sub-programs that are directed at the major objectives of the Program.

Program Management supports the Program Director (Dr Howel Williams) in the provision of strategic planning and management of the STDP; and services that are shared across the Program. This unit is led by the Program Manager (Andrew Sharman) who also reports to the Steering Committee on the performance and progress of the Program. Program Management supports the operation of the Scientific Advisory Committee, Meta-population Advisory Committee and Stakeholder Reference Group (see below).

An **Insurance Population** sub-program (led by Mark Holdsworth) provides for the establishment of the insurance population, the maintenance of that population and the assessment of alternative strategies to build the insurance population. Specific activities include species coordination services and support to the Meta-Population Advisory Committee (see below); captive management in quarantine; management of relationships with partners; design specifications, construction and evaluation of Free Range Enclosures (FREs); and the evaluation and establishment of landscape fencing and island populations.

The **Monitoring and Management** sub-program (led by Vaughan Smith) provides for the monitoring of devil populations and the ecological impact of decline in populations; surveillance of the disease spread and disease suppression trials. Specific activities include broad-scale monitoring of devil populations; disease suppression trials and evaluation; disease surveillance and monitoring and assessment of ecosystem impacts.

The **Diagnostic Services and Research** sub-program (led by Dr Stephen Pyecroft) provides diagnostics and veterinary support across the Program. This sub-

program also researches the evolution of the disease and potential treatments. Specific activities include the development of diagnostic tests and provision of diagnostic services; veterinary services to the insurance population and investigation of resistance and treatment. This component of the Program also provides for the management and facilitation of collaborative research that supports the STDP.

The **Steering Committee** (Chaired by Dr John Whittington) has as members representatives of DPIPWE (Alistair Scott, Dr Rod Andrewartha and Peter Mooney) and the Australian Government's SEWPAC (Caroline Cameron); as well as members representing key partners: the University of Tasmania (Prof. Sue Jones), the Australian Wildlife Health Network (Dr Rupert Woods) and the Zoo and Aquarium Association (ZAA) (Matthew Fuller). The Steering Committee meets quarterly and has a number of subcommittees which provide advice and recommendation regarding specific aspects of the Program. They are:

Scientific Advisory Committee (SAC)

The SAC assists with the development of science strategy, evaluation of science quality and advice on the capability required to support the program. The SAC was established during 2011 and will provide regular evaluations of the success and effectiveness of scientific programs in meeting the program's objectives. The SAC is Chaired by Prof Chris Johnson and comprises a broad range of knowledge, skills and experience from across Australia.



The Save the Tasmanian Devil Program team

Meta-population Advisory Committee (MAC)

The MAC provides oversight of the insurance population and advice to the Steering Committee on matters relating to the establishment and maintenance of the insurance population. The MAC is Chaired by the Program Director, and has members drawn from DPIPW, SEWPAC, ZAA, the International Union for Conservation of Nature (IUCN)'s Captive Breeding Specialist Group and an independent expert in small population management.

Stakeholder Reference Group (SRG)

The SRG provides a channel for communication between the Steering Committee and the Program's key stakeholders. The SRG is Chaired by the Program Director and has membership from bodies with interests in conservation, animal welfare, primary industry and tourism.

Major partners

A number of key activities for the Program are conducted by major program partners.

The Save the Tasmanian Devil Appeal is funded by the Save the Tasmanian Devil Program and coordinated by the **University of Tasmania's** Foundation. The Appeal is the official fundraising entity for the Program and directs its funds to the priorities of the Program. (<http://www.utas.edu.au/foundation/devil/>)

The **Zoo and Aquarium Association (ZAA)** links over 90 zoos and aquariums across Australia, New Zealand and the South Pacific in a network for wildlife conservation, environmental education and wildlife research. For the STDP it provides species management and coordination across the insurance population. ZAA also administers and manages the Tasmanian Devil Conservation Grants. (<http://www.zooaquarium.org.au/>)

Devil Island Project has worked in partnership with the Program on the construction of three Devil Islands (large Free Range Enclosures) that are integral to the insurance population. (<http://www.devilislandproject.com/>)

The Program also works with a number of other significant partners and collaborators who include the IUCN's Conservation Breeding Specialist Group, Sydney University and a number of researchers across the globe including the United Kingdom and the United States of America.

A number of Tasmanian wildlife parks have partnered with the Program to support the insurance population. These include: Devils@Cradle, East Coast Natureworld, Tasmania Zoo and Trowunna Wildlife Park.

Photograph by Darran Leal



Highlights of 2010/11



2010/11 was a busy and productive year for the Save the Tasmanian Devil Program, its partners and collaborators. Below are just some of the accomplishments from the past twelve months. Go to www.tassiedevil.com.au to keep up to date with the latest STDP activities and achievements.

The preparation of a feasibility study into the potential impacts of a broad-scale fencing project in north-western Tasmania was announced in August 2010 and completed in March 2011. A barrier fence could protect healthy populations on the Woolnorth farming property by breaking the disease transmission cycle; and the study gives the Program confidence that it could build a quarantine-standard fence that could do the job required. Meanwhile, the results of a 20-day survey confirmed that Tasmanian devil populations are persisting in north-eastern Tasmania, where DFTD was first identified more than fifteen years ago.



On Threatened Species Day in 2010 the STDP staff gave presentations on the plight of the endangered Tasmanian devil in Hobart, Launceston and Burnie. We also produced an education resource kit on the Tasmanian devil, and provided the kit free to all primary schools in Tasmania. The kit is available for download from the website (www.tassiedevil.com.au).



The Program's annual Roadkill Project was undertaken with the assistance of the Tasmanian public. Important information on Tasmanian devils killed on the road was provided with 362 incidents reported.

The Program has been involved with the development of the Tasmanian Devil Recovery Plan. The plan identifies the key threats, options and actions required to ensure the recovery of the Tasmanian devil; and

is being prepared by the Tasmanian and Australian Governments.



Attendees at the Tasmanian Devil Insurance Population Workshop

In conjunction with our partner ZAA, we held the Tasmanian Devil Insurance Population Workshop. This annual workshop brought together people from institutions that hold Tasmanian devils. Other achievements within the Insurance Population include the completion of both "Devil Island Two" and "Devil Island Three", 22 hectare Free Range Enclosures (FREs). The opening of "Devil Island Two" near Bridport saw a population of healthy Tasmanian devils return to the very region where, in 1996, the Devil Facial Tumour Disease (DFTD) was first observed. Included amongst the residents of "Devil Island Two" are two Tasmanian devils that went to Taronga Western Plains Zoo in Dubbo in 2007 as founders of the Save the Tasmanian Devil Program Insurance Population. "Michelle" and "Tilley" spent four years in NSW doing their bit to save the species from extinction. The girls joined 19 other healthy devils at "Devil Island Two".

Going in the other direction, ten female and five male Tasmanian devils left Launceston for new facilities at Barrington Tops. To learn about the development of this important insurance population, please see page 11.





Perimeter fence at Barrington Tops

The fencing design for the Free Range Enclosures (FREs) built in partnership with Devil Island Project was announced as the winner of the inaugural Chain-Link Innovation Design Award. As Devil Facial Tumour Disease (DFTD) is spread by biting, a double fence system is employed to ensure that diseased devils are kept completely out of contact with disease-free devils in FREs.

Rounding out a remarkable year for the captive management of devils by the STDP and its partners, Tasmania Zoo at Riverside donated 10 hectares for the State's fourth Devil Island free range enclosure. With the establishment of this FRE Tasmania Zoo will join the official, nationally-integrated Insurance Population.

Overall in 2010/11 the Tasmanian devil insurance population grew from 196 to 294. Two thirds of the population is held in facilities on mainland Australia, with the balance held in Tasmania.



Since 2006, the number of "founder" devils (disease-free, wild-caught animals, used as the basis for the insurance meta-population and to maintain genetic representation) has increased each year, with 111 founders part of the insurance population as of October 2010. (Updated figures are available from the Program website.)

Next year's Program report should feature plenty of photos of devil imps bred within the insurance population – many devils placed in the Devil Island FREs are, at the time of writing, carrying young in



their pouches. Final numbers won't be known until later in 2011.

In other Program news from 2010/11, the Oprah Winfrey Ultimate Australian Adventure aired in the USA and Australia with Tasmania featuring in the very first episode. A small group of the audience members had an up close and personal visit with Tasmanian devils at Bonorong Wildlife Park.



Oprah audience members join Gayle King at Bonorong

Program partners Australia Zoo Wildlife Warriors provided funding for a purpose-built veterinary vehicle for use by the Save the Tasmanian Devil Program's veterinary team. Funds were raised through Black and White Week at Australia Zoo, with merchandise sales, donations and raffles also contributing.

In further fundraising news, the Save the Tasmanian Devil Appeal, the official fundraiser for the Program, raised \$277,000 in 2010/11 through 1,525 donations made by the Tasmanian public, visitors to our state and corporate sponsorship. Much of this funding is directed towards research into the DFTD and successes in this field are recognised the world over. Recently one of our scientists, cytogeneticist Dr Anne-Maree Pearse from DPIPW's Mt Pleasant Animal Health Laboratory, was awarded a prestigious Japanese prize for her ground breaking research into DFTD. Anne-Maree's research helped identify that DFTD is an infectious line of cancer cells passed from one devil to the next by cell implantation.



Key Program Activities and Outcomes for 2010-2011

The following pages provide a snapshot of the Program's key activities and outputs during the 2010-11 year. These activities are delivered through the sub-Programs and are directed towards the major objectives of the Program Business Plan.

In October & November 2010 intensive trapping was undertaken in order to monitor the spread of Devil Facial Tumour Disease. During this time the 233 Tasmanian devils caught were examined and 8 cases of DFTD were detected, all within 5 km west of the Murchison Highway and any previously confirmed cases, suggesting the disease was continuing to move across the landscape at an average rate of 7-10 km per year.

The Program continued to monitor the disease front throughout the year by deploying a series of sentinel cameras across the area bordering the disease front. These cameras assist in detecting the disease as it enters new areas and populations as well as planning future trapping activities.

Tasmanian devils continue to decline across a large part of Tasmania and annual spotlight surveys conducted in February 2011 show there has been a state-wide decline in devils of 84% since DFTD was first recorded in 1996. In North-East Tasmania, where DFTD is thought to have initially emerged around 1996, devil numbers have declined by an extraordinary 97%.

The program uses infra-red cameras extensively in monitoring devil population in the diseased and disease free areas. These cameras can detect Tasmanian devil presence and abundance and also give an indication of the disease prevalence. Recently cameras deployed within an area thought to be diseased provided an indication of a small population of devils which appears to be disease free. Further investigation through trapping supported this. It appear this population has been isolated from the disease by landscape features such as large rivers, mountain ranges and even urban

development combining to prevent diseased devils moving into the area.

Disease suppression work, involving the removal of diseased animals from a population in an attempt to reduce the spread, was concluded at the end of 2010. This had been attempted at Forestier Peninsula but a major review in November 2010 identified that while disease suppression was having an impact, it was not enough to either maintain a substantial population long-term, or to eradicate DFTD from the Peninsula. A final report, detailing the project and the rationale for its cessation, is available on the Program website.

Work is continuing on the evaluation of a fence in the far north west of Tasmania to isolate a healthy population of devils (estimates are around 350 individuals) before the disease arrives. This project is a major undertaking both logistically and financially.



Cattle keeping a close eye on Program staff

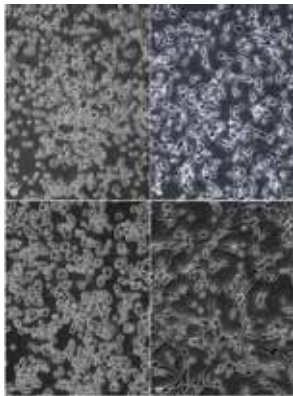
The community continues to provide great support and useful information to the Program's Roadkill Project, helping us to gain a greater understanding of the impact this has on devil population. The Program continues to promote messages about how people can reduce the impact of road kill on devils by changing driver behaviour.



A monitoring camera captures a devil in action



Establishing a DFTD free population of Tasmanian devils on islands is recognised as a key strategy for the Program. Over the last year a comprehensive translocation proposal for establishing a population of Tasmanian devils on Maria Island (off Tasmania's east coast) was prepared. This process has been extremely thorough not only because of the nature of the action, an introduction to an island; but also because the island is a National Park. Extensive surveys have been conducted across the island to determine the current species mix and identify any risks devil may pose to the island's natural values.



DFTD cell strains 1-4

The Animal Health Laboratories at Mount Pleasant continue to provide disease diagnostic and veterinary support to the Program. The team of scientists and vets have not only confirmed over 550 cases of DFTD in devils; they have also documented the different strains of DFTD as the disease continues to evolve in the wild.

The Program has now investigated a number of cancer treatments, such as chemotherapy, that may have some potential. To date none of these treatments have proven effective in stopping or slowing the growth of tumours. New treatments for cancer are being developed for humans and animals across the world, some of which may prove to be helpful to the Program. We continue to keep our eyes open for new and promising developments.

The Program already has an extremely impressive array of scientific researchers from all over the globe directly contributing to research which may help save the Tasmanian devil. In the last 12 months, there have been a dozen scientific papers published in some of the world's best peer-reviewed scientific journals which increase our understanding of the devil and the terrible disease affecting them. A list of scientific papers can be

found on the STDP website www.tassiedevil.com.au.

The Insurance Population is managed by staff working for DPI/PWE in Tasmania and a large number of partner institutions in other states. The Tasmanian devil insurance population grew from 196 to 294 during 2010/11 and will exceed 450 by the end of 2011. Two thirds of the population is held in facilities on mainland Australia, with the balance held in Tasmanian facilities, including the Devil Island FREs at Bridport, Freycinet Peninsula and Bicheno.

Since 2006, the population has steadily grown through new animals (founders) being brought in from the wild and breeding success in captivity has improved each year. The focus is on maintaining genetic diversity and this is being achieved at close to 100%. By captive population standards this is an outstanding achievement. It is likely that by mid 2012 the population will have reached 450-500 individuals; and that could be even higher if disease free populations of devils can be established behind fences in the wild or on islands.

One of the highlights of 2010-11 was the opening of the two new Devil Island FREs at Bridport and Freycinet. The devils in these FREs exhibited normal breeding behaviours during autumn, and nine females were confirmed as carrying pouch young by May 2011. The number of Tasmanian devils held within FREs in Tasmania has now increased to over 50 individuals and with another FRE to be completed in time for the next breeding season, these "Devil Islands" are becoming a major component of the Insurance Population.

Another type of FRE which now houses Insurance Population devils is Devil Ark. Devil Ark is an ambitious large scale project situated in the Barrington Ranges in NSW. The first stage of this project saw a series of large pens built, each containing groups of 2-8 healthy Tasmanian devils for breeding. Work commenced on the project in 2010 and the first devils arrived in early 2011. For more detail, see the "Devil Ark" case study, on p. 11.



ZOO AQUARIUM ASSOCIATION

Zoo and Aquarium Association

The Zoo and Aquarium Association (ZAA) and many of its member organisations provide very significant support to the conservation of the Tasmanian devil. With support from the STDP, ZAA provides the species management coordination for the insurance population and administers the Tasmanian Devil Conservation Grants scheme.

A number of ZAA's members are actively involved in the Insurance Population and their support has been critical to the success of the Program. ZAA's participants in the Program's Insurance Population currently includes:

Australian Reptile Park (NSW); Healesville Wildlife Sanctuary (VIC); Western Plains Zoo (NSW); Monarto Zoological Park (SA); Taronga Zoo (NSW); Dreamworld (QLD); Ballarat Wildlife Park (VIC); Devils@Cradle (TAS); Trowunna Wildlife Park (TAS); Australia Zoo (QLD); Halls Gap Wildlife Park and Zoo (VIC); Currumbin Wildlife Sanctuary (QLD); National Zoo and Aquarium (ACT); Tidbinbilla Nature Reserve (ACT); Symbio Wildlife Park (NSW); Lone Pine Koala Park (QLD); Adelaide Zoo (SA); Cleland Wildlife Park (SA); Gorge Wildlife Park (SA); Pearcedale Conservation Park (VIC); Perth Zoo (WA).



Devil Island Project

Devil Island Project (DIP) has been pivotal in securing land and funds for all Free Range Enclosures currently being used for the Tasmanian devil insurance population. Having built the first Devil Island with

their own resources, DIP has gone on to partner with the Program for the construction of three more Devil Islands. Two of these facilities were opened in 2010/11 and the Devil Islands now house over 40 devils that are part of the insurance population. A fourth Devil Island is under construction at Tasmania Zoo. For more information about Devil Island Project, visit the website www.devilislandproject.com.



Collins Debden

Save the Tasmanian Devil Appeal

The Save the Tasmanian Devil Appeal is supported by the University of Tasmania Foundation. A priority of the Appeal over the past year has been to shift the focus from 'ad-hoc' donations to targeted gifts from individuals and corporate partners. Results are pleasing and show a combination of overall growth in donor numbers and an increase in repeat donations, particularly from the corporate sector. This puts the Appeal on a solid footing for sustainable, long-term growth.

During the year Collins Debden became a major sponsor. Virgin Australia also provides significant support.

The primary outcome of the Appeal's fundraising is the transfer of donations to support the Program's objectives through a structured process of grants and scholarships. These are awarded twice-yearly by the Foundation. In the last year the Appeal distributed \$306,697 to activities of direct relevance to the conservation of the Tasmanian devil. For more detail, visit the website www.tassiedevil.com.au.





Insurance Populations - Case study: "Devil Ark"



The Devil Ark concept was first developed and discussed among mainland zoos wishing to participate in the STDP in 2006. It was formally presented at the Tasmanian devil International Union for Conservation

of Nature (IUCN) workshop held in Hobart in July, 2008. The proposal generated considerable discussion and what appeared to be nearly universal informal support. Much of the support for the concept stemmed from the impression that more natural conditions would provide a range of advantages to the devils – biologically, behaviourally and of course, reproductively.

Since the development of the Devil Ark concept, the managers of the Australian Reptile Park (ARP) have been busy working with a range of partners and stakeholders to bring about the physical creation of one of the most ambitious breeding programs for an endangered predator species anywhere in the world. With funding assistance from the STDP (\$350,000); Devil Ark partners Foundation for Australia's Most Endangered Species (\$300,000) and ARP (\$300,000), construction of the first stage of Devil Ark was completed in January 2011 in time for the arrival of around 40 Tasmanian devils – about half from the STDP, the rest from the Australian Reptile Park and other mainland facilities.

Devil Ark is built on a 500ha bushland property high in the Barrington Tops of NSW. The environment and cold climate of the site is arguably the most suited to replicating Tasmania-like devil habitat on the mainland. It is comprised of pens of approximately 2-8 ha, each containing groups of 6-8 devils.

Of the (only) 13 mature females contained in the pens (at the time of writing, six month post-arrival) 8 are with pouch young – an early indication that conditions are at the very least, heading in the right direction. Importantly, nightly camera-trap analyses indicate a wide range of wild-type social behaviours.

One of the biggest advantages of the Devil Ark model over the 'intensively managed' component of the STDP insurance population is a greatly improved level of cost-effectiveness. Due to the provision of small groups of interacting devils in relatively large

bushland pens, each with a wide range of burrows and retreats for the security of individual devils, the necessity of micromanaging and closely supervising all social interactions between the devils – a feature of traditional 'one-devil-per-pen' intensive holdings – is circumvented.

Of perhaps greater importance, the advantages of maintaining Tasmanian devils in far more natural environmental and social conditions will undoubtedly be conducive to the retention of wild-type characteristics, and the avoidance of unintended 'artificial selection' for adaptation to captivity in the longer term – a genetic trap regarded as a serious fault in many endangered species breeding programs in the past.

Devil Ark is fortunate to have a strong and effective working relationship with the STDP, and hopes to continue to provide a valuable component to the establishment of an effective insurance population for the Tasmanian devil. For more information about Devil Ark, visit the websites www.devilark.com.au and www.devilark.blogspot.com.



Aerial photo of Devil Ark just prior to completion of construction phase 1



Reptile park staff members and volunteers undertook most of the unskilled tasks required in the construction of Devil Ark

Performance of the Program to Targets



Performance of the Program to Targets

The Program's Business Plan specifies a number of multi-year targets for the evaluation of the performance of activities from across the Program. The following table outlines the targets and provides the actual performance as at the end of 2010/11 using a traffic light approach (green for meeting targets, orange for substantial compliance, red for significant underperformance).

Metric	2010/11 Target	2010/11 Actual
Inputs		
Funds committed (\$ millions)	5	5
Funds leveraged from partners (\$ millions)	Na	8.730*
Monitoring and management		
Disease front monitoring- trap nights	200	1054
Long term monitoring sites	3	3
Insurance –Population		
Founders included (n)	110	111
% genetic diversity	>95	99
% risk of extinction	<2	0
sex ratio	50:50	49:51
Average cost/devil in IMP (\$ thousands)	<8	**
FREs established	3	3
Island and semi-wild populations	1	0
Funding to IMP partners (\$ thousands)	500	485
% IMP genotyped	10	5
Program Management		
Persistence of devils in LTM sites (%)	≥90	100
Retain genetic diversity of devils (%)	>95	100

* This is a cumulative total and represents the operational and capital funds contributed by ZAA members- since the Insurance Population Program was established in 2006. It also includes contributions from Devil Island Projects, Inc towards the construction of FREs in Tasmania during 2010/11. An explicit target was not identified for 2010/11.

** At the time of publication these figures were not available. Costs per devil have been calculated for the Program however these include a significant component of research and evaluation in addition to husbandry activities. Issues relating to confidence over operating costs are being resolved and pooled data will be included in future reports.



In 2010/11 the Save the Tasmanian Devil Program received \$5M in combined Tasmanian and Australian Government funding.

The following table shows how these funds were invested across the Program:

Sub-program (activities described in section 2.3)	2008/09 (\$'000s)	2009/10 (\$'000s)	2010/11 (\$'000s)
Program Management	933	998	659
Monitoring & Management	1 064	1 172	1080
Insurance Population *	2 173	2 100	2 411
Diagnostics Services & Research	830	830	850
Total	5 000	5 000	5 000

* Includes all funds for Insurance Population projects, including capital works and Tasmanian Devil Conservation Grants Program.

Tasmanian Devil Conservation Grants Program

The Tasmanian Devil Conservation Grants scheme was established by the Save the Tasmanian Devil Program in 2009 and is administered by the Zoo and Aquarium Association's Wildlife Conservation Fund. In 2010 funding went to the Australian Reptile Park's Devil Ark development at Barrington Tops in NSW and two Tasmanian institutions: Trowunna Wildlife Park at Mole Creek, and Tasmania Zoo in Launceston.

These grants have successfully increased the capacity and number of Australian institutions participating in the Insurance Population with funds being leveraged against existing infrastructure or additional external contributions. In April 2011 the Steering Committee approved the allocation of a further \$400,000 for a second round of grants which will be allocated to successful applicants in 2011/12.

Where to from here?



In 2011/12 the Save the Tasmanian Devil Program has a large number of challenging and exciting projects to undertake in order to further its work towards saving the Tasmanian devil. These include (but are not limited to):

Insurance Populations

- Translocating devils to off shore islands
- Breeding success over time of devils in FREs vs. intensive management
- Behavioral traits of devils in intensive captive and FREs
- Classification of wounds and quantification of wounding rates in devils in FREs
- Camera-based studies in FREs
- Testing of new technologies in FREs and intensive captive enclosures

Monitoring and Management:

- Strategies for monitoring and managing ecological impacts
- Field sample collection to provide tumour samples to genetic researchers
- Monitoring the distribution of DFTD on the Northwest Disease Front
- Tasmanian Devil Roadkill Project



Diagnostic Services and Research

- Chemotherapy/Treatment trials for devils with DFTD
- Evolution of DFTD in wild populations of Tasmanian devils
- Development of DFTD Vaccines
- Further Immunohistochemical and Ultrastructural Characterisation of DFTD
- Devil Embryonic Schwann cell isolation, activation and characterisation
- Devil BAC library screening for Oncogenes, receptor regulator genes and apoptotic genes involved in the initiation and progression of DFTD
- Production of monoclonal antibodies against DFTD cells
- Monitoring the Northwest genotype's response to DFTD

Program Management

- Economic analysis of alternative strategies for securing disease free devils under the insurance meta-population framework
- Conducting feasibility studies to isolate DFTD-free populations by creating suitable devil-proof barriers
- Tasmanian Devil Conservation Grants Round 2

We look forward to reporting against these projects in 12 months time.



Devil Directory (as at 30 June 2011)

Steering Committee

Dr John Whittington (Chair), Deputy Secretary
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Peter Latch, Director, Recovery Planning Section,
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Patricia Cosgrove, Against Animal Cruelty

Eric Woehler, Birds Tasmania

Phill Pullinger, Director, Environment Tasmania

Michael Foley, Conservation Volunteers Australia

Paul Swiatkowski, RSPCA

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Peter McGlone, Director, Tasmanian Conservation Trust

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Simon Nally, SEWPAC

Peter Taylor, Private Forests Tasmania

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Design by the ILS Design Unit, DPIPWE

