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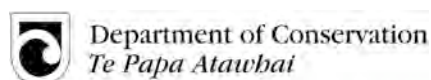
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A Partnership in Pest Control for Integrated Catchment Management:

Working together to protect our people, property and the environment

Kia mau ki me mauri o te talao o Hauraki

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Abstract

In June 2002 a life was lost and people were seriously injured when a weather bomb struck the Thames Coast of the Coromandel Peninsula. The personal and financial cost to the community was huge, but the community and agency collaboration that evolved in response has been a positive outcome for the Peninsula, leading to a major new initiative—the Peninsula Project. A partnership between Environment Waikato, Thames-Coromandel District Council, Department of Conservation and Hauraki Maori Trust Board, the Peninsula Project aims to improve the health and *mauri* of the environment and the safety of communities on the Peninsula. A whole-of-catchment approach is taken, integrating flood protection, river and catchment management, and animal pest control. Animal pest control, aimed at possums and goats, will allow the forest to recover, improving the stability of the catchment and downstream river system, and ultimately reducing the impact of flooding. The Department of Conservation and Environment Waikato are currently in year two of a four-year animal pest control operation that will cover 70,000 hectares of Crown and private land. The improved condition of the forest is already apparent with a notable increase in bird numbers. This project is unique in that the community approached the agencies to undertake animal pest control, believing it could provide long-term benefits in terms of reduced erosion and run-off. For the agencies this was an opportunity to achieve multiple outcomes including improved biodiversity and establishment of a collaborative approach to conservation and whole of catchment management.

Key words: biodiversity, catchment, community, integrated, pests, New Zealand, partnership

Introduction

On June 19, 2002 the MetService advised that a potentially damaging ‘Weather Bomb’—a low pressure system which rapidly deepens, causing barometric pressure to drop at least 25 hPa in 24 hours—was approaching the Coromandel Peninsula, bringing torrential rain and gale force winds. This resulted in widespread damage and the death of a camper at Waiomu. A civil defence emergency was declared. The Coromandel Peninsula has suffered three 100-year flood events since January 2002, so something had to be done to address the high risks to life and property.

The Peninsula Project, an inter-agency, integrated catchment approach evolved that includes initiatives such as soil conservation works, animal pest management, flood protection, river management and land use planning controls. The Department of Conservation and Waikato Regional Council (Environment Waikato) joined forces to target possums and goats on the Thames Coast as part of this overall approach. This partnership has been successfully working for nearly three years, with achievements made at both strategic and ground levels.

Background

The Peninsula Project was established to address pest control and river and catchment management issues across the Coromandel Peninsula. Four agencies (Environment Waikato, Thames-Coromandel District Council, Department of Conservation and the Hauraki Maori Trust Board; refer to the end note for roles and responsibilities) formed a partnership under this project to improve the health of the environment and the safety of communities on the Peninsula. Three key areas of work, where the benefits will be most apparent, are:

- Animal pest management—controlling possums and feral goats;
- River and catchment management—hillslope and streambank planting and river maintenance;
- Flood protection—engineering works and planning controls to reduce risks to life and property.

The first target area of the Peninsula Project was the Thames Coast. The Thames Coast is a picturesque 45 km stretch of coastline from Thames to Coromandel Town. It consists of numerous communities built on tidal deltas and flood plains that are very susceptible to flooding.

The Role of Animal Pest Control

Many of the catchments along the Thames Coast are steep and rugged and subject to very high intensity rainstorms. As a result, catchments are vulnerable to erosion and run-off, while downstream river systems are highly exposed to flash flooding and sedimentation.

Following the weather bomb, communities along the Thames Coast expressed concern about the state of upper catchment areas. The vegetative cover and condition of these catchments is considered a significant factor in the extent of erosion and flooding. The condition of large areas of the forest is poor mainly due to browsing animal pests such as feral goats and possums. These issues increase the risks of flooding and debris accumulation in the lower reaches and therefore need to be managed holistically.

Possums are targeted because they are slowly killing the Peninsula's forests. Reducing the possum numbers will allow the forest vegetation to recover and increase its ability to help absorb and slow down water that runs off hillsides and down valleys after heavy rain. Feral goats are targeted because they eat forest undergrowth and regenerating plants, affecting the stability of slopes and soils and increasing the effects of erosion.

Business Case to Central Government

In April 2004, a business case application was delivered to Central Government on behalf of Environment Waikato, Thames-Coromandel District Council and the Thames Coast communities for assistance in three key areas:

- Central Government agencies (namely DOC and Transit NZ) meeting their responsibilities as landowners and infrastructure managers;
- Provision of funding to support the removal of high risk properties;
- Support for the Peninsula Project (the overall strategy and work programme).

The business case also stressed the importance of an integrated, comprehensive package, agencies and the communities working together; a model for the rest of the country.

On 22 September 2004, the Government announced it had agreed to fully support our business case by contributing a multi-million dollar package towards this integrated river and catchment management plan for the Thames Coast. The Department of Conservation would receive an additional \$4.7 million over five years to target possums and goats. The Government viewed the integrated approach as being pivotal in lowering the risks to life and addressing the many complex river and catchment issues on the Thames Coast over the longer-term.

A Partnership Approach

The partnership formed between Environment Waikato and the Department of Conservation for animal pest control on both private and Crown land has been running for three years. Both parties involved consider it to be a success and of significant value. Project management of the animal pest control component of the Peninsula Project is performed by the Department of

Conservation (DOC). Roughly two-thirds of the land within the Thames Coast Flood Protection area is administered by DOC. There is also significant pest management expertise within the Department. A programme manager position, dedicated to the Peninsula Project, was created within DOC. The programme manager is based in Thames and is supported by a multi-agency project team made up of representatives from DOC, Environment Waikato and Hauraki Maori Trust Board.

The project team is responsible for:

- Strategic planning and budget management;
- Co-ordination and oversight of animal pest control programme;
- Integrating Crown and private land interests;
- Tendering and assessing contracts;
- Result and outcome monitoring design and implementation;
- Reporting to relevant managers and agency committees/boards.

How It Works

The project was largely set up and became effective on the basis of mutual goals, goodwill and personal relationships. This has been supported by the development of a Memorandum of Understanding between the Department of Conservation and Environment Waikato for the implementation of animal pest control on the Thames Coast. This sets out clearly the roles and responsibilities of both agencies and how the project will be managed and funded.

The agencies have also jointly prepared a Five Year Plan for this work that provides both strategic and operational guidance. The project team oversees this plan and regular team meetings are held for planning and monitoring purposes. A collective agency approach is taken to public communications including the use of Peninsula Project branding.

Animal Pest Control Programme

Objective

The key objective for the animal pest control programme is:

“To minimise runoff and sedimentation of Thames Coast catchments by increasing the density of the forest understorey and canopy through the control of feral goats and possums.”

This will be achieved through:

- Annual goat and possum control programmes, to industry standards and protocols, in a planned and coordinated manner;

- Monitoring of animal pest control operations;
- Providing input into measuring the effectiveness of the wider Peninsula Project;
- Community support for the animal pest control programme.

Control Methods

Possum control operations involve a combination of aerial and ground-based methods (mostly bait station networks and to a lesser extent trapping). Sodium fluoroacetate (“1080”) is the only pesticide option for aerial application and arguably the most effective, efficient and most researched control tool available. Aerial application of 1080 is the preferred control method for the large, rugged areas administered by the Department of Conservation. Several private landowners requested that their properties also be included in aerial 1080 operations. Landowners adjacent to properties where aerial application was to occur were consulted on effects and their concerns were addressed by providing information and by negotiating exclusion and buffer zones.

Ground-based operations mostly rely on bait station networks. Private landowners are able to choose which pesticide is used on their own properties. The ground-based work is performed by Peninsula Project staff as well as local contractors. Trapping is not preferred for ground-based control for a variety of reasons. It is very labour intensive (e.g. traps need to be checked daily), challenging terrain poses logistical problems and results are variable. However, this method has been used in areas where landowners are not supportive of toxins.

Feral goat control is achieved through the systematic use of a team hunting method. Hunters use specially-trained, short-range finder/bailer dogs. The dogs have all received bird and stock avoidance training.

Relationships

A fundamental component in the ongoing success of this project has been the support and participation of communities, other agencies and *iwi*. Community support for the project is strong in Thames Coast communities where pest control has been done during the past two years. This has enabled an integrated approach to river and catchment management along the entire Thames Coast. The project endeavours to work with communities and some customised pest solutions have been developed as a result.

Working with Iwi

A Thames-based *iwi* was fundamentally against the use of pesticides on their lands. They were also seeking local employment opportunities for their young people. A pest control unit was established by the *runanga*. The unit was awarded a contract to trap on their lands. Other

contracts have since been entered into for line clearing and bait station filling in other areas. In the Tapu River catchment a private landowner, who works as a trapper, was allowed to trap possums on behalf of the project on his own property, as well as on neighbouring land where the owners favoured trapping as a control option.

Tightening the Grid

In the Tararu catchment, three adjoining private landowners employed a Peninsula Project contractor to set up a denser bait station grid in order to control rats as well possums. In the Tapu Valley, DOC staff set up a rat grid infrastructure, funded by the Peninsula Project, and the local community undertook to fund and maintain on-going rat control in the future.

Active Involvement

A landowner in the Manaia catchment had several hundred goats on their farm but wanted to keep some goats for weed control. Peninsula Project staff helped the farmers muster most of the goats for removal to the meat works before shooting the remaining feral goats. The landowner erected goat-proof fenced enclosures to contain the few goats they intend to farm.

Monitoring

To assess the achievement of the project objectives a range of on-going monitoring programmes have been developed to measure changes in forest composition, canopy and undergrowth health, bird abundance, slip re-vegetation, soil stability, stream sedimentation, channel stability and stream ecology.

Forest Vegetation

Vegetation monitoring plots are used to determine whether goat and possum control is effective in increasing forest vegetation diversity and condition within the treated catchments. In the long-term, increased species richness, increased recruitment and decreased mortality of palatable species is expected. Forest canopy condition is also assessed in the short-term with an expected increase in canopy foliage cover, reduced possum browsing damage and less observed dieback if possum control is effective.

Two vegetation monitoring methods are used, namely 20 x 20 m permanent plots and Foliar Browse Index (FBI) plots. In the 20 x 20 m plots, tree stems, saplings, vines, seedlings and ground cover plants are measured and counted within each plot. The data from these plots is used to assess long-term changes in vegetation composition and structure. Permanent plots can also be fenced to exclude goats and thus provide a comparison of vegetation change in the

absence of goats. Exclosure plot pairs are established in addition to “open” 20 x 20 m to measure of the effectiveness of goat control in the catchments. FBI plots involve ground-based assessment of possum-preferred tree species to determine the impact of possums and vegetation response in relation to possum control. Randomly-selected, individual trees are permanently marked and repeatedly assessed for canopy foliage cover, possum browse score, stem scratching, canopy dieback, flowering and fruiting.

Birds

Bird monitoring is done using line-transect distance sampling methods. Monitoring focuses on the abundance of North Island tomtit (*Petroica macrocephala toitoi*) but data is also collected on tui (*Prosthemadera novaseelandiae*), bellbird (*Anthornis melanura*) and New Zealand pigeon (*Hemiphaga novaseelandiae*).

Catchment

Catchment monitoring aims to give an indication of the long-term change in soil erosion, water and sediment yield from catchments and associated effects on aquatic habitat on the Thames Coast resulting from improved vegetation cover following animal pest control. The monitoring focuses on the re-vegetation of slips, erosion and soil stability, in-stream sediment and flow, in-stream channel stability, and stream ecology and habitat quality.

Bait and Carcass

Bait and carcass breakdown monitoring is done to validate and if necessary amend the caution period for areas where 1080 is applied aerially.

Rats

Rats pose a significant threat to native wildlife. Rat monitoring, using tracking tunnels, is regularly undertaken. In the Tapu Valley Block, the rat-tracking rate decreased from 98% prior to the aerial 1080 operation, to 5%, three weeks later.

Possums

The success of possum control operations is measured by the residual trap catch index method prescribed by the National Possum Control Agencies.

Results

The operational target for possum control for forest restoration is to obtain a post-operational residual trap catch index (RTCI) of 5% or less.

POST-OPERATIONAL RESULTS OF POSSUM CONTROL OPERATIONS

Aerial 1080 Operation	Area treated	RTCI %
2005/2006	12,863 ha	1%
2006/2007	13,141 ha	1.4%

Ground Control Operation	Area treated	RTCI %
2005/2006	4,015 ha	9.8%
2006/2007	6,345 ha	2.7%

The RTCI for the ground-based operations carried out in 2005/06 was 9.8 %. This was due to a variety of reasons. High rats numbers resulted in rats taking baits intended for possums. Optimal coverage of the area by bait stations was challenged by rough terrain and the state of the forest in some areas, where total forest collapse had occurred. Ground-based work in the 2006/07 operational area is on-going. Initial monitoring results look promising with an RTCI of 2.7 % achieved in the Waiomu-Tapu Block.

GOAT CONTROL RESULTS

Operation	Area covered	Goats killed
2005-06 Financial year	8,336 ha	566
2006-07 Year-to-date (April)	6,000 ha	750

The target for goat control is less than one goat per effective hunter day controlled (shot). An effective hunter day is defined as a full days work for one hunter. The target has been achieved in each operation.

The Benefits of a Partnership Approach

The public often perceived the Department of Conservation and Environment Waikato to be doing similar things but not working together. The partnership has allowed the two agencies to align their goals as far as animal pest control is concerned, and demonstrate wider environmental gains by doing so. We've found that we can achieve a lot more by combining our efforts and a pest-free Peninsula for some key species may even be a possibility in the future.

The key to the success of this project has been the willingness of the agencies, *iwi*, communities and landowners to work together. An essential element in that relationship has been having a common goal—that of improving the forest and stabilising the catchments to reduce erosion and run-off. There have been operational benefits also. For example, DOC has undertaken feral goat control in the Central Coromandel and Waiomu-Te Puru areas on Crown land since the 1990s. These areas have suffered from constant re-invasion from surrounding private land. The Peninsula Project enabled this re-invasion issue to be addressed by controlling goats on private land as well, leading to long-term cost savings. The same principle applies to possum control.

Challenges

With any partnership there will be challenges that come with the different cultures, drivers and systems that exist within each. The Department of Conservation and Environment Waikato have different mandates and funding, and they have different experiences with communities and landowners. This has been an advantage in some instances where, for example, the Department of Conservation has worked with certain landowners on pest control operations in the past where Environment Waikato has no history to rely on, or where, because of the consultation and work undertaken by Environment Waikato with communities due to flooding, support for pest control has been gained where it has not been supported in the past.

With the agencies working together so closely on this programme, there is the potential for people to confuse the roles and identities of the individual organisations. Fallout from political issues affecting one project partner have the potential to affect the other partners. For example, recently there has been community reaction in relation to the Department of Conservation's application for the re-assessment of 1080, and to proposals contained in Environment Waikato's draft Regional Pest Management Strategy.

The single biggest challenge facing both agencies at present is the securing of ongoing and future funding for a programme that has been very successful. Successful in terms of achieving targets and capturing the imaginations of agencies and communities as to what might be achieved if we continue to work collectively.

Summary

The integrated approach currently taken on the Coromandel Peninsula for river and flood management has brought about an effective pest control partnership and achieved positive results. This is particularly true where aerial possum control methods have been used. Developing techniques that will achieve equally good results with ground control methods in difficult terrain will be important for future operations.

The partnership formed by Environment Waikato and the Department of Conservation has worked well and achieved more than just a reduction in possums and goats on the Thames Coast. Community support, opportunities to engage local contractors, and to consider a programme beyond the original have also been possible. The synergy from pooling expertise, experience and interests has, in this case, led to a successful partnership that is now looking at potential linkages to other activities on the Peninsula and what might be achieved in the longer term to protect our people, property and environment.

END NOTE: Roles and Responsibilities of Partner Agencies

Environment Waikato

Environment Waikato is responsible for the overall management of the Waikato Region's rivers and their catchments, including the effects of flooding and erosion. As part of the Peninsula Project, Environment Waikato is working with local communities to better protect them from frequent flooding and erosion. This will be achieved by undertaking work that helps to maintain stable rivers and streams, and productive land and soil.

Thames-Coromandel District Council

Thames-Coromandel District Council is responsible for ensuring the Peninsula's communities have the services and infrastructure they need. The Council's role in the Peninsula Project is to determine and plan for appropriate land use so that communities are safe and sustainable.

Department of Conservation

The Department of Conservation's mission is to conserve New Zealand's natural and historic heritage for all to enjoy now and in the future. The Department's role in the Peninsula Project is to control animal pests (feral goats and possums) to help reduce environmental damage and the impacts of erosion and flooding.

Hauraki Maori Trust Board

The Hauraki Maori Trust Board has a responsibility for developing policies and strategies that will improve and sustain the *mauri* of Hauraki. This role includes a strong interest in protecting and enhancing the water quality and stability of our rivers, streams and estuaries and our cultural heritage on the Peninsula.