

BIOSECURITY

SUMMARY 2007-08

OVERVIEW

- Northland Regional Council (NRC) is the management authority for pest plants and animals in the region.
- The Council's goal is to prevent potential pests from entering the region, in addition to managing existing targeted pest infestations.
- The Council works in partnership with local communities to facilitate Community Pest Control Areas, in addition to managing its own pest management strategies.
- At a national level, the Council works with other regions and organizations to develop and trial biological control mechanisms and research new or potential pest threats, including Kauri Dieback.

PERFORMANCE TARGETS

Work to reduce the adverse impacts of exotic organisms, pest plants and animal pests on primary production, natural ecosystems and on human health:	Target Achieved:
➤ Promote pest management options, work in partnership with Biosecurity New Zealand to identify, eradicate, contain and manage pest species and provide an organism identification service to the public.	✓
➤ Undertake animal pest management operations and report annually to the Landcare Committee on the achievement of set targets.	✓
➤ Implement pest plant service delivery programmes and report annually on the implementation of pest management strategies to the Landcare Committee.	✓
➤ Enforce rules in the Northland Regional Pest Management Strategies and report to each Council meeting on the number of sites inspected and the outcome of these inspections.	✓
➤ Provide advice on the control of problem plants, animals and insects and report to each Council meeting on the number and type of enquiries received.	✓

SUMMARY OF RESULTS 2007-08

- The NRC Biosecurity team responded to 833 enquiries in relation to pest management.
- The Biosecurity team continued its pest management operations involving nine pest plant species, four pest invertebrate species and nine pest mammal species.
- The Council continued to administer seven animal and 17 plant Pest Management Strategies.
- New biological control agents were trialed in Northland for gorse and boneseed pest plants.
- Up to 1 July 2008, 17 Community Pest Control Areas have either been approved or are being negotiated with communities in Northland.
- The organism responsible for Kauri dieback was isolated from soils in Northland.

INTRODUCTION

As the management authority for pest plants and animals, Northland Regional Council (NRC) is responsible under the Biosecurity Act 1993 for locating and controlling pest plants and animals in the region. Pests of particular concern in Northland are identified in the **Northland Regional Pest Management Strategies**. These are a collection of action plans that describe why and how plant and animal pests will be controlled.

During 2007-08, the Council Biosecurity team responded to 833 enquiries in relation to pest management. Biosecurity staff also carried out monitoring and/or control of:

- **Terrestrial pest plants** - including Nassella tussock, Spartina, Bathurst bur, Californian thistle, nodding thistle and Lantana;
- **Invertebrate pests** - including guava moth, tropical grass webworm, gum leaf skeletoniser and pest ants, such as Argentinean ants;
- **Pest animals** - including possums, mustelids, cats, rats and goats; and
- **Maritime invaders** – including sea squirt.

NRC's goal is to prevent potential pests from entering the region, in addition to managing existing targeted pest infestations to levels where they no longer pose a threat to natural ecosystems, primary production and animal and human health. In addition to managing and operating pest management strategies, it is the role of the Council to work in partnership with local communities to promote pest management and facilitate Community Pest Control Areas in the region.

NRC also participates in a collective with 12 other regional councils and DOC to develop and trial new biological control mechanisms for pest plants. Key personnel from the Biosecurity team are also involved in the Kauri Dieback Response Team, which has been established at a national level in order to assess the risk, and determine methods to prevent the spread of this new pathogenic organism.



Photo: The pest plant 'Manchurian ricegrass'

PEST MANAGEMENT STRATEGIES

Regional Pest Management Strategies

Pest species in Northland are identified in the Regional Pest Management Strategies (RPMS), published by NRC. The purpose of these strategies is to provide a strategic and statutory framework for the management of pest plants and animals. The primary objective is to achieve comprehensive and integrated management of pests in Northland.

Pest Plants

Each pest plant listed in the RPMS is given a management designation, which indicates whose responsibility it is to control that pest. The designations are as follows:

- Service Delivery – Pests with limited distribution or density. NRC is responsible for funding and implementing appropriate management programmes.
- Total Control – Pest plants in defined areas that land occupiers are required to treat whenever they appear on their land.
- Boundary Control – Pest plants in defined areas that land occupiers are required to treat in boundary situations in order to prevent spread to neighbouring properties.
- Quarry Control – Pest plants that owners or occupiers of quarries or metal stockpiles are required to control or eradicate to prevent spread via roading material.
- Roadside Control – Pest plants that road controlling authorities are required to clear from the region's road reserves.
- Community Control – Pest plants that have total control status within a designated Community Pest Control Areas. Land occupiers are required to control these plants according to an agreed management plan.
- Surveillance – Plants that pose a potential threat in Northland. NRC will seek to eradicate these species if identified in the region.
- Advice Only – NRC will provide advice only for these pests.



Photo: Pest plant Lantana – designated as 'service delivery'

Service-delivery 2007-08

- **African feathergrass** (*Pennisetum macrourum*) - of the 63 recorded sites in Northland, all were inspected during the 2007-08 survey season and 33 were found to be clear of new plants. This amounts to a 30% increase in the number of 'clear sites' compared to the 2006-07 survey season.
- **Lantana** (*Lantana camara*) – In total, the Council has inspected 500 sites in the Whangarei District, inspected and sprayed a number of sites in Dargaville and Te Kopuru urban areas and sprayed 300 sites scattered throughout the northern Kaipara District Council roading network. An intensive programme in the Far North was launched to detect all known lantana populations north of Pukenui. This was aimed at containing the advance of the species northwards. Over 200 sites were located and sprayed. Once initial control has been undertaken at a site it then becomes the land occupier's responsibility to maintain the site clear of Lantana.
- **Manchurian ricegrass** (*Zizania latifolia*) – Throughout the region, 76 sites are included in the control programme. All sites are monitored twice a year and any regrowth is sprayed. Monitoring results show 16 sites were clear of regrowth in 2007-08. A further 42 sites had regrowth of less than 10% of the original infestation level. The remaining sites had regrowth of between 10% and 50%. A partnership contract with Biosecurity New Zealand was also entered into which will result in an expanded programme of control during the 2008-09 financial year.
- **Nassella tussock** (*Nassella trichotoma*) – Nassella Tussock has been recorded from 39 properties in Northland. All sites were surveyed during 2007-08 and a total of 54 plants were found after intensive searching. This is an increase of 21 plants from 2006-07. A total of 24 properties which have had this plant controlled have now remained clear for four years.
- **Spartina** – Spartina is present at 150 known sites in Northland, and covers an area of approximately 100 hectares. All of these sites, bar two, have now been sprayed at least once. Of the total area, 50 hectares now has nil or very minor regrowth. Major infestations are present in the Kaipara, Hokianga and Parengarenga Harbours, with smaller infestations present in the Bay of Islands, Houhora, Rangaunu, Mangonui and Whangaroa harbours and the Taipa River. The Spartina programme is ahead of target and the bulk of Spartina is expected to be eradicated well ahead of the programme's target date of 2020.

Total control 2007-08

- **Bathurst bur** (*Xanthium spinosum*) – During 2007-08, 81 sites of Bathurst bur were inspected to ensure that property owners achieved complete control of all plants. There was generally good cooperation from landowners however some required a reminder letter.
- **Californian thistle** (*Cirsium arvense*) – During 2007-08, five Californian thistle sites were inspected. A total of 24 sites were identified in 2006-07 and monitoring of these sites is still ongoing. The total number of sites is still increasing each year as new populations continue to be found.
- **Nodding thistle** (*Carduus nutans*) – 72 sites of nodding thistle were inspected during the 2007-08 survey season to ensure that property owners achieved complete

control. Due to the short seed life of this species, and cooperation of landowners, it is hoped that eradication of this species can be achieved in the medium term on most sites.

Boundary, roadside and quarry control 2007-08

Boundary control enquiries received during the 2007-08 financial year mainly involved requests for information or advice on regulatory requirements and control mechanisms. In addition to enquiries relating to boundary control, the Biosecurity team also received a number of complaints relating to the presence of pest plants on property boundaries. All complaints were responded to within five working days and boundary clearances enforced.

Roadside weed clearance is progressing with the three district councils implementing control programmes in accordance with the RPMS. The objective is to ensure that one fifth of the areas included in the district council and Transit NZ five year roadside management plans are cleared of broom (*Cystisus scoparius*), gorse (*Ulex spp.*), pampas (*Cortaderia spp.*), privet (*Ligustrum spp.*) and wild ginger (*Hedychium spp.*) by the end of the plan period.

All operating quarries were inspected during the 2007-08 financial year and most sites were found to be implementing control activities as specified in the RPMS.

Surveillance 2007-08

Twelve plant species have been identified as posing a potential threat in Northland. These 12 pest plants have a “very high” national pest status and have either never been found in Northland or are rarely found in Northland. One plant, evergreen buckthorn (*Rhamnus alaternus*) is known at one site in Northland and during the 2007-08 financial year, contractors spent two weeks clearing the core of the site and eradicating outlier populations. The aim is to eventually eradicate this species from the site entirely.

As part of a national collaboration between the Nursery Association and local and central Government, NRC Biosecurity staff annually inspect plant nurseries and other plant retail outlets to check for plants that are banned from sale and distribution under the Biosecurity Act 1993. No unwanted organisms were found in any establishment during 2007-08.



Photo: Evergreen buckthorn

Invertebrate Pests

Guava moth

The guava moth (*Coscinoptycha improbana*), a native of Australia, has a voracious appetite for the fruit of many Northland trees – feijoa in particular. They were first found in Kaitaia in 1997. Since then, NRC has been involved in monitoring the spread and distribution of guava moth in the region. In 2004, guava moth were found to be well distributed throughout Northland. NRC received several calls from orchardists during 2007-08 in infested areas wanting to learn more about how to control this pest species.

The Council has produced a pamphlet to assist identification and management of guava moth, which is available on the NRC website – <http://www.nrc.govt.nz/Resource-Library-Summary/Publications/Pest-insects/>.

Tropical grass webworm

The tropical grass webworm (*Herpetogramma licarsialis*) has caused severe pasture damage in the Far North. In the last major outbreak in 1999, five hectares of paddock were completely chewed out in less than 48 hours. Caterpillars were recorded at 1500 per square metre, equivalent to 15 million per hectare.

NRC operates an annual monitoring programme on Far North properties. Monitoring is undertaken over the summer months (December-April) and involves installing pheromone traps to capture the adult moths and undertaking weekly counts of webworm larvae at four separate sites to determine the number of larvae per square metre. The counts are then used to determine the number of larvae and adults present at each site, which can be used to pre-empt a heavy infestation of webworm. If farmers are pre-warned of an imminent outbreak, it enables them to instigate management practices that can lessen the impact of an infestation.

In addition to annual monitoring, detailed weather data, including rainfall and hourly temperature recordings, is also collected by the Council and the potential risk of pasture damage is reported to farmers on a regular basis, recorded in the Kaitaia-based 'Northland Age' newspaper and on the NRC website.

Over the summer of 2007-08, moths caught per pheromone trap peaked at 40. A peak of 35 larvae per square metre was recorded at one site during April 2008. Feeding damage by tropical grass webworm during the summer/autumn of 2008 was the worst seen since 1999 and began as early as February, most likely as a result of favourable weather conditions. Spring through to autumn was characterized by consistently moist, warm and humid weather, which produced favourable conditions for kikuyu growth and build-up of webworm populations. Farmers were advised to harrow affected areas, if feasible, to break up the thatch and increase the risk of desiccation to developing larvae. Similar monitoring will continue next financial year.

Gum leaf skeletoniser

The gum leaf skeletoniser (*Uraba lugens*) is an Australian insect that attacks the foliage of trees, in particular gum tree (*Eucalyptus* sp.), causing significant damage. Monitoring of this species has shown that it is now widespread in the greater Auckland region. NRC works in collaboration with HortResearch, Biosecurity NZ, and Ensis to monitor the distribution and spread of this insect in the Northland region.

In March and April 2006, 60 pheromone traps were deployed on eucalyptus trees at high risk sites throughout the region. Of the 60 traps, only four had any moths which resembled the gum leaf skeletoniser. These are currently being formally identified. To date, the gum leaf skeletoniser has not been identified in Northland. The monitoring undertaken by the Council is not routine and no further monitoring was conducted during 2007-08 however further monitoring will be undertaken as required.

Pest ants

Pest ants, in particular the Argentine ant (*Linepithema humile*), have become a significant pest issue in Northland in recent years. The majority of known records of this species come from the region's urban centres. However, a survey of 14 significant ecological areas undertaken in 2006 did return one positive record. Due to the slow natural rate of spread of this species (200m/annum), it is highly likely that small populations may have been missed outside areas previously surveyed.

Future monitoring of this species will include surveillance monitoring at entry points into the region, for example, ports and marinas, and surveys of significant ecological and economic areas, where the potential impact of a pest ant incursion is high.

Pest Animals

As with pest plant species, each animal pest listed in the RPMS is given a management designation, which indicates who is responsible for managing the pest. The current designations are as follows:

- Service Delivery – Pests with limited distribution or density. NRC responsible for funding and implementing appropriate management programmes.
- Cost Recovery – NRC control on a cost-recovery basis where landowners have requested control works to be undertaken.
- Community Control – Pests controlled in designated areas where land occupiers are required to control selected pests to levels specified in a management plan.
- Surveillance – Species that pose a potential threat. The public are encouraged to report sightings to NRC and NRC is responsible for implementing surveillance and control work if and when found.

NRC's achievements to date in terms of animal pest management include:

- Completing a 'once-over' control programme in the region for possums.
- In association with the Department of Conservation, reducing wild Sika deer in Northland to one population, which is located in Russell forest.
- Establishing approximately 15,505ha of Community Pest Control Areas for continuous control of pests, including possums, rats and mustelids.
- Assisting Northland's landowners with free advice and discounted poisons and traps, to assist them with their pest problems.

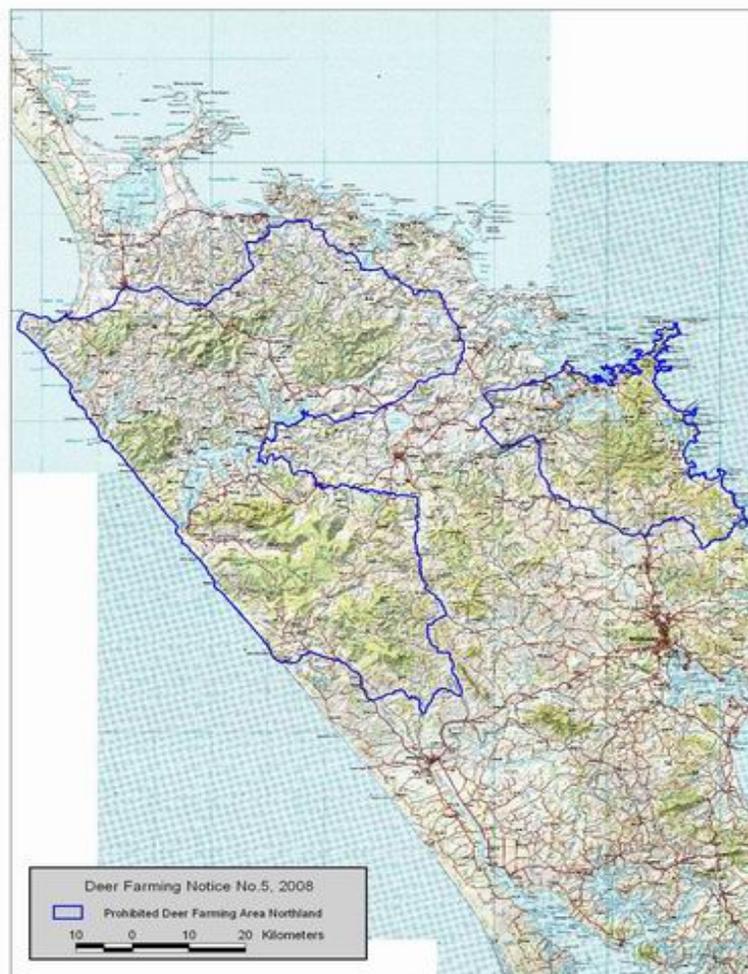
Over the past few years, NRC has moved in a new direction in terms of pest animal control. The focus of NRC's work is moving from a single-species, targeted approach to an integrated pest management approach, where a number of pest species are controlled over a smaller area. This approach has developed out of a realisation that by controlling a single species, it can encourage other pest species to flourish and so a more integrated approach to pest management is required. NRC is now focusing on

assisting community groups and landowners who are committed to protecting economic, biodiversity and/or cultural values.

Wild deer

Wild deer pose an environmental and economic threat to Northland. If left uncontrolled, wild deer would spread to occupy all available habitats and deer browsing would have a severe detrimental impact on the region's natural environment. In addition, wild deer are a known vector for bovine tuberculosis. The spread of these animals across Northland would therefore have a severe impact on the region's dairy industry and farming economy.

Northland has been historically deer free. However, increasing wild deer populations have sparked a move by NRC, DOC and the Animal Health Board to eradicate all wild deer populations in the region and halt their dispersal by working with deer farmers to prevent farm escapes. In addition, "prohibited deer farming areas" have been established in and around ecologically sensitive areas in the region to prevent populations becoming established from farm escapes (see map below). As a result of this multi-agency, co-ordinated approach, Northland remains largely deer free.



Map: Prohibited deer farming areas in Northland

Wild goats

A five-year plan to reduce the number of wild goats in the Whangarei District has been developed by DOC and NRC, with the aim of controlling wild populations and preventing a re-invasion of land of high ecological value. In the late 1980s and early 1990s, these organisations undertook a major knockdown of goat populations in the region but since this time, goats have slowly re-colonised many areas of natural habitat and are again becoming a conservation issue.

There are four strategic objectives of the plan:

- To achieve knockdown of goat populations within Whangarei District to low levels;
- To ensure wild goats on priority sites are maintained at low levels or eradicated;
- To raise awareness of wild goat issues in the Whangarei District; and
- Ensure new goat populations do not establish outside existing populations.

This will be achieved by employing a “deer response team” who will target each habitat by year and who will undertake ground and aerial hunting, public relations, pre and post animal density surveys and the mapping and gathering of data. It is proposed the plan will begin in Pukenui forest in the first year.

Marine biosecurity

Marine biosecurity is a worldwide issue, which can affect the economy, environment and society of an affected country. As an island nation, New Zealand is particularly vulnerable to new invasive marine species, especially given the country’s reliance on shipping as a means of trade (it is widely recognised that shipping vessels are the most common vector that aids in the transportation of non-indigenous marine species) and the high visitation rates of overseas vessels.

Northland, with its warm seas, high levels of sunshine and tropical weather patterns provides an ideal environment for marine pests. The constant influx of overseas vessels to the region provides an ideal vector for the transmission of such organisms.

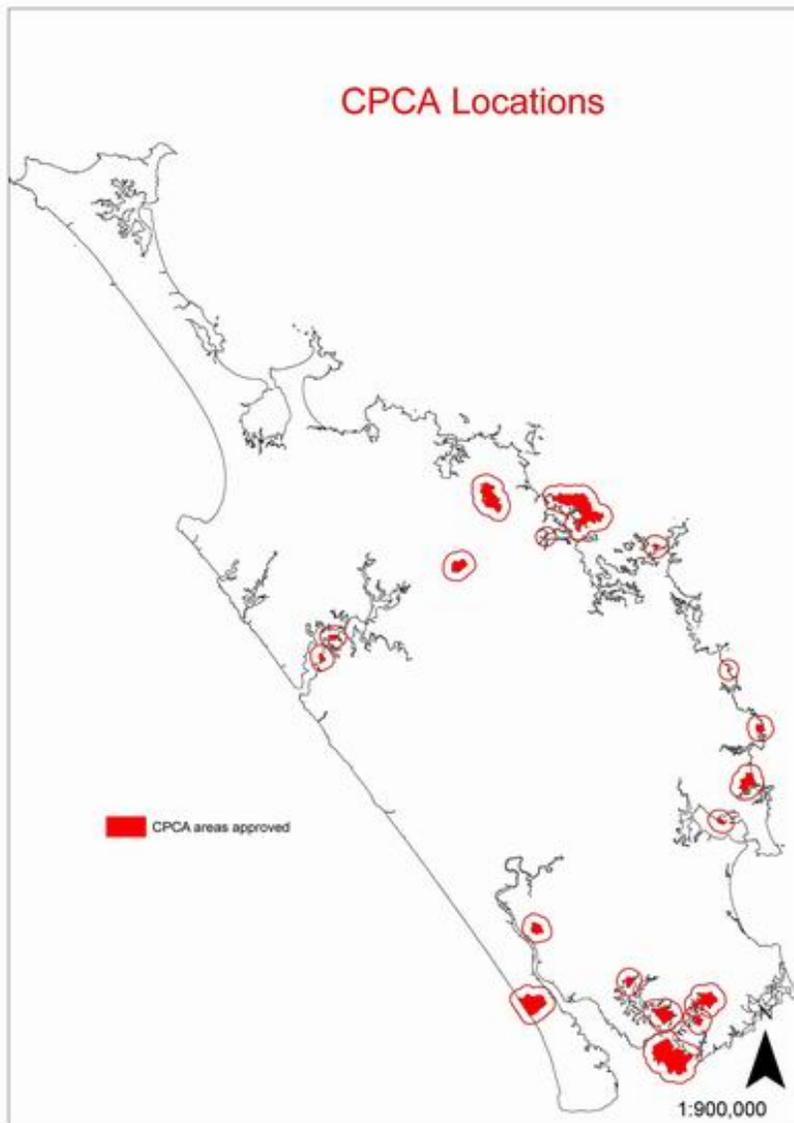


Photo: The highly invasive sea-squirt, *Styela clava*, recovered from Marsden Cove Marina

NRC is concerned about the ecological, economic and social impacts of invasive species on the marine environment in Northland and as such, is currently researching the best options for monitoring and control of these organisms. One idea being considered is the designation of “high value marine sites” as “pest-free areas”, which would be regularly monitored. If pests were discovered in these areas, NRC would be able to respond quickly and efficiently to the threat. “Pest-free areas” would be selected based on proximity to marine areas of ecological significance.

Community Pest Control Areas

One of the aims of the Council’s Pest Management Strategies is to encourage the community to become involved in integrated pest management. The main mechanism for facilitating this involvement is the development of a network of Community Pest Control Areas (CPCAs) around the region.



Map: Existing Community Pest Control Areas in Northland

CPCAs are areas that have been identified by the community as worth protecting. For these areas, a list of pests for control is drawn up and a management plan is developed, which details how these pests will be controlled. In Northland, the main focus of CPCAs tends to be pest mammals, such as possums, however in some areas the community has identified pest plants as being the biggest threat to ecological values.

Each proposal for establishing a CPCA must be put to the Council for consideration and is accompanied by staff recommendations. If the Council resolves to establish a CPCA, the pests defined in the proposal become 'total control pests', requiring the landholder to follow a set programme of control following an initial knockdown.

In Northland to date, 17 CPCAs have been approved, with several more pending or in negotiation with local communities. Many hundreds of people are now involved as property owners, or have willingly signed up to ongoing maintenance of low pest numbers. In 2005-06, Council adopted a new Community Control Pest Plant Strategy to promote integrated pest management and to channel more Council funding into pest control within CPCAs.



Photo: Community Pest Control Area at Oneri

Enquiries

NRC Biosecurity and Pest Management officers responded to 833 enquiries from the general public during the 2007-08 financial year. The majority of enquiries received related to requests for information on, or help with, pest management, including possum, Argentine ant and rabbits. There were also requests for advice on a wide variety of other animal and insect pest species, weed eradication and identification of pest plants and invertebrates.

BIOLOGICAL CONTROL

Few realise it but Northland is a battleground for a largely unseen war between a host of tiny insects and fungi and some of the region's worst weeds. In the last five years alone, 49 releases of different 'biocontrol' agents have occurred in Northland to help control weeds such as Californian, nodding and Scotch thistles, alligator weed, broom, gorse, mistflower and ragwort.

Biocontrol is not designed to totally eradicate an individual species, but to keep pest populations at low levels. NRC invests \$50,000 a year in biocontrol and is part of a wider collective of 13 other regional councils and the DOC. Collectively, group members fund a national biocontrol programme of about \$670,000 annually. This is managed on behalf of the collective by Landcare Research, who provide for research, quarantine facilities, management, and releases of the agents within New Zealand. In 2007-08, the collective supported research into agents for 15 pest plants, 12 of which are significant pest plants in Northland.

Before bio agents can be released into New Zealand, there is a rigorous process of trial and experimentation overseen by the Environmental Risk Management Agency (ERMA). Imports are strictly controlled via a process that includes public debate and scientists can often take several years to satisfy the risk assessment criteria and complete trial work. When biocontrol is decided upon as an option, one of the first steps in the process is to see if the weed has any natural predators in New Zealand and/or overseas. Potential agents are then studied further, either here or overseas, to evaluate impacts on non-target species before they are introduced.

Biocontrol in Northland

Gorse

Several agents have been trialed in Northland for the control of gorse. The English gorse thrip was released in the nineties however did not survive in the region. Trials of the hardier Portuguese gorse thrip are ongoing.

Ragwort

There are now five bio agents that attack ragwort and one of these, the ragwort flea beetle, has proven very effective in Northland. This tiny beetle is a root and crown feeder and is now commonly found in most areas.

Boneseed

In October and November 2007, releases of the boneseed leaf roller were undertaken in Northland. Monitoring of release sites has shown that small populations are surviving and it is hoped that this agent will work well.

Mistflower

One of the region's most successful biocontrol releases over the past five years has been the release of a gall fly and a smut fungus to control mistflower. Mistflower was once common throughout Northland, occupying the margins of most Northland waterways and many wetlands. Since the introduction of the bio agents, the presence of mistflower has declined markedly.

KAURI DIEBACK

Kauri dieback is a microscopic 'fungus-like' plant disease that only affects kauri and can lead to their death. Its botanical name is *Phytophthora taxon Agathis* (PTA). It can affect kauri of any age and causes yellowing foliage, leaf loss, canopy thinning, dead branches and in severe cases, death. Affected trees can also develop lesions that bleed resin, extending to the major roots and sometimes girdling the trunk as collar rot.



Photo: Tāne Mahuta, a national treasure under threat

To date, the disease has been found in the Rodney District and North Shore City and has also been identified in the Waitakere Ranges and on Great Barrier Island. The disease has been isolated from soil in Northland and DOC is currently carrying out more soil testing to confirm the spread of the disease.

PTA is soil-borne and spreads by the movement of soil or water. The disease can also be spread by root-to-root contact between infected individuals and neighbouring trees and by human and animal vectors.

In response to this new threat, MAF Biosecurity New Zealand, the Department of Conservation and four regional councils, including NRC, have established a joint response team to identify and manage the risks to kauri. The Kauri dieback team is currently:

- Assessing the risks posed by the organism to individual trees and their ecosystem;
- Determining methods for limiting the spread of the pathogen and assessing the effectiveness of these methods;
- Collecting further information on the distribution of the disease to inform a response decision.

In the interim, landowners with kauri on their land and the general public can help

prevent the spread of PTA by taking the following steps:

- Minimise movement of vehicles, livestock or people around kauri roots;
- Make sure shoes, and other equipment, are clean of dirt before visiting kauri forest;
- Clean shoes and any equipment that come into contact with the soil after each use;
- Keep to defined tracks in parks and reserves at all times;
- Keep dogs on a leash at all times;
- If they have kauri on their land, erect warning signs to alert visitors to the dangers of spreading the disease; and
- If they think a kauri on their land has symptoms of PTA, contact the Kauri dieback response team on 0800 NZKAURI (69 52874).