



# Regional Pest Management Strategy – Operational Plan Report 2011/12

Quality for Life



greater WELLINGTON  
REGIONAL COUNCIL  
Te Pane Matua Taiao





# Regional Pest Management Strategy 2002-2022

Pest Animals and Pest Plants

Operational Plan Report 2011/12

Biosecurity Department

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## **1. Introduction**

### **1.1 Biosecurity at the Greater Wellington Regional Council**

The Wellington region is under threat from a number of pest animal and plant species. Greater Wellington Regional Council (GW) Biosecurity Department is involved in the control of unwanted plants and animals for environmental, economic and social reasons:

- Many of New Zealand's native plants and animals cannot co-exist with introduced species. In areas of high biodiversity value, pest plants and pest animals need to be controlled to protect vulnerable ecosystems
- The impact of pest plants and pest animals leads to considerable economic loss in many of New Zealand's primary industries. Pest management is essential to the success of agricultural industries
- Pest plants and pest animals cause a considerable nuisance to many aspects of rural and urban life, inhibiting the ability of people to enjoy their property, lifestyle and wellbeing.

The Regional Pest Management Strategy 2002-2022 (RPMS) provides the strategic and statutory framework for effective pest management in the Wellington region. The central focus of the RPMS is on mitigating pest threats to society, to farming and agriculture in general, and supporting indigenous biodiversity and health of our ecosystems. There are two major objectives:

- to minimise the actual and potential adverse and unintended effect of pests on the environment and the community; and
- to maximise the effectiveness of individual pest management programmes through a regionally coordinated response.

GW has implemented the RPMS for 10 years and many advances in the effective management of a wide range of pest plants and pest animals have been made in that time. In response, indigenous biodiversity has been enhanced and local economic values protected over large parts of the region. We were able to achieve this due to support from landowners, care groups and local authorities.

### **1.2 Purpose of this Operational Plan Report**

This document reports against the achievements and outcomes of GW's biosecurity related activities. The work programme was set by the RPMS Operational Plan 2011/12 which is based on the RPMS and is in line with GW's Annual Plan, which sets the overall priorities and work programmes for the organisation.

The implementation of the RPMS requires resources. Our obligation to the community is to ensure these resources are used as efficiently and effectively as possible. This report provides some detail of how and where those resources

were applied in the 2011/12 year in response to the Operational Plan. Both of these reports are a core component of the accountability to effectively implement the RPMS.

The report is structured in two parts:

- Pest animals
- Pest plants

The content is organised to correspond with the Operational Plan 2011/12. In the Pest animals and Pest plant sections the aim, cost, means of achievement, and the actual performance is reported on for each pest species or activity.

The pest management activities under the RPMS in 2011/12 were delivered with an operating surplus of \$56,300 and total operating expenditure of \$2.98 million.

## Part One

### Pest Animals

#### 2. Species led programmes

##### 2.1 Surveillance species

**Aim:** To prevent the establishment or minimise the impact, and prevent the further spread, of animal surveillance species in the region at a cost of \$27,200.

**Annual cost:** The cost of surveillance species management (monitoring, investigation, publicity and reporting) for the region was \$3,552.

The species in this category are Argentine ants, Australian subterranean termites, Darwin's ant, Rainbow skink, and Red-eared slider turtle.

##### **Means of achievement**

- (i) Provide information and publicity to enhance public awareness of the surveillance species.

##### Actual performance

In the 2011/12 year there was very little activity around these species. There were a handful of calls requesting information which was provided. We are also now able to direct the public to very useful websites providing control information - for example the Landcare Research (LCR) web-pages for Argentine ants at <http://argentineants.landcareresearch.co.nz>.

##### **Means of achievement**

- (ii) Record and report any incidences of the Surveillance species in the region.

##### Actual performance

There were no new records or reports of the Surveillance species in the 2011/12 year.

##### 2.2 Retailer inspections of pests listed in the Strategy

During 2011/12 year Biosecurity officers made a series of impromptu visits to a selection of pet shop retailers and veterinarians across the region to ensure compliance with the Strategy rules with respect to animal species being offered for sale through their outlets. Generally the retailers visited have a good understanding of which types of animals they can legally sell. In November 2011 four retailers were visited in Wairarapa and a further nine were inspected in June 2012 in Wellington, Hutt Valley and Kapiti.

### 3. Total control pest animals – rooks

Rooks are large non-indigenous black birds active during the day. They can be identified by their harsh 'KAAH' call. Rooks nest in colonies of usually 20 to 100 pairs, called rookeries, and up to 900 pairs co-habit in heavily infested areas. Rookeries in the Wellington region typically contain up to 20 nests.

During the summer, when soil becomes hard and difficult to extract insects, rooks assemble into large groups and target easy food supplies. These include walnut stands, acorns, freshly ploughed soil (for unearthed insects), newly germinating crop seedlings and mature grains such as wheat and lentils. Precision planted crops such as maize, peas and beans are especially at risk.

**Aim:** To manage rooks as a Total Control (TC) Category pest to levels that protects production systems at a cost of \$83,200

**Annual cost:** The cost of rook management (surveys, research, compliance, education) for the region was \$40,470

#### Means of achievement

- (i) Undertake direct control by Service delivery where rooks are known to exist.

#### Actual performance

In the 2011/12 year, there were a total of nine known breeding rookeries in our region, all in the Wairarapa. To control rooks, nests are hand baited with a poison paste by an operator slung under a helicopter.

In September and October 2011 a total of 98 nests were aurally baited. The number of nests were higher than in 2010/11 year (70 nests) due to the report of a new rookery by a diligent Wairarapa hill country farmer. This new rookery was well established in an obscure location and was holding a substantial number of rooks. Beside the aerial control there were no ground baiting operations during the year as no reports of crop damage were received.



Photo 1: method for baiting rook nests slung under a helicopter

During the breeding season staff observed the presence of a few rooks residing outside Wairarapa in the Ohariu Valley, but there was no evidence of nesting. To date staff have not received any reports of rook nesting or any damage to crops in the areas outside Wairarapa.



The rook control programme is on track to achieve total control of rooks in our region by 2025. The number of treated nests reduced from 150 in 2009/10 to 98 in 2011/12.

### Means of achievement

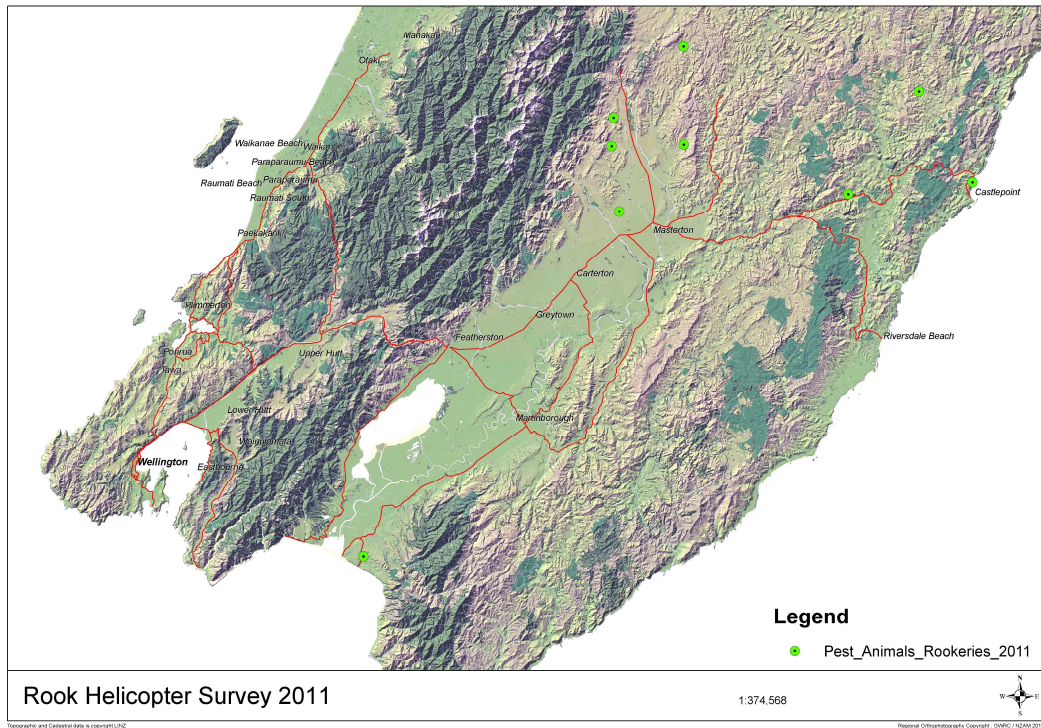
- (ii) Survey rook populations annually in areas where they are known to exist, and where new infestations are reported.

### Actual performance

GW holds records of 107 rookery sites (historical and current). All of the sites were visited to determine the presence or absence of rooks in the 2011/12 year. Ground surveys are followed by aerial surveys in spring to establish the state of a rookery (presence/absence of nests, eggs and/or chicks). Knowing the state of a rookery is critical for planning the right time to carry out aerial control.

Beside surveys we rely on public and landowners in the region to help with locating rooks. Every year we prepare media material that is published in the local newspapers and advertised on local radio stations, urging public to report sightings of rooks or rookeries. This proved to be quite successful and as a result we received information about three new rookeries and the reactivation of two old rookeries this year.

### Rook nest survey helicopter flight lines and rookeries treated



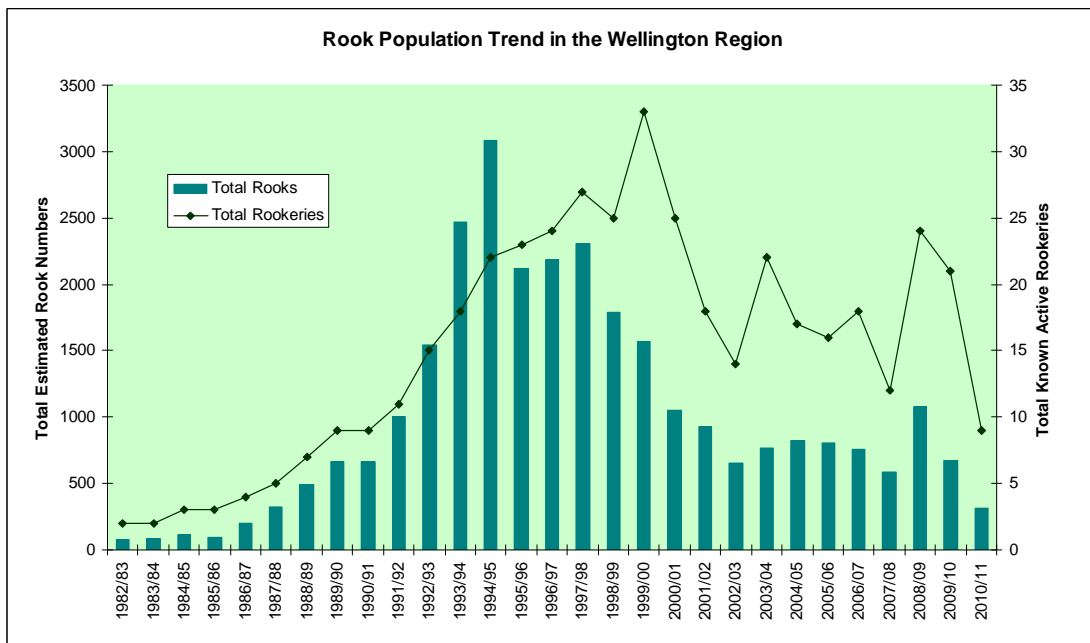
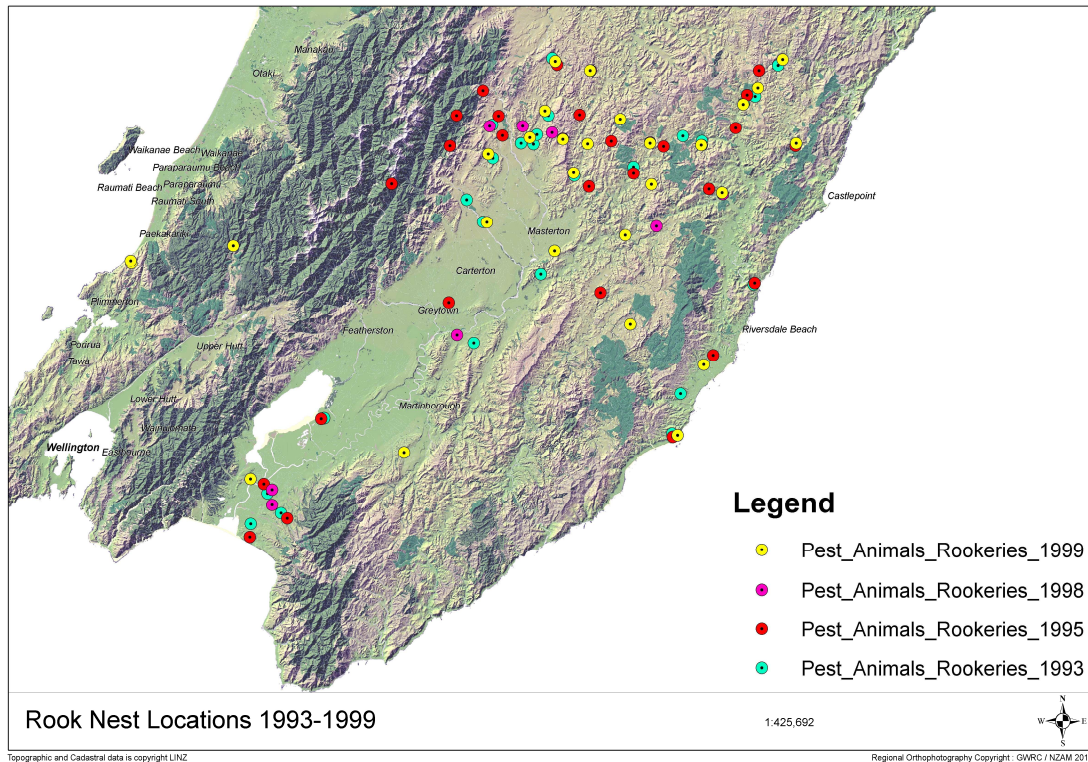


Figure 1: Total number of rookeries in the Wellington region and the total number of rooks estimated to be in the Wellington region

### Means of achievement

- (iii) Support appropriate research initiatives, including biological control should it become available.

### Actual performance

GW staff attended a meeting organised by LCR as part of the Envirolink research grant. Researchers and rook control practitioners from a number of

regional councils gathered to identify gaps in rook control knowledge and needs. Topics covered surveillance, ecology, biology and control methods and strategies. Attendees identified a need to update the National Possum Control Agencies (NPCA) Rook Control Guidelines.

As a result of this meeting, Hawkes Bay Regional Council has led the process to include the addition of walnuts and macaroni on the label of the rook control toxin DRC1339. Both baits have been very successful as effective carriers for DRC1339 in the past.

#### **Means of achievement**

- (iv) Ensure compliance with the RPMS rules in order to achieve the RPMS objectives.

#### Actual performance

Rooks are both shy and cunning birds, and poorly conducted attempts at control can lead to rookery fragmentation and dispersal over a wider area. Rooks may become bait shy if ground baiting is conducted ad hoc and using inappropriate methods and baits. Public/landowner education is the key to ensure control is managed by GW.

We used local media, A&P shows and field days (e.g. Masterton Agricultural Field Days), and regular contact with landowners to educate the public on the importance of appropriate rook control.

#### **Means of achievement**

- (v) Encourage Horizons Regional Council to actively pursue management of rooks within their region that complements GW's TC programme.

#### Actual performance

Horizons Regional Council was actively involved with aerial nest baiting in the 2011/12 year. Both GW and Horizons have cooperated in the annual joint nest baiting programme on both sides of the regional boundary. The programme was designed to prevent the southward migration of rooks to Wairarapa. Horizons staff are now manufacturing the DRC1339 gel bait for their control programme and for GW.

#### **Means of achievement**

- (vi) Annually inspect pet shops and rook keepers for the sale of rooks.

#### Actual performance

There were no reports of rooks being available for sale. Refer to section 2.2 Retailer Inspections.

#### 4. **Suppression species – rabbits**

Feral rabbits are communal animals sometimes forming large groups. They burrow and form nests underground (warrens). Rabbits eat a wide range of food including native grasses and seedlings. They directly compete with grazing stock for food, and contribute to the increase of unpalatable weed species. In combination with grazing stock, rabbits can increase the risk of soil erosion. Rabbit grazing also impacts on amenity plantings, commercial gardens and forestry seedlings. Grazing and burrowing can lead to the loss of vegetation cover and soil erosion in native flora and fauna habitats.

**Aim:** To minimise the adverse impacts of feral rabbits throughout the region at a cost of \$121,000

**Annual Cost:** The cost of rabbit management (surveys, service delivery, biological control, compliance, education and research) for the region was \$102,033

##### **Means of achievement**

- (i) Undertake direct control by Service delivery to control rabbits on riverbeds, esplanades or similar public commons to ensure that rabbits do not exceed Level 5 of the Modified McLean Scale.

##### Actual performance

Rabbits have continued to be an amenity nuisance around the Riversdale Beach and Castlepoint resorts on the East Coast of the Wairarapa but did not reach the trigger level that required regulatory intervention.

In the Western side of the region, there were no sites that scored level 5 or above on the Modified McLean scale. Most rabbit control work is to protect new plantings in re-vegetation projects by care groups, councils and private land owners. A variety of control methods were used. Regular night shooting in urban parks, to maintain rabbit numbers at low levels, was undertaken for Wellington City Council, Hutt City Council and Kapiti Coast District Council.

##### **Means of achievement**

- (ii) Ensure compliance with the RPMS rules in order to achieve the RPMS objectives.

##### Actual performance

There was only one very localised rabbit infestation recorded at level 5 in the region (in Wairarapa, see below). There were no investigations required for breaches of the Strategy rules for rabbits.

##### **Means of achievement**

- (iii) Survey land in high to extreme rabbit prone areas to determine the extent of rabbit infestation.

## Actual performance

In Wairarapa monitoring was carried out at historically rabbit prone areas:

- Tauherenikau River and eight adjacent properties. At these sites rabbit densities did not get above level 2-3 on the Modified McLean Scale, (refer figure 3). Generally, level 3 was the infestation level recorded over most of that river system. This area supported high numbers of rabbits in the past and it is likely that the current low numbers were caused by the cross blading of the gravel beaches for flood protection purposes has removed much of the old rabbit habitat.
- Four random properties in Wairarapa that have previously had a history of high rabbit numbers were inspected during the day time. These properties tended to be a cross section from the Tararua's to the East Coast and provided a general snapshot of the current rabbit trend for the region.

The four properties ranged from level 2-3 with one localised corner of one property reaching level 5. Recreational shooters were operating on this higher density property.

The rabbit prone areas of the Kapiti Coast were monitored in late May 2012, with rabbits present throughout the area in low numbers. Hot spots still exist around park areas, lifestyle blocks and smaller private properties with good rabbit cover and overgrazed pasture or large expanses of lawns. No properties were over level 5 on the Modified McLean Scale.

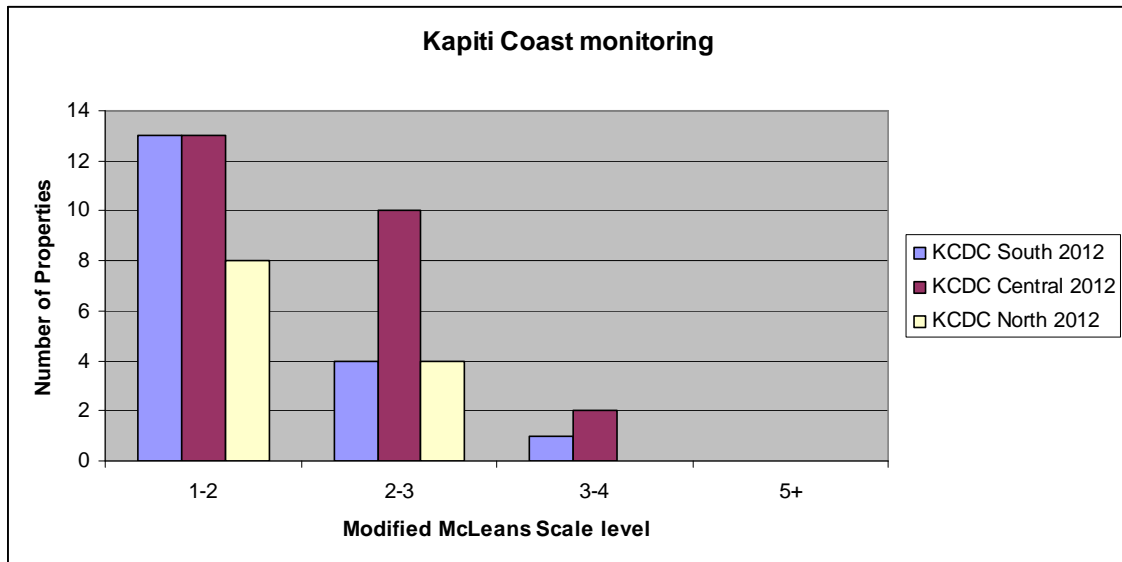


Figure 2: KCDC South: Pukarua Bay to Waikanae River  
KCDC Central: Waikanae River to Otaki River  
KCDC North: Otaki River North

## **Means of achievement**

- (iv) Provide information and publicity to enhance awareness of the threat rabbits pose to the region.



### Actual performance

GW has electronic and printed information available to assist occupiers with self help rabbit control. These are freely available on the GW website, at GW offices, at promotional field events, and given when completing inspections for landowners. Staff attended several A&P shows, field days and school events during the year and provided free educational material.

### **Means of achievement**

- (v) Release biological control agents for the control of feral rabbits when appropriate.

### Actual performance

GW did not reintroduce the Rabbit Haemorrhagic Disease (RHD) virus in the 2011/12 period. The virus continues to cycle naturally in some areas. Blood samples were taken this year from the Western Zone (Wellington, Hutt Valley, Kapiti) to give an indication of resistance levels in the wild rabbit population. Due to low rabbit numbers in Wairarapa not enough rabbit samples were able to be obtained so this was not included in the sample this year.

RHD virus immunity is still present in rabbit populations. Kapiti and Hutt Valley areas, range from 31.7% to 38.5% immunity, with Wellington areas ranging around 9.53%.

Of the total sample (74 rabbits) 27% showed immunity to the RHD virus. This is a very low level of immunity comparing to some other parts of the country and it means that the virus is still effective in reducing rabbit numbers in most parts of the region.

### **Means of achievement**

- (vi) Support research initiatives including biological control.

### Actual performance

Biosecurity staff have provided expert advice for the development of a national rabbit accreditation training programme for regional councils run by the National Pest Control Agency (NPCA).

### **Means of achievement**

- (vii) Annually inspect pet shops to prevent the sale of feral rabbits.

### Actual performance

No feral rabbits were displayed for sale. Refer to section 2.2 Retailers inspections.

## 4.1 Modified McLean Scale

The Modified McLean Scale has been successfully used for regional trend monitoring. While trend monitoring using night counts provides a more sensitive measure, it is also more expensive. The Modified McLean Scale cannot be used to provide an estimate or percent kill because the scale is not linearly related to rabbit population density.

Scale	Rabbit Infestation
1	No sign seen. No rabbits seen.
2	Very infrequent sign seen. Unlikely to see rabbits.
3	Sign infrequent with faecal heaps more than 10 metres apart. Odd rabbit may be seen.
4	Sign frequent with some faecal heaps more than 5 metres apart, but less than 10 metres apart. Groups of rabbits may be seen.
5	Sign very frequent with faecal heaps less than 5 metres apart in pockets. Rabbits spreading.
6	Sign very frequent with faecal heaps less than 5 metres apart over the whole area. Rabbits may be seen over whole area.
7	Sign very frequent with 2-3 faecal heaps often less than 5 metres apart over the whole area. Rabbits may be seen in large numbers over the whole area.
8	Sign very frequent with 3 or more faecal heaps less than 5 metres apart over the whole area. Rabbits likely to be seen in large numbers over the whole area.

Figure 3: Modified McLean Scale

## 4.2 Rabbit trend monitoring

### Rabbit and hare trend night counts

Staff continued annual monitoring of rabbit and hare numbers in selected areas of the region as a general indication of population trends in the absence of any control activities. Monitoring is carried out by night counts in May or July each year in Queen Elizabeth II Regional Park, on the Kapiti Coast and on the Tora Coast in the Wairarapa (figure 4). Queen Elizabeth Park was not completed this year. Hare numbers remain negligible on the Tora Coast and rabbit numbers remain at levels lower than when monitoring started in mid 1990s and before RHD reached the area.

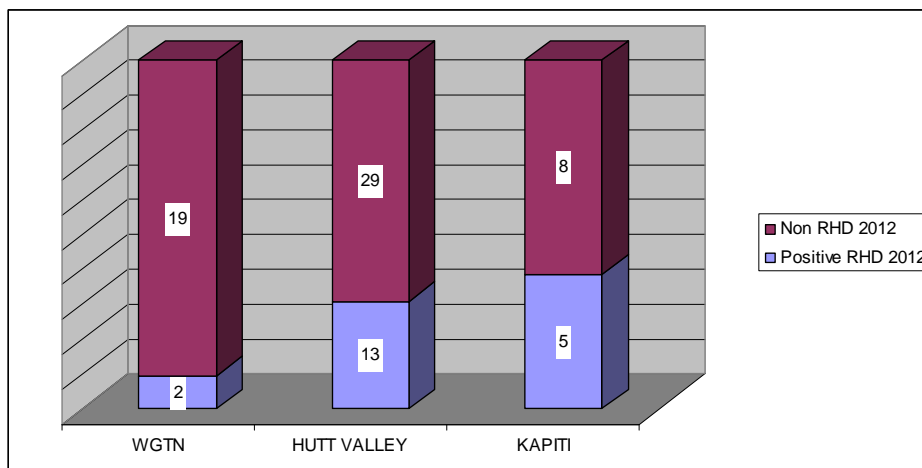


Figure 4: average number of rabbits and hares counted at Tora Coast over three fine nights

## 5. Site-Led species –magpies

Magpies, an Australian immigrant, are large black and white birds, with a distinctive warbling call. Magpies were widely distributed throughout the Wellington region by the 1970s. Their preferred habitat is open grassland and cultivated paddocks with tall trees nearby for shelter. They are frequently found in paddocks, city parks and playing fields, on the edges of native and exotic forest and occasionally on mountains up to 1700m.

During the breeding season magpies can become very aggressive and attempt to drive off animals and humans. Small children and cyclists in particular can be subject to intimidating and hazardous attacks. Magpies are also known to harass and kill a wide variety of native and exotic birds. There is anecdotal evidence that magpies cause native bird species to become less conspicuous in an area.

**Aim: To manage magpies to minimise adverse environmental and human health impacts in the Wellington region at a cost of \$37,800**

**Annual Cost: The cost of magpie management to minimise adverse environmental and health impacts for the region was \$48,428**

### **Means of achievement**

- (i) Undertake direct control of magpies by Service delivery where there is known to be a threat of injury to members of the public or complaint(s) are made to that effect within 10 working days.

#### Actual performance

Thirteen complaints were logged in the Wairarapa and three in the Western Zone regarding attacking magpies. All complaints were attended to within 10 working days and all magpies were successfully controlled.

### **Means of achievement**

- (ii) Respond to landowners wanting to undertake magpie control within 15 working days of receiving a request for information and/or assistance.

#### Actual performance

All requests for information or assistance are entered onto our database and a phone call or personal visit is made to the complainant within 15 working days. Staff provide advice on best practice trapping techniques to maximise catch results.

We received 70 calls from landowners in Wairarapa and 44 in the Western Zone. All calls in both the zones had response times within 10 working days. We updated and reprinted the GW brochure on the control of magpies this year to provide the public with the best available information.

## Means of achievement

- (iii) Establish representative population trend monitoring sites for magpies.

The magpie population study started in 2005 at 20 sites with a specific habitat type (open country within 50m of trees) in the Wairarapa that receives no formal magpie control. The aim is to annually assess magpie density at these sites and track changes over time. This ongoing survey will give some insight into the population trends for territory holding magpies, as well as any long-term change in the frequency of non-territorial flocks of roaming juveniles.

246 birds were recorded for 2011/12, compared to 271 in 2010/11.

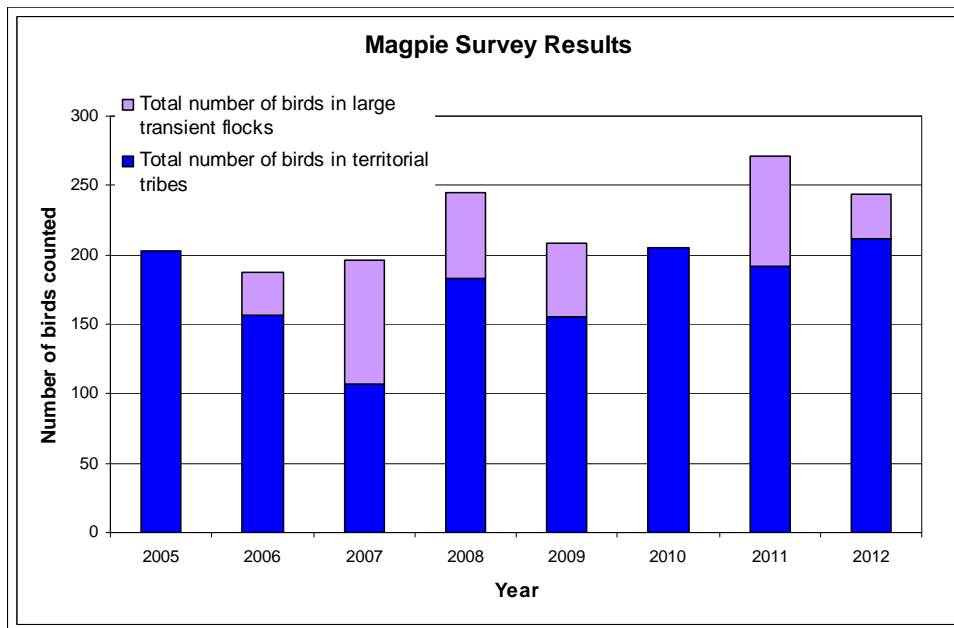


Figure 5: total number of magpies counted in small breeding tribes and large

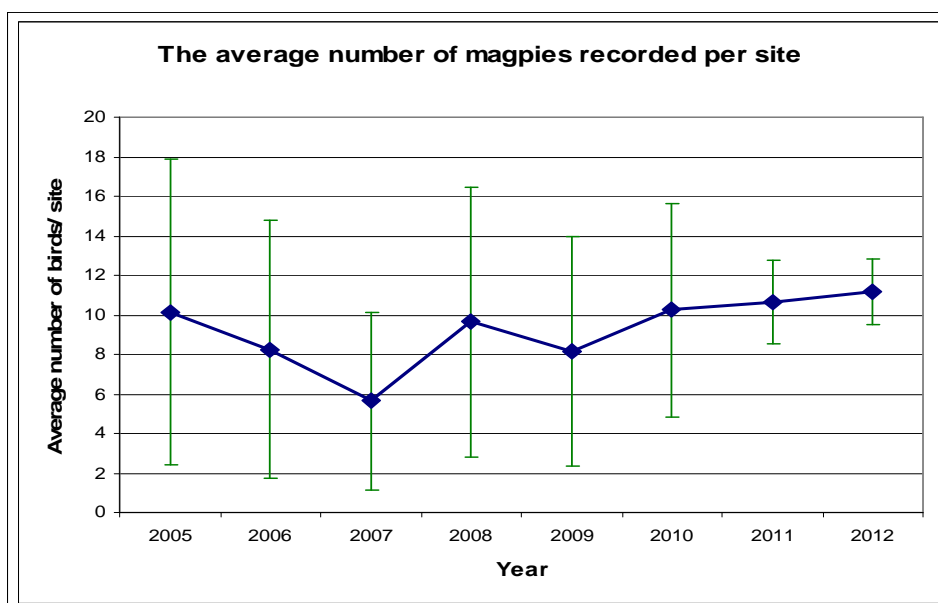
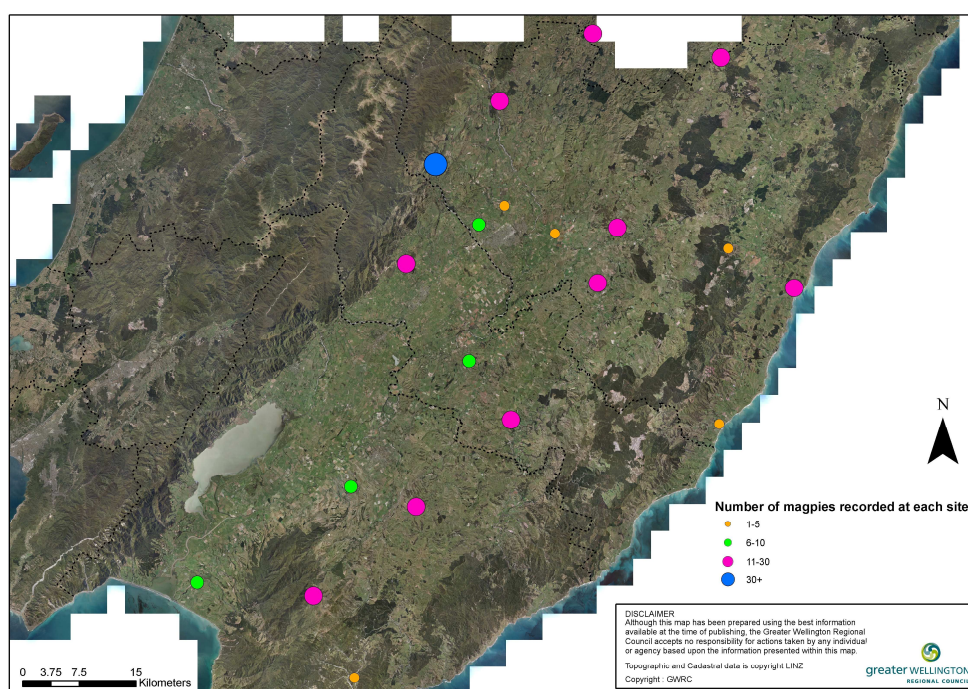


Figure 6: average size of small breeding family tribes of less than 30 magpies non-breeding transient tribes of over 30 birds

## Average size of small breeding family tribes of less than 30 magpies



### 5.1 Site-Led species – human health – wasps

Wasps are a serious threat in homes, schools and recreational areas such as parks, forests or beaches. Wasps pose a real risk to people who are allergic to the sting. Those working in industries such as viticulture, agriculture and forestry are particularly at risk. Wasps reduce honey bees' productivity by raiding beehives and reducing the food supply, and they predate on native insects and honey dew, which are important food sources for many native species. The New Zealand environment provides a favourable habitat for wasps because of mild winters, a lack of natural wasp predators and plentiful food supply. Consequently, New Zealand has some of the highest densities of common and German wasps in the world.

Common wasps were first noted in the 1920s, but did not become well established in the Wellington region until 1978. German wasps have been present in New Zealand since the 1940s. Australian and Asian paper wasps are also present in the region. Both common and German wasps live in large colonies, about the size of a soccer ball. The nest can become larger if the colony survives the winter. Common and German wasps have distinctive yellow and black striped bodies. The common wasp nest is yellowish to reddish brown, while the German wasp nest is grey. Both species can use their sting repeatedly.

**Aim:** To minimise the adverse human health and environmental impacts of wasps at selected sites at a cost of \$3,000

**Annual Cost:** The cost of wasp management to minimise the adverse human health and environmental impacts for the region was \$3,321



### Means of achievement

- (i) Provide advice and education to occupiers wanting to undertake wasp control.

#### Actual performance

Advice on how to treat wasp nests was given to public enquires over the phone and brochures posted out. The brochure on the identification and control of wasps was updated and re-printed in the 20011/12 year. It is also available on the GW website.

### Means of achievement

- (ii) Provide a referral service to landowners/ occupiers who require wasp control.

#### Actual performance

All members of the public who contacted Biosecurity were given advice on how to manage the problem nests, or referred to the relevant District or City Council, Parks or Department of Conservation staff if nests were on public land. If people were uncomfortable to treat nests themselves they were recommended to contact a pest control contractor.

A total of 47 wasp nests were reported directly to GW staff over the year. The number was lower than reported last year (78 nests), most likely due to an unusually cold and wet summer.

## 5.2 Wasp season 2011/12

Staff from city and district councils, DOC and GW are all involved in responding to wasp nest nuisance calls within the Wellington region. All calls have been logged in the 'Wasp Nest Register' since 1990/91 and can be used to summarise wasp nest type location, time of year and frequency of occurrence.

Monitoring seasonal and annual changes across the region provides a valuable record to help understand wasp population dynamics.

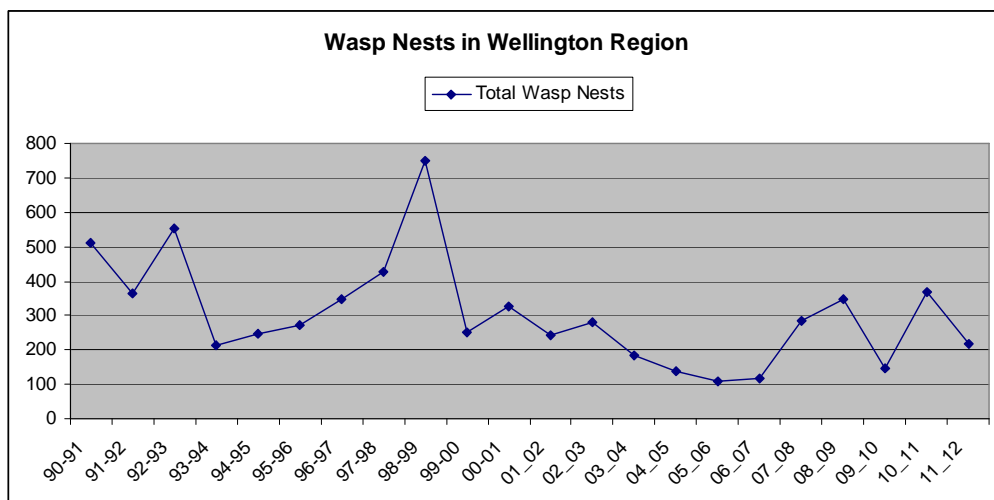


Figure 7: wasp nuisance trend for the Wellington Region



Photo 2: large wasp nest in a tree in Nga Manu swamp

## 6. Site-Led – biodiversity – feral and unwanted cats

Cats were first introduced to New Zealand in 1770, and were well established in the North Island by the 1860s. Cats are an exceptional and successful predator that eats eggs, young and adult birds, lizards, fish, frogs and large invertebrates. Cats will kill without hunger if the opportunity arises, storing any surplus prey for future use.

Feral and unwanted cats are present throughout the Wellington region. They can be found in most terrestrial habitats from sea level to the snowline. All feral and unwanted cats originate from domestic cats. Feral cats tend to avoid human contact, although some unwanted cats may continue to rely on humans for food or shelter.

Feral and unwanted cats are a threat to our native birds and lizards and left uncontrolled impact adversely on GW biodiversity enhancement programmes. Where unwanted cat populations are established that threaten our KNE programme, every effort is made to disestablish these colonies.

**Aim:** Minimise the biodiversity impact of feral and unwanted cats at a cost of \$7,600

**Annual cost:** The cost for the management and publicity of feral and unwanted cats as a threat to biodiversity for the 2010/11 year was \$7,602

### Means of achievement

- (i) Provide information and publicity to enhance public awareness of the threat feral and unwanted cats pose to the native fauna of the region.

### Actual performance

Printed and electronic information is available on the threat that feral and unwanted cats pose to the biodiversity of the Wellington region. The GW website also has additional information on the management and control of feral and unwanted cats. This information is posted out on request from enquiries.

### **Means of achievement**

- (ii) Undertake direct control of feral and unwanted cats by service delivery as part of the integrated pest management of KNE and other selected sites.

#### Actual performance

Feral and unwanted cats are actively managed in 20 KNE sites within the Wellington region (11,251 ha). These sites are predominantly rural as the high number of domestic cats in urban KNE areas could be at risk from current control methods. GW also works in conjunction with TAs and private landowners to manage feral and unwanted cat populations. Feral cats are the most persistent predator species under ongoing control, with consistent numbers captured in KNE management sites. Abandoned domestic cats continue to be a problem within the region.

### **Means of achievement**

- (iii) Provide financial assistance to domestic cat desexing programmes in partnership with select organisations and businesses.

#### Actual performance

GW sponsored the SPCA led 'adopt-a-pet' programme this year. This programme aims to re-home cats that have been de-sexed to avoid further breeding by unwanted cats in the community. This support will be reviewed next year.

### **Means of achievement**

- (iv) Work with communities to remove populations of stray or unwanted cats.

#### Actual performance

Individuals who wish to remove feral or stray cats from their own land are given advice on the best type of control strategy or referred to pest management agencies.

There is a growing trend of private organisations and individuals wishing to maintain colonies of de-sexed cats which are fostered while remaining in the wild. GW is strongly opposed to this practice as these 'managed' populations encourage support for unmanaged cat populations as well. Both continue to threaten the native wildlife of the region.

## **7. Site-Led – biodiversity – possum**

Possums are omnivorous feeders, both browsing vegetation and preying on wildlife. Possums eat a diet largely consisting of leaves, fruit, seeds, buds and bark, but will also eat birds' eggs, chicks and insects. Possums can eat large quantities of vegetation often systematically stripping a mature tree. They compete with native birds by eating berries and flowers, and predate on their eggs and young.

Because of their feeding habits, possums pose a serious threat to the biodiversity of the Wellington region. Possums also pose a threat to agriculture by grazing pasture and crops and serving as a vector for bovine Tb.

**Aim: To minimise the adverse impacts of possums in areas of ecological significance and maintain accrued biodiversity and economic gains in the Wellington region at a cost of \$420,000**

**Annual cost: The cost for minimising the adverse impacts of possums in ecologically significant areas and maintaining current biodiversity and economic gains in the Wellington region was \$459,355**

#### **Means of achievement**

- (i) Undertake direct control by service delivery in sites of ecological significance in agreement with the landowner/occupier.

#### Actual performance

GW provided ongoing support to 17 covenanted site landowners who provide labour for the on-going possum control. These sites are mainly located in the Porirua and Kapiti districts. Not all of these sites are part of the KNE programme, but they provide important ecological linkages across the Wellington region.

Biosecurity staff carry out pest animal control on Regional Park areas, many of which are high value sites. This work consists of ground and aerial pest control for possums, rats, mustelids, goats and pigs. Biosecurity staff also participated in the rodent, mustelid and possum control in the GW Wainuiomata Mainland Island. This tract of old growth native forest is some of the most valuable lowland rimu-podocarp forest in the North Island.

Biosecurity also undertakes possum and rat control work outside the KNE programme for local TA's and private landowners that fully fund this control work.

#### **Means of achievement**

- (ii) Support the establishment of new possum control programmes, in collaboration with landowners, in areas which have historically received bovine Tb vector control and now meet the Animal Health Board criteria to be declared Tb free.

#### Actual performance

The Regional Possum and Predator Control Programme (RPPCP) for the Wellington region commenced during the 2010/11 year. Activities included possum population monitoring to determine the required control intensity and undertaking control operations.

## Means of achievement

Provide information and publicity to enhance public awareness of the threat possums pose to the region.

### Actual performance

Published information on the threat that possums pose to the biodiversity and agriculture of the Wellington region is available on the GW web-site and in hard copy on request.

## Means of achievement

- (iii) Provide a referral or cost recovery service to landowners/occupiers who require possum control.

### Actual Performance

GW provides assistance and advice on the management of possums to individual property owners, usually in urban or peri-urban situations. Assistance is usually with the intent that the occupier can self-manage any future possum problems. Nuisance possums can often be managed in conjunction with or as an extension to our existing possum control areas.

## Means of achievement

- (iv) Support research initiatives, including biological control.

### Actual performance

Population trend monitoring for possums in the absence of formal possum control has been undertaken in Belmont Regional Park since 1994. The aim of the monitoring is to gain an understanding of possum activity at this site in the absence of formal control. This year the average number of possums active over three fine nights reduced slightly. Since the survey began in 1994 possum activity has fluctuated between an average of 8 to 30 possums counted per line over three fine nights, and may be trending slightly up overall from around 14 in 1994 to around 21 in 2012.

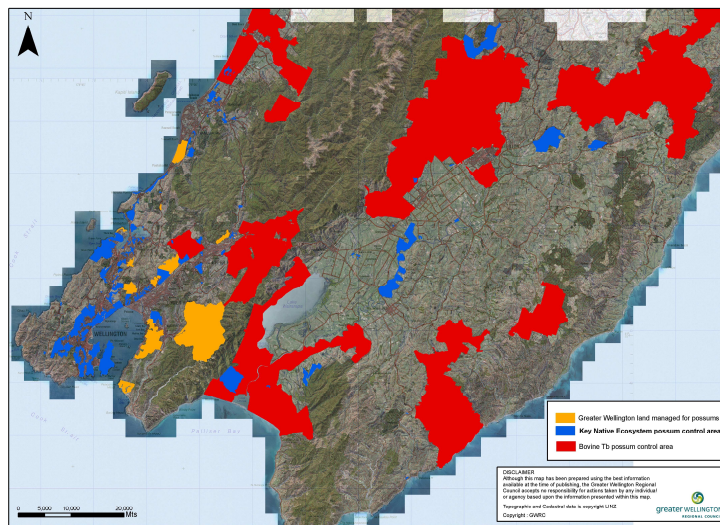


Figure 8: possum control map



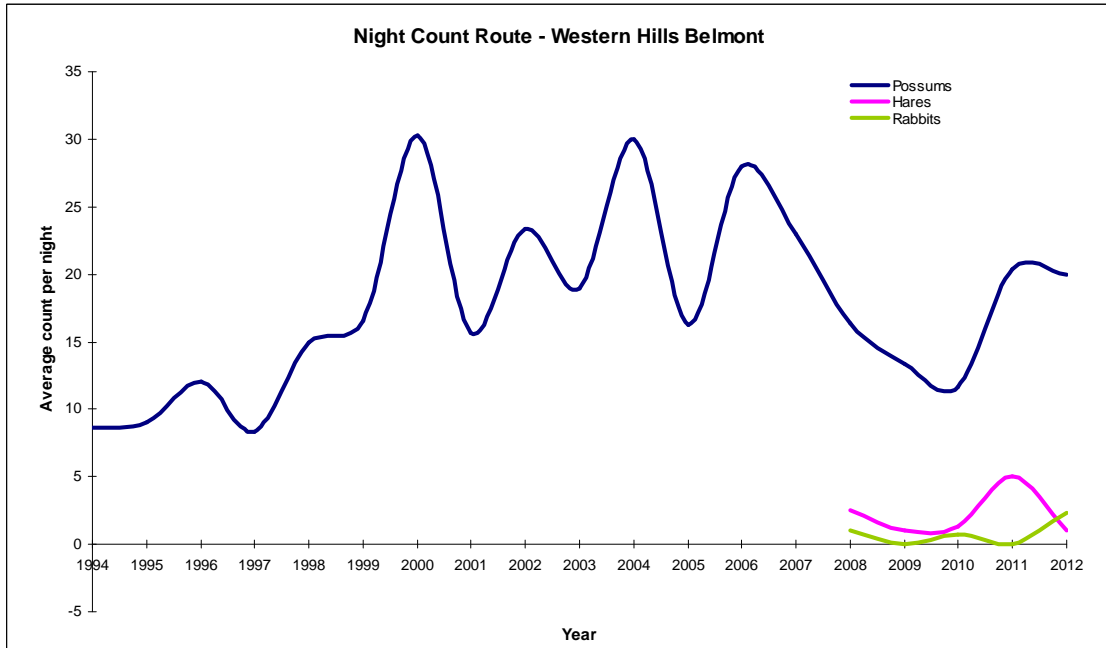


Figure 9: average number of possums, rabbits and hares counted during the night count in Belmont Regional Park over three fine nights

## 8. Pest control research and development

### 8.1 Henry self-setting gas powered possum trap trial

For a number of years pest managers were looking for a self resetting trap that would minimise staff input and increase the number of predators killed. In recent years a promising device appeared on the market named the Henry possum trap.

As part of our efforts to improve control programmes we obtained a number of traps to test their effectiveness against current control methods. In consultation with experts we designed a set of trials adjacent to several of our operational areas. The results indicate that the self-setting traps did not significantly reduce possum numbers in their vicinity. Staff have reported the results of the trial to the trap manufacturer and offered suggestions for improvement. With a few improvements this trap has the potential to become a great tool for possum control.



Photo 3: Henry trap set up in a trial site

## 8.2 Kaka interference with bait stations and traps

There are concerns in various regions of New Zealand that kaka are potentially accessing possum control toxins from bait stations. There were also some concerns that kaka might interfere with the self setting gas powered Henry trap. Kaka are becoming more abundant in our region with growing populations in Zealandia and Pukaha Mt Bruce.

GW has started trialling various modifications to the Baitsafe bait station and working with the Wellington Zoo and Corliss Eco-Systems to test these designs on captive kaka. Video surveillance has been a key component of this work.



Photo 4: Baitsafe bait station inside the kaka enclosure at Wellington Zoo

In collaboration with DOC and other regional councils we provided financial assistance to the manufacturer to develop a prototype of a day/night switch that would lock the Baitsafe bait station during the day, when kaka and kea are most active, and allow it to unlock and open at night for possums to access. Further testing is being carried out to test the effectiveness of the bait station with this switch on.



While trialling a new bait station design, a deactivated Henry possum trap was placed in a kaka enclosure at Wellington Zoo for eight days and nights. Two kaka had exposure to the trap for four days and an additional kaka was added into the enclosure for the remaining four days. The trap was baited with Goodnature possum prefeed paste smeared on the trigger. Video footage was gathered for the first 45 hours. During this time footage showed that kaka had no real interest in putting their heads in the trap, but tried to pick around the component that holds the gas cartridge. It appears the Henry possum trap is unlikely to pose a significant threat to wild kaka.



## **9. Site-Led – biodiversity species**

### **Feral deer, feral goats, feral pigs, gambusia and koi carp**

Feral goats, pigs and deer have been nominated as among 100 of the “World’s Worst” invaders. They all pose a serious threat to New Zealand’s native ecosystem and economy. Feral deer and goats eat native plants and contribute to erosion by destroying plants which help to hold the soil in place. Feral deer can also be a bovine Tb vector at high densities.

Feral pigs eat native vegetation, invertebrates and ground nesting birds. They dig up large areas of vegetation, destroying habitats for native animal and exposing areas to further erosion.

**Aim:** To minimise the adverse environmental impacts of the Site-Led – biodiversity species in sites actively managed for ecological health at a cost of \$30,200

**Annual cost:** The annual cost for minimising the environmental impacts of the Site-Led – biodiversity species in special sites was \$25,476

#### **Means of achievement**

- (i) Reduce densities of select Site-Led – biodiversity species in KNEs and TA reserves.

#### Actual performance

GW Biosecurity assists KNE landowners, GW Parks staff and territorial authorities with the management of Site-Led biodiversity species when requested. GW staff have undertaken urban feral goat and feral pig control in several urban sites where these animals were damaging public and private property adjacent to KNE, Regional Park or reserve areas. Problem sites usually occur where residential properties border on to large tracts of reserve or farmland where feral goats or feral pigs are prevalent. Pig trapping has worked very successfully in areas where hunting with dogs would be too disruptive. Goats were also controlled on the Ruamahanga River to protect pole plantings for the GW Flood Protection Department.

#### **Means of achievement**

- (ii) Provide information and publicity to enhance public awareness of the threat Site-Led biodiversity species pose to the region.

#### Actual performance

Information on the threat that Site-Led biodiversity species pose to the natural environment and agriculture of the Wellington region is available in hardcopy on request and on the website. We updated a brochure on feral ungulates this year.

## **Wellington Peninsula goat eradication project**

Wellington City Council has gained funding through the Biodiversity Condition Fund to undertake a goat eradication project on the coastal and rural lands to the south-west of Wellington City. A coordinator employed by Wellington City Council has been assigned to manage the three year project, and a hunting contractor selected to undertake the work. The GW Biodiversity Department have contributed funding, with Biosecurity contributing advice and assistance with notification information.

The first year of the project has been completed, with hunters targeting goats in the eastern section of the control area closest to Wellington city. Two helicopter shoots and intensive ground hunting destroyed 1500 goats during the operation. The dense coastal vegetation, including gorse and Darwin's barberry proved difficult for the hunters and their dogs. A number of Judas goats with radio tracking collars have been released in the area, and these will continue to be monitored. Hunters will return in 2013 to continue the programme.

Biosecurity staff met with the coordinator and contractor to discuss GW's ongoing possum and rat control in the area, and manage secondary poisoning risks for the hunting dogs. Possum and rat control operations were affected in the 2011/12 year due to the contractors requesting bait be removed from bait stations as they were concerned about hunting dogs scavenging. This set back some of these operations. Rats will have bounced back to near initial levels in some area requiring more intensive control to bring the numbers down.

## **10. Site-Led Mt Bruce (Pukaha) predator buffer**

**Aim:** Complement the native flora and fauna restoration programme undertaken by the Department of Conservation (DOC), Rangitane o Wairarapa and the National Wildlife Trust at the Mount Bruce Scenic Reserve at a cost of \$42,300.

**Annual Cost:** The cost for the predator control programme within the buffer for the 2010/11 financial year was \$43,759.

The main objective of the Pukaha predator buffer is to reduce and maintain all predator numbers at very low levels within the buffer area, and to reduce re-infestation by predators of the Mt Bruce Reserve. These control operations benefit a wide range of flora and fauna within the reserve. The focus is particularly on helping the reintroduced endangered native bird species, such as kaka, kokako and kiwi to live and breed with a reduced threat of predation. Predator species targeted for control are mainly possums, cats, ferrets, stoats, weasels, hedgehogs, and rats.

Control is undertaken by kill-trapping and laying toxic baits in bait stations. The servicing of all equipment within the 2,200 hectare Pukaha predator control buffer was completed as a prescriptive service contract carried out by GW BioWorks staff. Servicing occurred regularly at monthly intervals, with reports of kills and bait-take supplied after each service round. Trapping accounted for 86 feral cats, 23 ferrets, 4 stoats, 311 hedgehogs and 129 rats during the 2011/12 servicing year, with a further unknown number of possums and rats controlled by the 17kg of brodifacoum baits which were used.

Following the death of 12 kiwis from predation by ferrets in July to August 2010, a technical advisory group was formed to provide expert advice on predator control. GW has a representative on this group. The review of the 2010 incident commended GW buffer programme and recommended replacing the Fenn trap to the more modern DOC 250 trap as resources allow. Ten DOC 250 traps were installed in the 2010/11 and a further 46 traps were installed during the 2011/12 year.

## **11. Site-Led - Key Native Ecosystems, Reserves and Forest Health**

**Aim:** To protect indigenous biodiversity in a comprehensive selection of Key Native Ecosystems and reserves at a cost of \$789,000

**Annual Cost:** The cost to achieve a measurable improvement in the ecological health and diversity of Key Native Ecosystems and reserves through pest animal control was \$859,122

### **Means of achievement**

- (i) Ensure KNEs are legally protected into perpetuity.

#### Actual performance

All of the KNEs treated during 2011/12 were legally protected (TA - reserves, QE II covenants, or at the very least, contained legally protected sites within the management area).

### **Means of achievement**

- (ii) Establish and implement integrated pest management plans for all KNEs and selected reserves.

#### Actual performance

Integrated management plans for KNE areas and reserves are currently being developed by the newly formed Biodiversity Department.

### **Means of achievement**

- (iii) Undertake direct control by service delivery of pests identified in the management plan for each KNE.

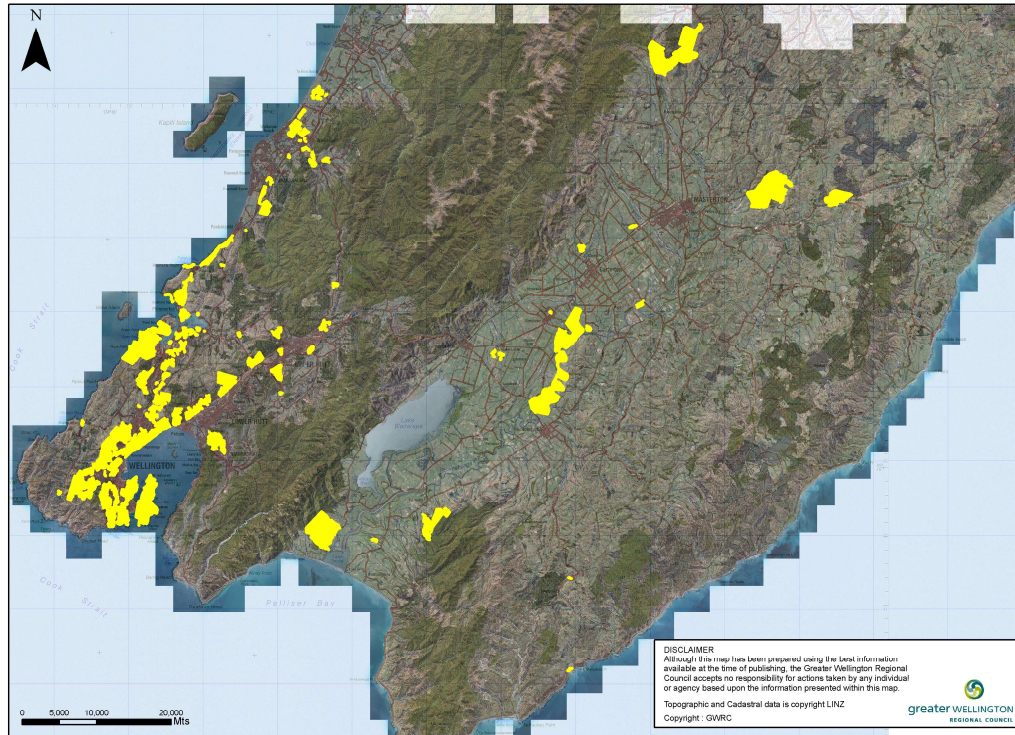
#### Actual performance

During the 2011/12 year, possum and predator work was undertaken over 20,522 ha. This comprised 16 sites in the Wairarapa (10,436 ha) and 79 sites (10,086 ha) in the Western Zone. Forty sites are on private land and 55 on TA parks and reserves. All TA reserve work was jointly funded with the relevant authorities. No initial KNE work was undertaken during 2011/12. In addition, nine sites (comprising 8,582 ha) of GW Parks land was treated for possums and/or predator control as part of an ongoing forest health programme.



Bait take from each site is recorded and historical trends can be used to preempt changes in pest populations. This allows for better selection of toxins for individual sites, improving the effectiveness of the operations.

### Operational hectares

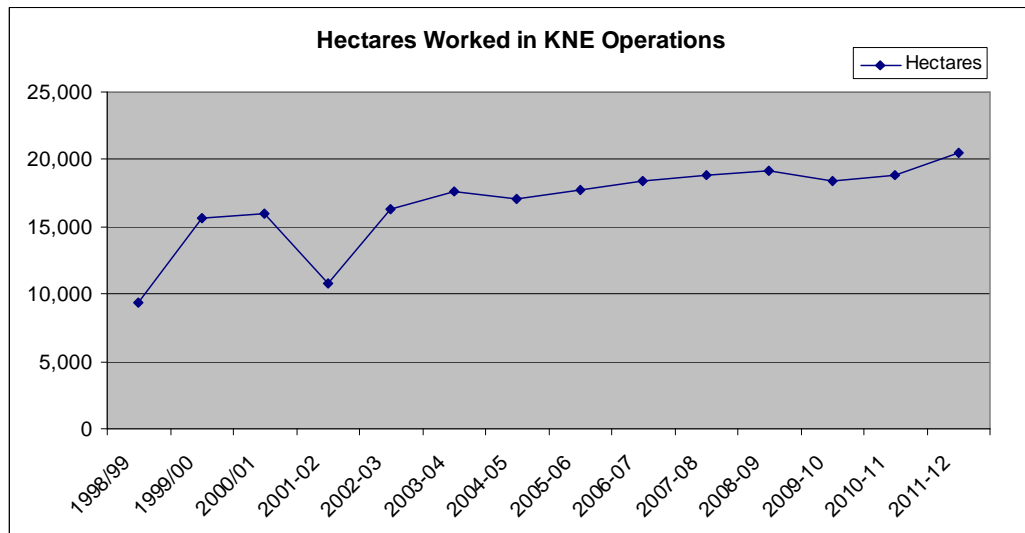


**Table 1: KNE maintenance operations**

	Hectares work carried out by:			Hectares
	GW Staff	Contractors	Volunteers	
Kapiti	177	215	389	781
Porirua	1888	184	62	2134
Wellington	3,114	1,729	754	5,597
Lower Hutt	393	657	0	1050
Upper Hutt	16	0	508	524
<b>Sub total:</b>	<b>5,588</b>	<b>2,785</b>	<b>1,713</b>	<b>10,086</b>
Masterton	2203	1962	0	4165
Carterton	193	0	45	238
South Wairarapa	4,931	1,089	13.0	6,033
<b>Sub Total:</b>	<b>7327</b>	<b>3051</b>	<b>58</b>	<b>10,436</b>
<b>Total</b>				<b>20,522</b>

The total area controlled is the same as last year<sup>1</sup>.

<sup>1</sup> Discrepancies between these and previously reported numbers result from a correction in geospatially defined boundaries



**Means of achievement**

- (iv) Facilitate the involvement of community groups, where appropriate.

Actual performance

GW has been involved with community groups undertaking pest control for many years. This involvement continued this year with groups participating at 26 different sites and a further 16 private landowners doing their own control.

**Means of achievement**

- (v) Coordinate site management with other biodiversity initiatives, where possible.

Actual performance

Pest animal and plant control is being undertaken concurrently with Care/Friends Groups to assist them to achieve a range of ecological based objectives. This continues in a wide range of TA reserves and KNEs across the region.

**Means of achievement**

- (vi) Monitor site recovery using a range of ecological indicators.

Actual performance

A range of ecological indicators are used to monitor the health of various sites such as rodent monitoring and native bird counts.

**11.1 Rodent monitoring in Key Native Ecosystems**

Ongoing rodent monitoring is conducted in selected KNE sites twice a year (February and August) to determine the population’s response to anticoagulant bait for multi-species pest management.



Rats and mice eat native birds' eggs and chicks, seeds, fruits and seedlings of native trees, invertebrates (including weta, snails, beetles and stick insects) and lizards.

Integrated pest control (targeting possum and rodents) continues to limit rat populations to low levels effectively with the rat tracking index (percentage of tunnels that have rodent foot prints in a set area) exceeding the target of 10% in only two reserves, Long Gully in August (45%) and Keith George in February (13%). Mouse tracking indices ranged from 0 to 70% in Long Gully.

The focus of the rodent monitor has shifted from determining the efficacy of the current baiting regime to insuring that rats are at low levels at key native bird breeding times of the year. Rodents are now monitored twice a year, summer and winter. The summer monitor shows the rodent levels during the bird nesting season and monitoring during the winter, historically the most active rodent season, gives us time to implement further baiting if required before the next bird-nesting season.

#### **Means of achievement**

- (vii) Provide public education and advice to foster biodiversity management outside formal KNE programme areas.

#### Actual performance

Landowners, both large and small, are often keen to preserve or regenerate areas of native bush or wetland on their properties. GW provides informative literature, attends forums and field days with ecological themes and meets with groups or individuals to convey information.

#### **Means of achievement**

- (viii) Maintain holistic management in existing KNE areas.

#### Actual performance

Integrated pest management targeting possums, rodents and/or other predators were maintained in all KNE sites and some other high biodiversity value areas. With available resources, priority was given to maintaining existing programmes, rather than taking on new works. Most areas were maintained on a three monthly cycle by GW staff or service providers.

#### **Means of achievement**

- (ix) Where KNEs are identified on TA land, seek funding from the relevant authority to form financial partnerships.

#### Actual performance

GW Biosecurity maintains an excellent rapport with all of the regional TAs including shared funding agreements for pest management. Memorandum of Understanding (MoU) provides a formal platform for this relationship. The

MoU is prepared and agreed annually between GW and the Western Zone TAs. The parties agree to support biodiversity and optimise ecological health within the relevant territories.

Formal pest management programmes with Wellington, Lower Hutt, Upper Hutt and Porirua City Councils and with the Kapiti Coast District Council continued during the 2011/12 year. The direct costs for work undertaken on their land are equally shared between GW and the local authority.

## **12. Site-Led – Regional Possum Predator Control Programme**

In conjunction with DOC and Animal Health Board, GW has made a considerable investment in possum control in the region. With the roll-back of Animal Health Board operations commencing in the northern Masterton District in 2008/09, subsidised Tb control operations ceased. This roll-back will eventually include other parts of the region. In these areas possum populations will have been reduced to 5% residual trap catch (RTC) or less. Without continued control, the population will return to previous high levels. This situation will need to be addressed to maintain gains in protecting catchment functions and economic opportunities, including reducing opportunities for re-emergence of bovine Tb.

**Aim: To minimise the adverse impacts of possums in areas declared Bovine Tb free at a cost of \$190,000**

**Annual cost: The cost for minimising the adverse impacts of possums in areas declared bovine Tb free in the Wellington region was \$110,491**

### **Means of achievement**

- (i) Address the adverse impacts of possums in bovine Tb free areas for catchment functions, biodiversity and economic prosperity.
- (ii) Maintain a possum residual trap catch (RTC) of 5% or lower across the 15,500 ha of the Wellington region which has been declared bovine Tb free.

### Actual performance

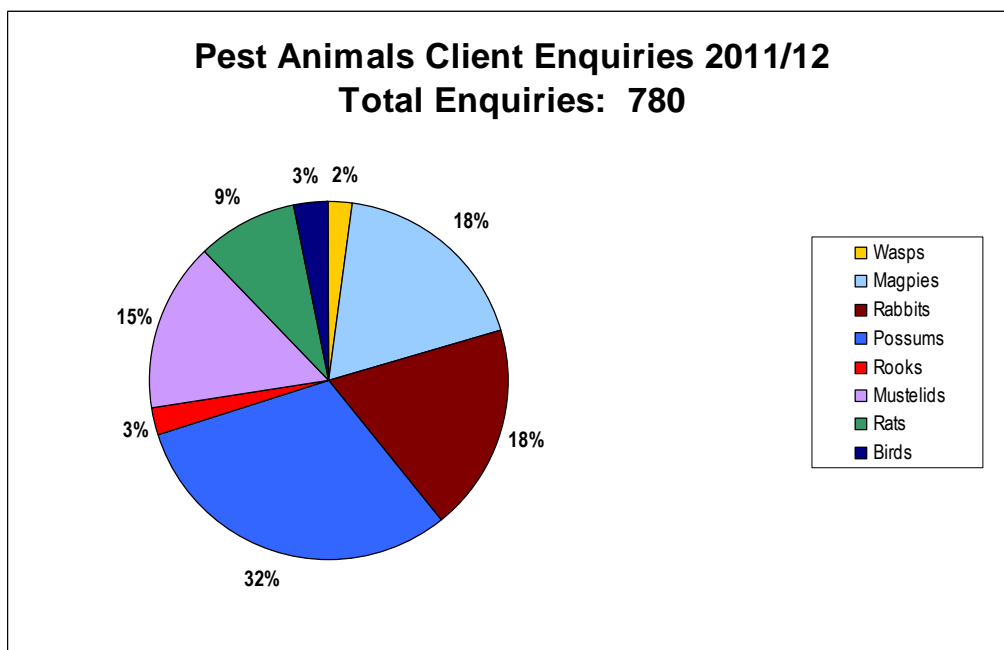
The Regional Possum and Predator Control Programme (RPPCP) for the Wellington region is now in the second year of control. Activities included possum population monitoring to determine the required control intensity and then undertake control operations where required.

Possum monitoring was undertaken in 12 sites and results indicated that only two strata were above the control threshold (5% RTC). Control was instigated in these strata along with three other strata which had higher population levels or were at risk from possum reinvasion. Control over almost 7,000 ha consisted of one application of Brodifacoum pellets in January and February 2012. Possum monitoring will be undertaken again before next years work programme is set.

### 13. Client enquiries 2011/12

**Total enquiries: 780**

The proficient servicing of clients is a significant theme throughout the Operational Plan. To enable this to be measured, a client response database is maintained. The database supplies historical information on an area or pest. It enables GW to manage efficiently, plan the level of control required and assess effectiveness of current control methods.



### 14. Financial summary

The year end result for pest animal management under the RPMS was an operating surplus of \$50,000.

	\$ (000's)
Rates and Levies	829.9
External Revenue	45
Internal Revenue	817.1
<b>Total Operating Revenue</b>	<b>1,683.1</b>
<b>Total Direct Expenditure</b>	<b>1,202.2</b>
Group Overheads	430.8
<b>Total Operating Expenditure</b>	<b>1,633</b>
Surplus	50

## Part Two

### Pest Plants

#### 15. Species led programmes

##### 15.1 Surveillance species

**Aim:** To determine the distribution and means of control for Regional Surveillance pest plants within the Wellington region at a cost of \$250,700

**Annual cost:** The cost of managing Surveillance plants throughout the region during 2011/12 was \$195,400

##### **Means of achievement**

- (i) Report outcomes of investigations into new incursions or species known to be established in the region.

##### Actual performance

All known Surveillance species sites were inspected and mapped. The first stage was to visit each site and verify that the species record and infestation size was accurate. Research and assessment of the control required to manage each species was carried out continually during the year.

##### National Pest Plant Accord (NPPA)

The NPPA Steering and Technical Advisory Groups reviewed the plant NPPA species list. As a result of the review a further 13 plant species were added to the NPPA list bringing the total number of species banned from sale or distribution nationally to 135. The current NPPA together with a full list of the species banned from sale or distribution can be viewed on the Ministry for Primary Industries (MPI) website [www.mpi.govt.nz](http://www.mpi.govt.nz)

During this year efforts were made to target plant nurseries that propagate plants, weekend markets and a few other higher risk sites in the region. A total of 22 plant outlets, 19 in the western zone and three (3) in the Wairarapa were inspected. No banned species were found at any of the plant outlets or markets. The results were entered in the national MPI database.

##### **Means of achievement**

- (ii) Identify new sites of Surveillance pest plants by Biosecurity staff, the public, or through the Surveillance pest plant programme.

##### Actual performance

A total of 472 delimiting inspections of Total Control sites were completed. Thirteen new Surveillance species sites were located: five purple loosestrife,

four chocolate vine, two Senegal tea, one bomarea and one Asiatic knotweed. These were added to the current records of known surveillance species in the region (Table 2). The delimiting surveys around current known sites will be necessary to establish the full extent of Surveillance species distribution in the region.

**Table 2: total number of surveillance species records for the region**

Surveillance species	District	No. of Infested Sites
African fountain grass	Kapiti Coast	1
	South Wairarapa	1
		<b>2</b>
Asiatic knotweed	Hutt City	1
	South Wairarapa	1
	Upper Hutt	1
	Wellington	26
		<b>29</b>
Australian sedge	Kapiti Coast	1
		<b>1</b>
Bomarea	Lower Hutt	23
	Kapiti Coast	6
	Wellington City	19
	Upper Hutt	1
		<b>49</b>
Chilean flame creeper	Carterton	2
	Masterton	1
	Upper Hutt City	4
		<b>7</b>
Chocolate vine	Carterton	25
	Lower Hutt	23
	Kapiti	25
	Masterton	29
	Porirua	4
	South Wairarapa	18
	Upper Hutt	29
	Wellington	33
		<b>186</b>
Nassella tussock	Kapiti Coast	2
	Porirua	1
		<b>3</b>
Purple loosestrife	Carterton	1
	Kapiti Coast	11
	Masterton	2
		<b>14</b>
Senegal tea	Kapiti Coast	9
	Upper Hutt	1
		<b>10</b>
Spartina	Lower Hutt	2
	South Wairarapa	1
		<b>3</b>
White edged nightshade	Carterton	2
	Masterton	1
		<b>3</b>
<b>Total:</b>		<b>307</b>

### **Means of achievement**

- (iii) Undertake a control trial programme on selected Regional Surveillance pest plants within the region.

#### Actual performance

The current research and trials aim to assess effective control treatments for all Surveillance species enabling effective response planning. A literature review of the current control methods for the Surveillance species was completed during 2011/12.

A field trial on control methods for Asiatic knotweed and bomarea has been on going since 2008. These plants are notoriously difficult to control but after four years of control a noticeable decline in plant vigour has been recorded for both.

### **Means of achievement**

- (iv) Use biological control agents where appropriate, and support relevant biological control research initiatives.

#### Actual performance

A number of Surveillance species in our Strategy are widespread in other regions, e.g. nassella tussock, Chilean needle grass and alligator weed, and as such are currently on the list of priorities for biocontrol research nationally. GW Biosecurity actively supports research on these species to ensure effective control agents are available if the pest species becomes established or wide spread in our region.

Please refer to Section 17 'Biological Control' for more information.

### **Means of achievement**

- (v) Provide information and publicity to enhance public awareness of the threat posed by Surveillance species to the region.

#### Actual performance

Media releases and "Our Region" articles were produced for Alligator weed, Californian arrowhead, Californian bulrush and Delta arrowhead.

## **15.2 Total control species**

**Aim:** To determine the distribution and means of control for Total Control pest plants within the Wellington region at a cost of \$253,100

**Annual cost:** The cost of managing Total Control plants throughout the region during 2011/12 was \$277,600

### Means of achievement

- (i) Identify new sites of Total Control (TC) species through incidental reports by GW staff, the public, or through the Regional Surveillance pest plant programme delimiting known infestation sites.

#### Actual performance

Staff completed delimiting all known TC sites. The project has been in progress for six years and apart from any new sites identified in the future, the delimiting programme is now complete. There are 1,267 known TC sites in the region.

This year a total of 472 properties were surveyed and 23 new TC species sites were located (Table 3). The areas inspected often had more of the target species and sometimes revealed other species of interest. These areas were generally older urban properties with well-established gardens, or modern subdivisions on the west coast.

**Table 3: TC sites identified during the delimiting survey programme**

Season	Properties surveyed	New TC Sites	%
2007/2008	1302	49	3.80
2008/2009	6409	54	0.90
2009/2010	3670	42	1.10
2010/2011	890	10	1.10
2011/2012	472	23	4.80
<b>Total</b>	<b>12743</b>	<b>178</b>	<b>1.40</b>

In addition to the delimiting programme nine additional sites were located following reports from the public. Therefore across the entire region, 32 new TC infestations were located during 2011/12.

### Means of achievement

- (ii) Undertake direct control by service delivery of all TC species at all known sites with the region on an annual basis.

#### Actual performance

##### **(a) Annual inspection programme**

All 1,267 known TC sites were inspected and controlled during the year. Some sites are visited up to five times annually depending on reproductive ability of the targeted species and seasonal weather (e.g. Bathurst bur and saffron thistle). Others were only visited once (e.g. blue passion flower and moth plant).



The programme to date has been successful (Figure 10). There are:

- 465 (37%) sites where no TC pest plants were found
- 312 (25%) sites free from TC infestation for up to nine years
- 140 (11%) sites declared “eradicated” after nine years with no TC plants found.

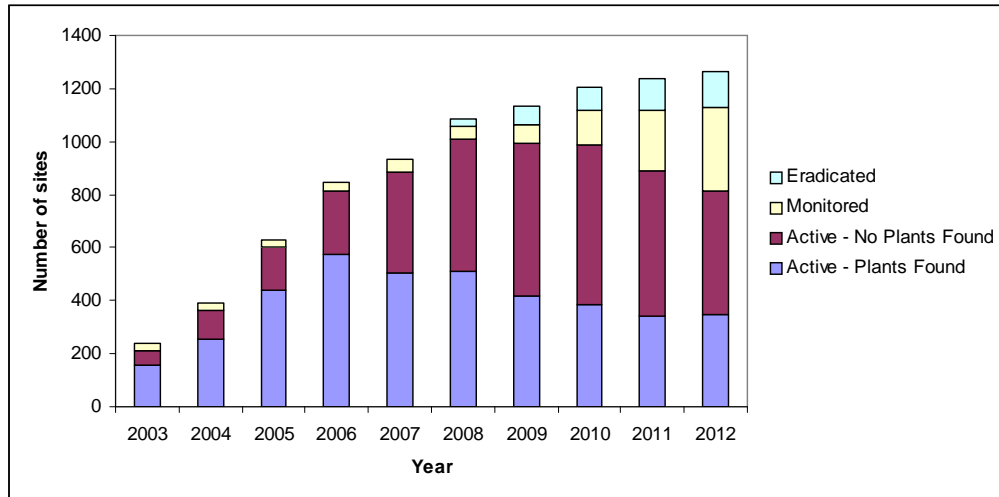


Figure 10: number of sites and their status for all TC species combined, 2003-2012

A decrease in number of active sites and a corresponding increase in monitored and eradicated sites can be seen over time for the TC species (Figure 11).

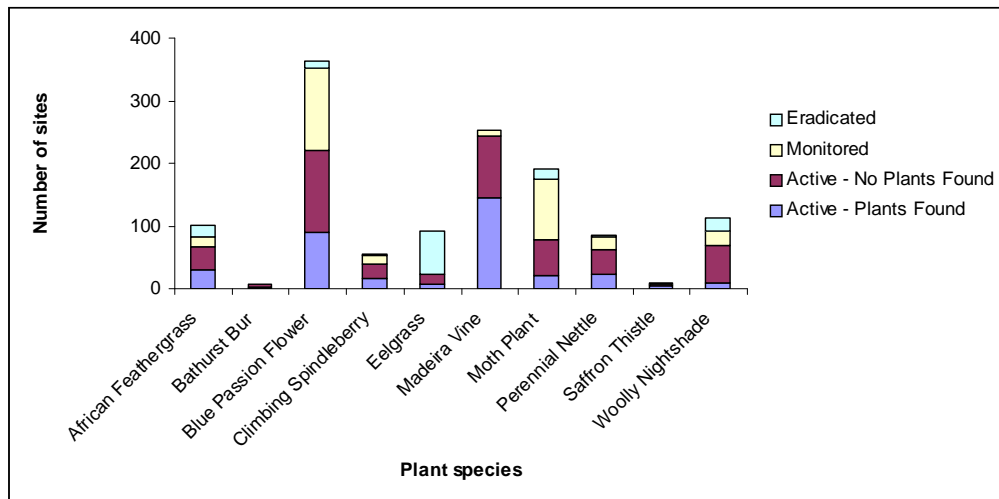


Figure 11: number of TC sites and their status by species, 2012

The TC species with the highest number of sites are blue passionflower (363), Madeira vine (254) and moth plant (190). Blue passionflower and moth plant are the two TC species with the highest number of monitored sites, 130 and 96 sites respectively. The species with the highest number of eradicated sites since the start of the TC programme were eelgrass, woolly nightshade, African feathergrass and moth plant (Figure 11).

Madeira vine is the only TC species where we are not achieving the control targets. A constant increase in number of sites found, along with a low amount of monitored and no eradicated sites in the region, has led to a review of its status in the RPMS. The outcome will determine if Madeira vine will still be classified as a TC species.

**(b) MPI National Interest Pest Response (NIPR) contracts**

Manchurian wild rice, Cape tulip and water hyacinth are National Interest Pest Response (NIPR) species and Total Control species within the region. Control work on these species in the region is funded by MPI.

For 2011/12 an extensive delimiting survey was conducted in addition to the twice yearly control on Manchurian wild rice. The control methods were reviewed following a site inspection in collaboration with MPI and NIWA. The control plan was updated as additional resources were required to intensify eradication efforts on the remaining very low level of infestation. The remaining plants are at very low density and scattered through the treated wetland in Kapiti. MPI funded \$15,880 of direct costs incurred.

Biosecurity staff inspected all known Cape tulip sites. Plants present were only present at one out of five sites. This site needed more extensive control work than usual, being located at the base of a birch tree. The tree was removed with all soil and site restored. MPI covered the full cost of the work.

No water hyacinth plants were found at the two monitor sites.

**(c) Didymo and Aquatic Pest Awareness Campaign**

MPI renewed \$20,000 of funding for the fourth year of Check, Clean, Dry (CCD) summer campaign. The aim of the programme is to raise awareness of Didymo and other freshwater aquatic pests. GW employed an advocate for a four month period over the 2010/11 summer. The work was coordinated with DOC to ensure most efficient use of resources in the region.

Tasks carried out by the summer advocate over the period included:

- Checking and replacing of all CCD awareness signs at 86 fresh water entry points around the region
- Completing a CCD information pack mail out to 230 clubs, contractors, tourism operators and accommodation providers in the region
- Visiting all sports equipment retail outlets, rental vehicle companies, campgrounds, information centres and accommodation providers across the region leaving CCD and Didymo awareness campaign information
- Assisting with a freshwater aquatic pest survey in the Wairarapa river systems to compliment a similar survey undertaken in the Western zone of the region during the 2010/11 summer CCD campaign

- Assisting with the preparation of an organisational plant and equipment hygiene process document
- Communicating with river users on the sites around the region.

This year the Wellington region experienced a cold and wet summer and overall there were fewer people visiting the rivers and lakes during the advocacy period. However, the advocate was still able to interact with good numbers of people by planning visits to coincide with the generally short periods of fine weather.

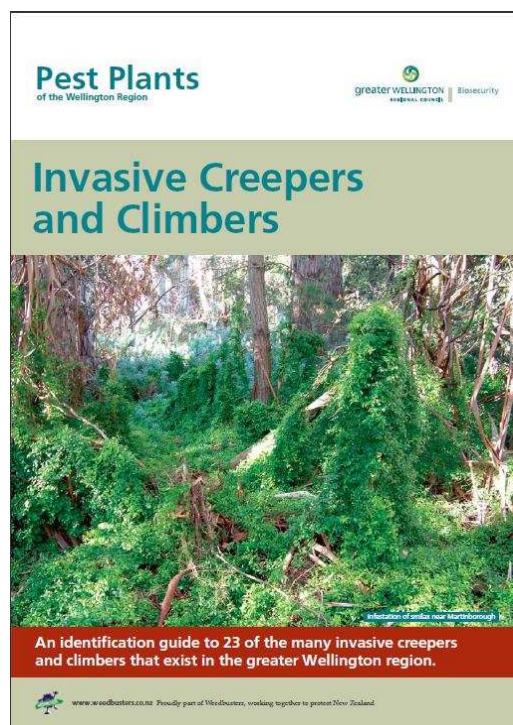


**Means of achievement**

- (iii) Provide information and publicity to enhance public awareness of the threat posed by TC species to the region.

Actual performance

Newspaper and “Our Region” magazine articles covered moth plant, Bathurst bur, and Madeira vine this year. A reprint was done for the popular publication ‘Invasive creepers and climbers’.



**Means of achievement**

- (iv) Annually inspect all plant outlets and markets within the region for the sale and/or propagation of TC species.

Actual performance

Please refer to Section 15.1 ‘Surveillance (NPPA inspections)’ above for more information.

**Means of achievement**

- (v) Use biological control agents where appropriate, and support relevant biological control research initiatives.

Actual performance

A number of TC species listed in the strategy are widespread in other regions, e.g. woolly nightshade, blue passion flower and moth plant. They are therefore currently on the list of priorities for biocontrol research nationally.

Please refer to Section 17 ‘Biological Control’ for more information.

### 15.3 Containment species

**Aim:** To control all Containment species outside the Containment zones within the Wellington region at a cost of \$245,200

**Annual cost:** The cost of managing Containment plants throughout the region during 2011/12 was \$259,100

#### Means of achievement

- (i) Undertake direct control by service delivery of Containment species outside the Containment zone within the region on an annual basis.

#### Actual Performance

##### a) **Boneseed**

All Containment species sites with boneseed have been surveyed to determine the extent of infestation at each site. Sites that receive early control will be revisited to assess seed germination during spring following the initial inspection.

During the last six years the delimiting process has pushed control areas beyond settlements into remote, steep escarpments. This has required expensive control methods including abseil and helicopter to access these sites. The control was successful in reducing infestations to very low levels rapidly but the overall cost was much higher than anticipated. A biannual control of the escarpments have been put in place to reduce the cost which will hold the infestation density at its current level.



**Boneseed (*Chrysanthemoides monilifera* ssp. *monilifera*)**

The number of active boneseed sites outside the containment zone has been declining from 237 sites in 2008/2009 to 73 sites in 2011/2012 (Figure 12).

The long-term plan is to support biological control for boneseed and attempt to establish leaf roller caterpillar and other agents. Please refer to Section 17 for more information.

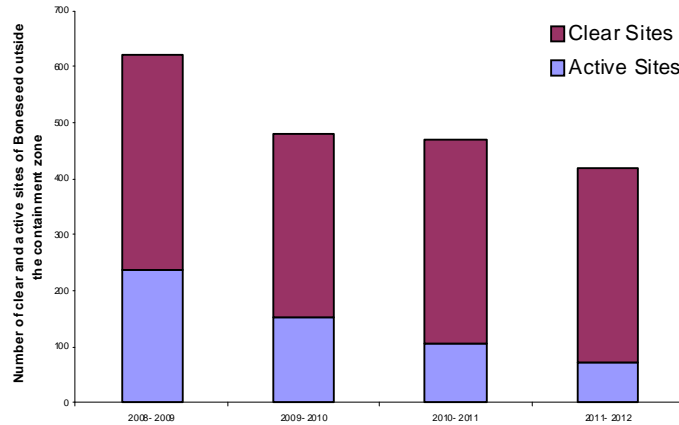


Figure 12: the number of clear and active sites of boneseed outside the containment zone in the Wellington Region.

**b) Hornwort**

One new Hornwort site outside of the containment zone was detected in Paraparaumu. A delimiting survey is planned to be carried out during Summer 2012/13. No other new sites were found in the Wellington Region this year.

**c) Evergreen buckthorn**

A few reoccurring plants were controlled on the Kapiti dune ecosystems undergoing restoration.

**d) Sweet pea shrub**

There were no sites of this species found outside the containment area this year.

**Means of achievement**

- (ii) Provide information and publicity to enhance public awareness of the threat posed by the Containment species to the region.

Actual performance

Biosecurity staff have ongoing involvement in the Wairarapa Moana and Forest Lakes restoration projects and relevant forums. Both of these areas are within the Containment zones. Focus is on advice and assistance to enable self management around aquatic weed issues. A report detailing control options and costs for hornwort has been completed and distributed.

**Means of achievement**

- (iii) Identify new sites of Containment species outside the Containment zones through incidental reports by Biosecurity staff, the public, or through the Regional Surveillance pest plant programme.

#### Actual performance

Evergreen buckthorn plants were identified and controlled on Kapiti dune's restoration sites. A hornwort infestation was identified in Paraparaumu and scheduled for delimiting. Survey planning work continued in the containment zone around Lake Wairarapa for restoration planning.

#### **Means of achievement**

- (iv) Annually inspect all plant, animal outlets and markets in the region for the sale and/or propagation of the Containment species.

#### Actual performance

Please refer to Section 15.1 'Surveillance (NPPA inspections)' for more information.

#### **Means of achievement**

- (v) Use biological control agents where appropriate, and support relevant biological control research initiatives.

#### Actual performance

The National Biocontrol Collective formed a working group to focus effort on aquatic species. Hornwort was ranked in the top five priority species for biological control. GW contributed \$20,000 funding towards assessment of this species.

The boneseed leafroller caterpillar has been released in the region but failed to establish. Research by the National Biocontrol Collective continued for other biological control agents.

Please refer to Section 17 'Biological Control' for more information.

### **15.4 Site-Led boundary control and human health species**

**Aim:** To minimise the adverse impacts of Site-led boundary control species and the risk to human health of species in specific situations throughout the Wellington region at a cost of \$250,700

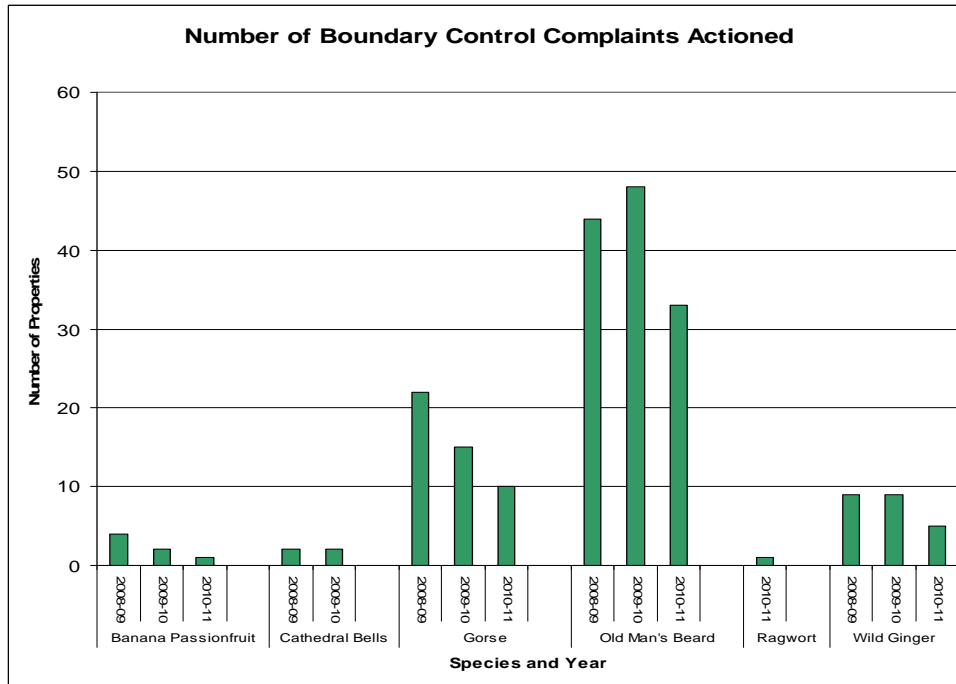
**Annual cost:** The cost of managing Site-led boundary control plants throughout the region during 2011/12 was \$234,500

#### **Means of achievement**

- (i) Action complaints received to within the parameters of the RPMS.

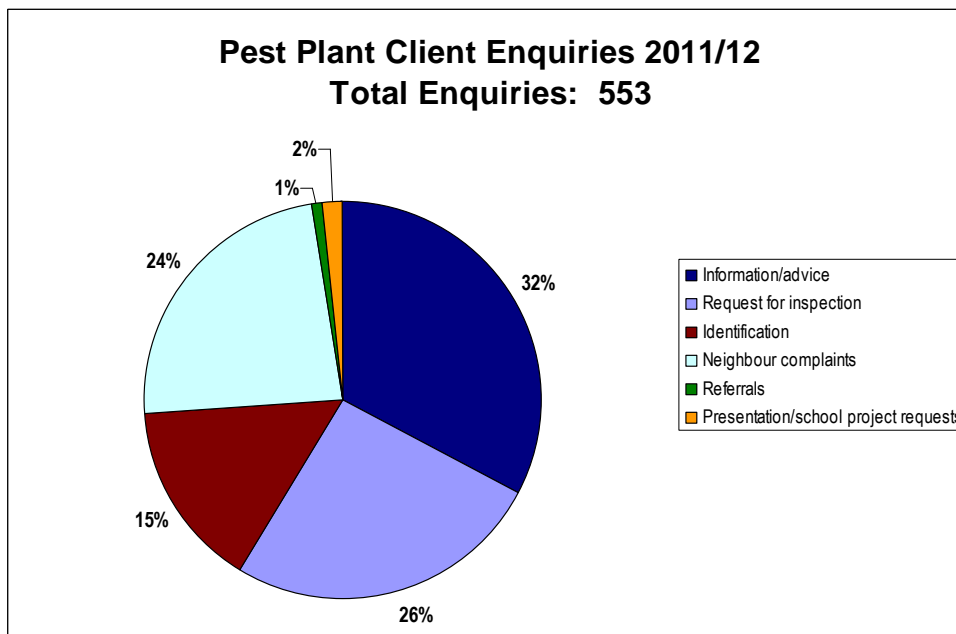
#### Actual performance

Staff responded to all complaints and client response requests this year. Direct compliance action by GW staff is the most effective way to deal with most of these complaints.



## 16. Client enquiries

A total of 553 enquiries were received during 2011/12.



### Means of achievement

- (i) Provide information and publicity to enhance public awareness of the threat posed by Site-led boundary control and Site-Led human health species to the region.

### Actual performance

Please refer to Section 18 'Communications' for more information.



**Means of achievement**

- (ii) Annually inspect all plant outlets and markets within the region for the sale and/or propagation of Site-Led boundary control and Site-Led human health species.

Actual performance

Please refer to Section 15.1 ‘Surveillance (NPPA inspections)’ for more information.

**16.1 Site-Led – Key Native Ecosystems, Reserves and Forest Health**

**Aim: To protect indigenous biodiversity in a comprehensive selection of Key Native Ecosystems and Reserves at a cost of \$388,500**

**Annual cost: The cost to GW to manage KNE species was \$383,300 (KNE and Memorandum of Understanding income was paid direct to the GW Biodiversity Department)**

**Means of achievement**

- (i) Ensure KNEs are legally protected into perpetuity.

Actual performance

All sites currently receiving restoration activity by Biosecurity are either covenants registered with QEII or are Reserves owned by TA’s.

**Means of achievement**

- (ii) Establish and implement integrated pest management plans for all KNEs and selected Reserves.

Actual performance

Integrated management plans for KNE areas and reserves are currently being developed by the newly formed Biodiversity Department.

**Means of achievement**

- (iii) Undertake direct control by service delivery of pests identified in the management plan for KNEs and Reserves.

Actual Performance

Pest plant control work was undertaken in 16 KNE sites for a range of pest plants. In total 17 contracts were completed for those areas at a value of \$79,990. Pest plant work was conducted by staff in KNE sites where it was inefficient to engage contractors, (Table 4).

Work was carried out collaboratively with TA's or DOC as per agreed annual Memorandum of Understanding agreements.

**Table 4: Pest Plants Key Native Ecosystems/ Reserves programme**

	Porirua	Wellington	Lower Hutt	Upper Hutt	Wairarapa
<b>Forest/ bush</b>	Porirua Park Bush	Johnsonville/ Khandallah	Hayward	Keith George Memorial Park	Tauherenikau Bush
		Seton Nossiter		Witako	Greytown Bush*
		Trellisick Park			
<b>Dunelands</b>			Pencarrow		Riversdale
<b>Escarpments</b>	Titahi Bay/Stuart Park				
<b>Coastal forest</b>	Karehana Bay				
<b>Wetlands</b>					Riversdale Southern Wetlands
<b>Riparian</b>				Moehau Stream	
<b>Estuaries</b>		Makara Estuary			

\* Private covenants

### **Means of achievement**

- (iv) Facilitate the involvement of community groups where appropriate.

#### Actual performance

Close liaison was maintained with the volunteer groups and Biodiversity-Take Care co-ordinators on sites across the region. Assistance and pest plant management advice and information were provided when required.

Assistance and pest plant management advice and information were also provided when required to other departments and agencies such as GW Land Management department and DOC in relation to site restoration projects.

### **Means of achievement**

- (v) Co-ordinate site management with other biodiversity initiatives where possible.

#### Actual performance

Staff provided assistance to the Biodiversity department and conducted control work at the Riversdale southern reserve and assisted Land Management Department with a planting day at the Riversdale dunes.

Staff contributed to the Wairarapa Moana and MPI "Fresh Start for Fresh Water" restoration project and assisted DOC with hornwort control at Boggy Pond.

Staff actively assisted other GW departments with site ranking, ground assessments and landowner contacts for the regional wetland survey.

**Means of achievement**

- (vi) Use biological control agents where appropriate, and support relevant biological control research initiatives.

Actual performance

Please refer to Section 17 'Biological Control' for more information.

**Means of achievement**

- (vii) Monitor site recovery using a range of ecological indicators.

Actual performance

Pest plant calibration and recording has been developed for weed work in KNEs and reserves and is a requirement for all pest plant control operations. One site (Tauherenikau) has been established as a pilot study for pest management outcome monitoring. Indigenous species seedling establishment and species site occupancy is recorded as ecological indicators. This site is monitored every two years (to allow for a suitable period of vegetation growth). A monitor was last conducted in August 2010 and is next scheduled for the coming summer of 2012.

**Means of achievement**

- (viii) Manage external pressures that are inconsistent with KNE and reserve management objectives.

Actual performance

Staff managed threats to restoration areas such as livestock access, rubbish and garden waste dumping, boundary encroachment and pest animals. Efforts are made to raise awareness on such issues and referrals are made to relevant agencies when necessary.

**Means of achievement**

- (ix) Provide public education and advice to foster biodiversity management outside formal KNE and reserve areas. Provide information and publicity to enhance public awareness of the threat posed by Regional Surveillance, Total Control, Containment, Site-Led and Environmental pest plants to the region.

Actual performance

Please refer to Section 18 'Communications' for more information.

**Means of achievement**

- (x) Maintain holistic management in existing managed KNE and reserve areas.

### Actual performance

Integrated pest plant and animal control was maintained in all currently managed KNEs and TLA reserves as per MOU with TAs.

The role of holistic ecological management has been passed on to the newly formed GW Biodiversity Department. The recently released GW Biodiversity Strategy outlines key regional priorities to achieve biodiversity improvement in the region.

### **Means of achievement**

- (xi) Where KNEs are identified on TA land, seek funding from the relevant authority to form financial partnerships.

### Actual performance

Biosecurity staff maintained close liaison with TA and GW Biodiversity staff. MOU agreements are in place for each TA that have resources allocated to reserves of interest to GW. TA's contributed \$17,230 and DOC \$1,000 to the programme.

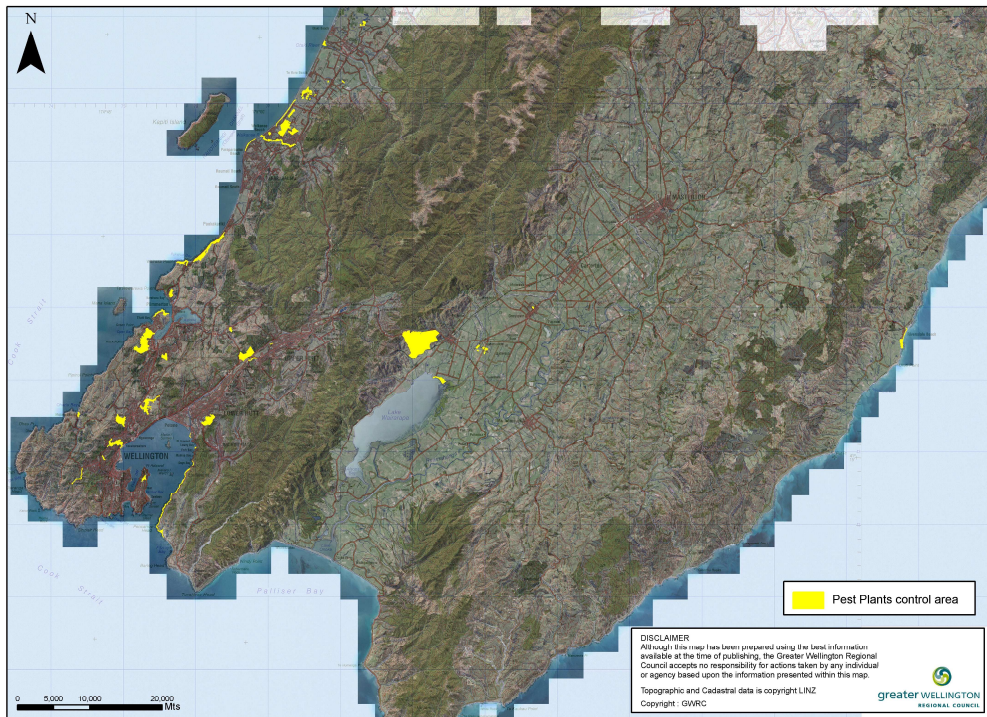


Figure 13: KNE areas receiving pest plant management during 2011/12

## **17. Biological control**

One hundred and forty-eight biocontrol agents have been released in the Wellington Region since the start of the biocontrol programme in 1988. Most of the agents are well established and widespread across the region, (Table 5).

**Table 5: Status at July 2012 of biocontrol agents, purchased and released in the GW region from 1988**

Agent species name	First released	Total number of known sites	Overall agent status
<b>Boneseed agents</b>			
Boneseed leaf roller	2007	8	suspect failure
<b>Broom agents</b>			
Broom gall mite	2009	2	established
Broom leaf beetle	2009	1	uncertain (1 beetle has been found 12 months after release)
Broom psyllid	1995	11	widespread
Broom seed beetle	1994	1	widespread
Broom shoot moth	2008	3	uncertain
<b>Buddleia agents</b>			
Buddleia leaf weevil	2007	12	established
<b>Gorse agents</b>			
Gorse colonial hard shoot moth	2002	4	failed
Gorse pod moth	1997	11	widespread
Gorse soft shoot moth	2007	4	uncertain
Gorse spider mite	1989	8	widespread
Gorse seed weevil	1930's		widespread
Gorse thrips	1990	15	widespread
<b>Mistflower agents</b>			
Mistflower gall fly	2001	2	established
Mistflower fungus	2009	1	established
<b>Old man's beard agents</b>			
Old man's beard leaf fungus	1997	4	failed
Old man's beard leaf miner	1995	5	widespread
Old man's beard sawfly	2002	2	failed
<b>Ragwort agents</b>			
Cinnabar moth	2006	1	widespread
Ragwort plume moth	2012	3	too early to determine
Ragwort flea beetle	1988	8	widespread
<b>Thistle agents</b>			
Californian thistle flea beetle	1994	2	suspect failure
Californian thistle gall fly	2006	1	failed
Californian thistle leaf beetle	1993	3	failed
Californian thistle stem miner	2010	2	uncertain
Green thistle beetle	2008	8	established
Nodding thistle receptacle weevil	1972		established
Nodding thistle crown weevil	1990	4	established
Nodding thistle gall fly	2005	2	established
Scotch thistle gall fly	2005	12	established
<b>Tradescantia agents</b>			
Tradescantia leaf beetle	2011	6	too early to determine
Tradescantia stem beetle	2012	2	too early to determine
<b>TOTALS:</b>		<b>148</b>	

## 17.1 Biological control activities

Staff worked with 19 different species of biocontrol agents throughout the year. The work included releasing and transferring agents, and monitoring their establishment and spread.

Submissions were written to Environmental Protection Authority in support for the release of the lantana rust and two beetles for Darwin's barberry.

In the 2011/12 year a workshop was held to enhance awareness amongst the community and relevant organisations in the region of biocontrol as a pest plant management tool. Attendees included representatives from DOC, TA's, the Botanical Society and large landowner community groups. We received positive feedback from all who attended.

## 17.2 Releases

Three agents new to the region were released in the 2011/12 year. One, the ragwort plume moth, was obtained from Horizons Regional Council. This moth has been very successful at suppressing ragwort in wetter areas where the ragwort flea beetle doesn't thrive and is likely to have a good impact on ragwort populations in similar conditions within the Wellington region.

The other new agents were two beetle species for the environmental weed tradescantia, each of which attack different parts of the plant. A particular highlight for the 2011/12 year was the support gained from Wellington City Council and Hutt City Council for the purchase of tradescantia agents. Due to their additional funding two extra releases were able to be made of the tradescantia leaf beetle in their subsequent territories - greatly helping to enhance the tradescantia management programme.

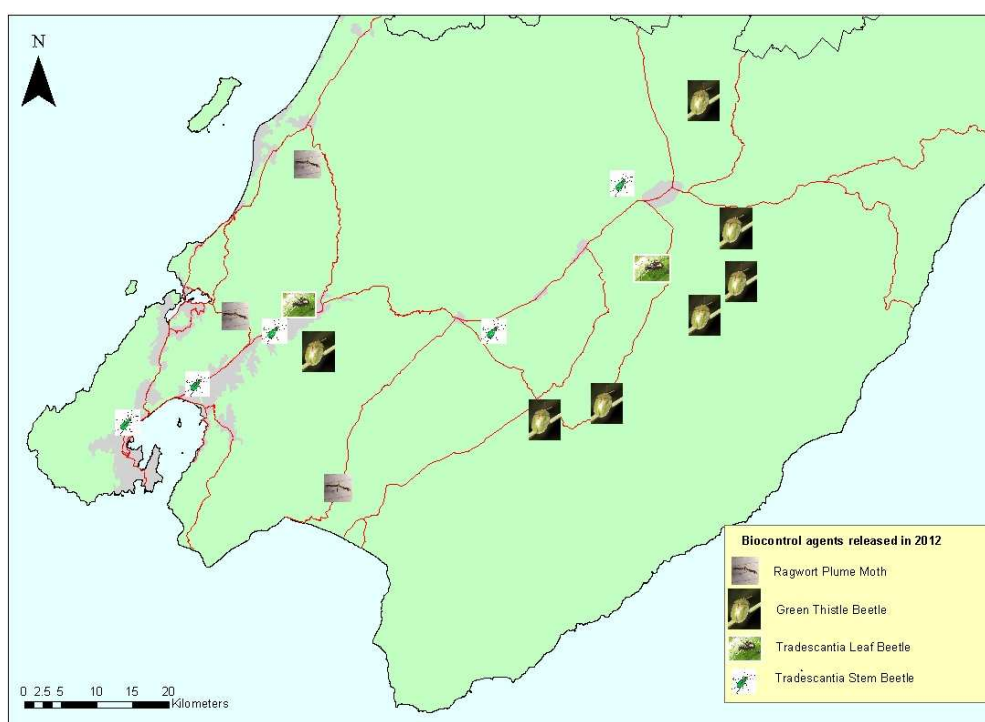


Figure 14: new biological control agents released in the Wellington Region in 2011/12



A third tradescantia beetle species is to be released in spring 2012.

The first release of green thistle beetle in the Western Zone was completed in Mangaroa Valley. Five additional transfers from the original release site were completed in the Eastern zone.

### 17.3 Transfers

In 2011/12 broom psyllid were transferred to five sites in the eastern coastal hills of Wairarapa. This number of releases was limited by the low density of broom plants found in this area.

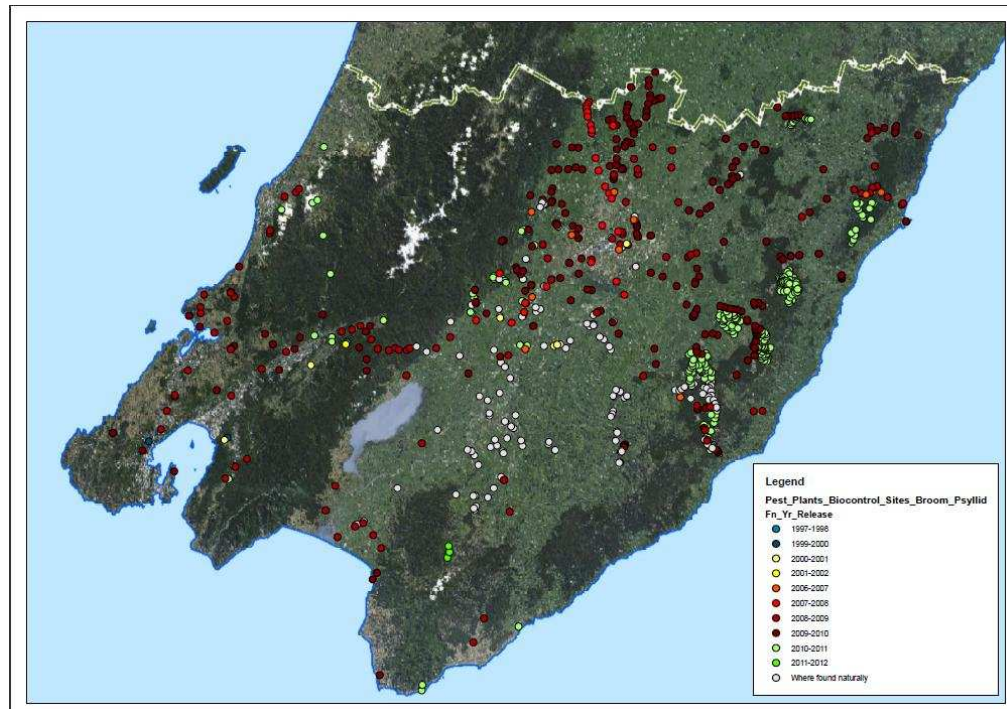


Figure 15: release sites of Broom psyllid in the G W region between 1997- 2012

Trials were set up for the broom gall mite to establish how many galls are needed for a successful transfer. Galls can be transferred 12 months after establishment and focus is to be made on transfers in 2012/13. The trial is testing establishment from as low as five galls transferred to a new site.

We observed success during the year with flourishing populations of buddleia leaf weevil and green thistle beetle. Our team made nine transfers of buddleia and six of green thistle beetle into new areas around the region.



Photo 5: close up of galls on broom  
(Source: The Biocontrol of Weeds Book, Landcare Research)



## 17.4 Monitoring

Monitoring processes were developed for buddleia leaf weevil and tradescantia leaf beetle with advice and guidance from LCR and GW Environment Monitoring and Investigations Department.

Photo 6: larval feeding damage on tradescantia by the tradescantia leaf beetle (*Neolema ogilblini*)  
(Source: The Biocontrol of Weeds Book, Landcare Research)



Before the release of the tradescantia leaf beetle measurements were taken from tradescantia plots to provide pre-release base-line data on the plant. Assessments of percentage biomass were made by measuring the percent coverage and height of the weed in 0.5m x 0.5m quadrants. After the beetle has established these measurements will be continued over a number of years to determine the impact the beetle have on tradescantia.

Monitoring of buddleia was continued in the Wairarapa that started in 2010/11. Pre-impact measurements were taken at four new sites in the region. Staff monitored using the LCR random sampling method to get a quantitative assessment of damage done by the agent. The programme places 200 random points within a square metre quadrant, (Photo 7). Analysis is made of the status of the area under the random points to calculate the percentage of leaves damaged. It is too early to definitively determine the impacts of the weevil on buddleia, however data collected to date looks promising and we are observing significant damage.



Photo 7: Buddleia monitoring photograph depicting one square metre quadrant. The photo is processed using the LandCare Digital Sampling Method to obtain a quantitative percentage of foliage damaged by the biocontrol agent.

Presence/absence monitoring of agents was continued with establishment still to be determined on six new agents – the broom shoot moth, broom leaf beetle, Californian thistle stem miner (released in 2008-2010) and the ragwort plume moth, tradescantia leaf beetle and tradescantia stem beetle released this year.

Progress was made with the survey and transfer of broom psyllid and survey of mistflower in the region and distribution studies continued on gorse thrip.

Follow up inspections were made for the ragwort survey for LCR, obtaining useful outcome data for a national study on the impacts of the ragwort flea beetle.

A survey was conducted on mistflower fungus in the region. All 40 known sites of mistflower in the western zone were visited, mistflower was found at 19 of those sites.

Rust was confirmed at three sites from Wellington to Plimmerton showing the rust is dispersing naturally.



Mistflower (*Ageratina riparia*)

## 17.5 New initiatives

In 2011/12 there was continued involvement with the National Biological Control Collective consisting of LCR, DOC and other regional councils. The collective provides important information updates and serves as an additional source of agents. During the year there was also on-going involvement in the dung beetle project and aquatic weed initiative, both seen as positive steps in utilising the potential of biocontrol.

### 7.5.1 Dung beetle

The Dung Beetle Release Strategy Group (DBRSG) is a group of interested farmers who have an aim to import and release dung beetles in NZ. The group receives funding from the MPI Sustainable Farming Fund along with support from AgriLink, LCR, Dairy NZ and Environment Southland.

In October the principal scientist for the project presented five presentations throughout the Wellington region on dung beetle to raise awareness and support for the programme. The target audience was farmers and the presentations highlighted the opportunities that dung beetle offer for improved pasture production, soil health and water quality.

As a result of the meetings a small group of farmers in Pirinoa, South Wairarapa committed to contribute funds for one release of dung beetle. A contribution was also made from the Pest Plants biocontrol budget to the DBRSG to assist continued research before commencing mass release programmes.

Staff held initial discussions with LCR to apply for funds from MPI to assist monitoring at proposed dung beetle release sites within the Mangatarere and Lake Wairarapa areas focusing on reducing nutrient entry to groundwater.

### 7.5.2 Aquatic pest plant agents

Staff attended a meeting on the biological control of aquatic weeds. The meeting was initiated by LCR to focus on the impact aquatic weeds impose throughout the country and raise awareness of the potential of biocontrol as a management tool. Attendees included representatives from regional councils, LINZ, NIWA, MPI and several major power companies. It was agreed in the meeting that assessment on biocontrol as a means of controlling intractable aquatic weeds in New Zealand was required. It was considered that a partnership group wider than the current members of the National Biocontrol Collective would be advisable (e.g. LINZ, NIWA and hydro power companies), and a steering group was assembled to move forward. First steps for the group are to decide on the priority aquatic weed targets and to advocate and seek funding. A contribution of \$20,000 was made from the Pest plant budget to focus on hornwort assessment.

### 7.5.3 National Biocontrol Collective

Staff attended the National Biocontrol Collective annual meeting in November 2011. This was a valuable meeting where participants discussed national issues regarding biocontrol. At the meeting participants have prioritised where the collective funds could be best utilised in future. We learned that many research programmes are nearing completion and mass rearing projects on a number of agents are ready to commence:

- Japanese honeysuckle; two agent species ready for EPA application
- Old man's beard; gall mite ready for EPA application
- Wild ginger; three agents host testing almost completed
- Banana passionfruit; foliage feeder, prepare EPA application and complete host testing of stem borer moth
- Woolly nightshade; flower bud feeder EPA application preparation
- Darwin's barberry; two weevil species to attack flowers and seed, EPA application hearing and mass rearing.

The Collective continued research on agents for boneseed. The boneseed leafroller caterpillar was released within our region in 2007, however, it failed to establish. Over the last year LCR conducted a study into the patchy establishment success of the leaf roller caterpillar throughout the country. The study identified that scale insect on boneseed produces a sap residue which attracts ants and wasps. These in turn predate on the boneseed caterpillar. It was shown that the boneseed leafroller caterpillar has successfully established in areas of the country where scale insect is absent.

Due to the wide presence of scale and predation on the leafroller caterpillars, these insects are no longer considered a good biocontrol option for boneseed in the Wellington region and a greater emphasis is being made on other agents. Testing of the boneseed rust is continuing but has met challenges due to the long life cycle of the rust and the fact that it can take one to three years before symptoms of infection appear. Unfortunately, initially inoculated plants failed to become infected in sufficient numbers and the trials and new inoculations of test plants had to be redone in October 2010. Results are still pending for these trials.



Photo 8: boneseed leaf roller caterpillar  
(Source: The Biocontrol of Weeds Book, Landcare Research)

## **18. Communications**

### **18.1 Communications plan**

Overall activity targets for the section for the 2011/12 year were again set and completed according to the Regional Pest Management Strategy Operational Plan 2011/12 <http://www.gw.govt.nz/document-library-2/detail/1018>.

### **18.2 Articles**

Articles continue to be the main form of publicity and the most efficient way of reaching a large audience. Media releases started promisingly this year with both the biocontrol and Delta arrowhead articles being taken up by a number of papers around the region.

The short advertorials *Wanted: Pest Plant* continued in the GW magazine *Our Region*. This year Californian bulrush, Californian arrowhead, moth plant and alligator weed were covered.

Beside a number of publications Biosecurity staff provided information to the public through a regional weed swap events in Wellington and presentations to special interest groups including polytechnics, schools, societies and restoration groups.

## 19. Financial summary

In 2011/12 we completed all pest plant management activities under the RPMS with an operating surplus of \$6,300.

	<b>\$ (000's)</b>
Rates and Levies	1,110.2
External Revenue	47.7
Internal Revenue	198.3
<b>Total Operating Revenue</b>	<b>1356.2</b>
<b>Total Direct Expenditure</b>	<b>980.1</b>
Group Overheads	369.8
<b>Total Operating Expenditure</b>	<b>1,349.9</b>
Surplus	6.3

Water, air, earth and energy – elements in Greater Wellington’s logo that combine to create and sustain life. Greater Wellington promotes **Quality for Life** by ensuring our environment is protected while meeting the economic, social and cultural needs of the community

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