

1: Introduction

1.1: Title

This regional pest management strategy is known as the “Regional Pest Management Strategy for Marlborough” (the Strategy). It has been made following the review and amendment of the existing “Regional Pest Management Strategy for Marlborough” which expired on 3 September 2006.

1.2: Purpose

The purpose of this Strategy is to provide a framework for the efficient and effective management or eradication of pests and unwanted organisms in Marlborough so as to:

- Minimise actual and potential adverse and unintended effects associated with the targeted pests; and
- Maximise the effectiveness of individual pest management through a regionally co-ordinated approach.

As provided for by the Biosecurity Act 1993, the Strategy will confer powers and impose legal obligations on people for pest control purposes. Objectives specific to each pest are set out in Part Three of the Strategy.

1.3: Commencement and Duration

The Strategy shall become operative on the date that the Council's special order resolution adopting the Strategy is publicly notified. The Strategy will remain in force for a period of five years from becoming operative. The Council may initiate a review within five years if the Council considers the Strategy is failing to meet its objectives, or circumstances have changed significantly.

1.4: Area of Jurisdiction

The Strategy, when operative, will have effect over the entire Marlborough District as shown in Map 1.

1.5: Structure of the Strategy

The structure of the Strategy is based in part upon the requirements for a regional pest management strategy that are set out in section 76 of the Biosecurity Act 1993 as well as providing some background and context for the Council's role in managing pests in Marlborough.

Part One provides background to the Strategy including its purpose, duration and area of effect. This part is an explanatory section of the Strategy that covers the various roles and responsibilities for pest management in New Zealand and the Council's philosophy and approach to how these responsibilities will be achieved at a local level. This part also addresses Council's non regulatory approach to managing pests and undesirable organisms.

Part Two covers statutory matters that need to be included in terms of the requirements of the Act relating to the preparation, administration and implementation of the Strategy. The way in which pests are identified for inclusion in the Strategy, the various obligations on stakeholders affected by its provisions, the effects of implementing the Strategy and a range of other management responses are covered.

Part Three specifies the management regimes for pests included in the Strategy. For each pest, the management programme sets out the effects of the pest to be addressed, the objective to be achieved, the main methods (including alternatives) to achieve the objective and the rules relating to each pest.

Part Four details the powers conferred on the Council, the approach to enforcing the Strategy, monitoring and funding provisions relating to the implementation of the Council's responsibilities as a management agency.

The appendices include an explanation of terms used, reasons for rules included in the Strategy, an assessment of alternative options and an assessment of the costs and benefits of including pests in the Strategy.

2: Background

This part of the Strategy provides context for the Council's pest management activities. It sets out the various roles of those involved in pest management in New Zealand, the Council's philosophy in managing pests as well as the methods used in pest management. This includes those methods contained within the Strategy as well as methods that are not directly provided for through the Strategy.

The Biosecurity Act was enacted in 1993. The Act has two basic purposes:

- Border control and surveillance to keep unwanted organisms out of New Zealand; and
- The control and management of unwanted organisms post border (plants, animals and diseases).

The main tools for achieving this are various preventative control measures both at the border and pre border.

2.1: Who is Involved in Pest Management?

2.1.1: Biosecurity New Zealand

The Act is administered at a national level by Biosecurity New Zealand (BNZ), which is a division of the Ministry of Agriculture and Forestry. BNZ has a lead role in preventing unwanted pests and diseases coming into New Zealand and for controlling, managing or eradicating them should they arrive in the country. The species that are introduced into New Zealand from overseas are referred to as 'exotic' species. BNZ is responsible for dealing with incursions from organisms such as Didymo and Salt Marsh Mosquito. BNZ is supported by the Crown agencies and regional councils in some of this work.

BNZ is also responsible for administering the New Zealand Biosecurity Strategy. The Strategy sets out a vision for New Zealand that by 2010:

"New Zealanders, our unique natural resources, our plants and animals are all kept safe and secure."

2.1.2: National Strategies, Programmes and Initiatives

A number of industries are actively involved, with BNZ, for managing organisms that may be harmful to their interests. For example there are three national pest management strategies:

- The Animal Health Boards strategy for Bovine tuberculosis;
- The National Beekeepers' Association strategy for American Foulbrood; and
- The Varroa Agency Incorporated strategy for Varroa (bee mite).

The Council currently provides vector management services to the Animal Health Board, along with being a funding provider under the National Pest Management Strategy for Bovine tuberculosis. The Council is also a member of the Varroa Agency Incorporated and contributes to the implementation of the Varroa bee mite strategy.

Other than national pest management strategies, BNZ manages national pest control programmes for a number of notifiable pests, for example Salvinia (*Salvinia molesta*), Johnson Grass (*Sorghum halepense*) and Cape Tulip (*Hameria collina*).

National Pest Plant Accord

The National Pest Plant Accord (the Accord) is a non-statutory agreement between nurseries and the Garden Industry Association, regional councils, the Minister of Agriculture and Forestry and the Department of Conservation (termed "The parties to the Accord"). The Accord was established in 2001.

The purpose of the Accord is to prevent the sale, propagation or distribution of specific plant pests. This is enabled by declaring all pest plants listed in the Accord to be unwanted 'organisms' under the Act. The Council is a party to the Accord and as a signatory is committed to its implementation. The list of plants in the accord is available on Biosecurity New Zealand's website www.biosecurity.govt.nz/nppa. The full list has not been included in the Strategy because the list is subject to review and may change during the life of the Strategy.

2.1.3: Crown and other Agencies

Animal Health Board

The Animal Health Board is a non-profit making incorporated society, made up of representatives from the farming sector and local government. The Animal Health Board's mission is to eradicate Bovine tuberculosis (Bovine Tb) from New Zealand, in order to protect New Zealand's access to export markets for dairy, beef and deer products.

It was formed specifically for this purpose, and is legally responsible for managing and implementing the National Pest Management Strategy for Bovine Tb.

The Animal Health Board has a significant pest control programme in Marlborough where Bovine Tb vectors for carriers of Bovine Tb, such as possums and ferrets are controlled in risk areas.

Department of Conservation

The Department of Conservation (the Department) is responsible for the nation's estate under the Reserves Act 1977, National Parks Act 1980, and the Conservation Act 1987.

The Department has particular interest and expertise in the area of environmental animal and weed pests that pose a threat to indigenous biodiversity. In Marlborough, the Department carries out control of animal pests, mainly Possums and Goats along with weed pest species like Wilding Pines and Old Mans Beard in order to protect vulnerable plant communities and snail habitats.

Land Information New Zealand

Land Information New Zealand (LINZ) is a significant land owner in Marlborough and is involved in pest management programmes on Unoccupied Crown Land (UCL). The majority of the UCL for which LINZ has responsibility is contained within the main braided river systems of the Wairau and Awatere Rivers.

On Track

On Track is the government department responsible for the railway corridor that extends from Picton to the Council's south-eastern boundary. On Track is involved in pest management programmes on land associated with the rail corridor.

Transit New Zealand

Transit New Zealand is the government department responsible for the state highways within Marlborough.

2.1.4: Marlborough District Council's role

The Act empowers the Council to have a significant role in carrying out its purpose. The Council has therefore chosen to be very actively involved given the range of pests present in Marlborough and the potentially damaging consequences to our economy and general environment if these pests aren't managed.

The main way in which the Council has managed pests has been through the development and implementation of a regional pest management strategy. The Strategy sets out specific pests to be managed and the ways in which they will be managed.

The Council also provides a liaison and support role between BNZ and the wider community where BNZ is the lead agency for dealing with an unwanted organism.

From the rivers and adjoining river or floodway reserves to the many land based reserves managed for recreation, soil conservation (Wither Hills Farm Park) or locally used for playgrounds, the Council is actively involved in dealing with plant and animal pests and a range of undesirable species on, and in the land and water, that it administers. For example, aquatic vegetation in waterways is often referred to as 'weed' and is considered to be unsightly and unwanted. Some species grow prolifically and reduce the efficiency of the water flow, resulting in the loss of production on surrounding farmland. The Council has a management programme to mitigate the threat from a range of these undesirable species in the drainage systems of the Wairau Plain. However, there are species, both native and introduced, that are valued for cultural purposes and which also provide valuable habitat and food for species of native fish, invertebrates and birds. So the Council plays an important balancing role between the cultural and ecological values of these 'weeds' and the need to remove them from our waterways.

In more recent times the Council has become more aware of, and involved in, dealing with unwanted organisms and undesirable species in the marine environment.

Under the Resource Management Act 1991 (the RMA), the Council's regional policy statement and resource management plans also have something to say about plant and animal pests. These RMA based documents currently state that regional and national pest management strategies are generally the most appropriate methods in managing pest problems. There is however, little recognition within these documents of threats to our waterways (fresh and marine), from unwanted organisms.

The resource management plans do have some rules for the application or administration of chemicals, biological controls, poisons and hazardous substances, where it is necessary to control plant and animal pests. In some cases these rules may provide for activities to be permitted, subject to certain conditions, while other activities may require a resource consent.

One important aspect of the RMA is that under section 6(c) the Council is required to recognise, and provide for as a matter of national importance, the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna. The Council has been going through a process of identifying significant natural areas in Marlborough and this has included an assessment of where plant or animal pests may be a threat to the values sought to be protected. Pest control in these areas of significance will be an important part of providing protection and will help restore and improve ecosystem functions and maintain indigenous biodiversity.

2.1.5: Land owners and Land occupiers

All land owners and occupiers play a big role in managing a variety of pests including rural and urban property owners, gardeners, and parties with an interest in aquatic aquariums and ornamental plants.

2.1.6: Community Initiatives

Communities play an important role in managing pests. Communities with pest problems often have the enthusiasm and local knowledge to undertake pest control programmes to provide benefits to the community. There are many examples of community groups including Landcare and Weedbuster groups, local resident associations, industry organisations, which all have a part to play in working together to tackle weed and animal pest problems.

2.2: Principles in Managing Pests

The Council has a number of principles which underpin the direction for its pest management activities in Marlborough. These include the following:

- The primary responsibility for the management of pests rests with land occupiers when the pest is classified as a containment control pest.
- Monitoring and surveillance of pests is fundamental for detecting new sites of existing pests and potential new pest organisms.
- Pest species that are of low incidence, but which have the ability to spread and potentially can cause significant impacts, may be eradicated subject to their distribution and density.
- Public awareness and ownership of pest issues is essential for ongoing management of existing pests and for being alert to the risk of new pest organisms.

- Costs for the control of pests, with the exception of low incidence pests, rests with land occupiers. A targeted general rate based on land value is used to fund all other activities associated with pest management as much of this work benefits the whole district.
- The Council will work alongside Government agencies, community groups and iwi to manage pest problems, including advocating to central Government for improving the relationship between national and regional pest management activities when necessary.
- The Council will take part in research for the development of new tools for managing pests, including biological control, particularly where there is benefit to the whole district.
- The Council will encourage site led pest management programmes and initiatives on areas of significant natural value.

2.3: Methods the Council Uses to Manage Pests

Most of the Council's responses to managing pests are currently within the framework of the Biosecurity Act 1993 with the Regional Pest Management Strategy for Marlborough playing a significant role. While there are a range of alternatives for the future management of pests both in terms of methods and the range of pests to be managed, presently the following methods are used by the Council.

2.3.1: Information, education and advice

The Council recognises the advantages of a strong advisory and educational role in pest management and therefore takes a very active role in providing information and advice on the best methods for controlling plant and animal pests. This role relates to providing advice, promoting effective control action and creating a greater understanding and acceptance by land occupiers of the responsibilities of pest management.

The Council's officers have considerable experience and expertise in pest management matters. This experience and expertise will be passed onto the wider community to assist them when addressing specific problems. Information is disseminated in the following ways:

- Responding to public enquiries including identification of pests for the public;
- Personal visits associated with inspections, monitoring and surveillance;

- Carrying out presentations to interested groups;
- Educational programmes designed to increase the awareness of land occupiers in respect of the responsibilities pests present, infestation levels and best control methods;
- The use of displays at shows and field days;
- The publication and distribution of leaflets;
- Preparing features for and placing advertisements in the media;
- Conducting practical, on site demonstration of management techniques; and
- Community initiatives e.g. Weedbusters.

2.3.1.1: Pest Risk Pathways

Increasingly, the prevention of pest spread is best managed at the source rather than once a pest organism has arrived at a new destination. Historically, the majority of pest programmes have focused management of pests at the point of origin with little emphasis on strategies to deal with risk pathways.

Pathways for terrestrial pest spread can include such things as the dumping of garden waste, transportation of stock, grain, and hay commodities. Other pathways include the movement of road metal gravel, and earth works associated with land management activities. While in the aquatic environment contaminated vessels, drainage maintenance and the dumping of aquarium waste can all potentially cause pest spread between waterways.

There is a growing need to develop a coordinated approach to manage these risks more effectively. Ongoing consultation and further exploration of risk pathways and policy intervention to avoid and mitigate adverse impacts need to continually be considered with relevant stakeholders and the community.

The Council intends to undertake an ongoing education campaign, as well as providing advice and information during the life of the Strategy, to increase public awareness of pest spread and pathways. The following table provides a summary of significant risk pathways and potential mitigation measures.

Table 1: Pest Risk Pathways		
Risk Pathway	Description of Problem	Risk Mitigation Measures
Garden Waste	The dumping of garden waste on public and private land, such as road ways, river and recreation reserves damages the environment. Invasive plant pest stem/root fragments or seeds will cause new plant pest infestations.	Public and land occupier education programmes. Appropriate private and public green waste dumping facilities. Regulatory powers.
Gravel, Soil Stockpiles and Quarries	Gravel/soil stockpiles and quarries can be a source of weed seeds. For example, the movement of gravel onto road ways can cause new plant pest infestations.	Public, land occupier and contractor education programmes. Responsible authorities to maintain management plans to mitigate risks. Regulatory powers.
Earthworks	Earthworks are major soil disturbing activities and occur at various scales. Earthworks can be a consequence of land use change, subdivision and land redevelopment. Invasive plant pest stem/root fragments or seeds are capable of being moved through the movement of contaminated soil or machinery.	Public, land occupier and contractor education programmes. Regulatory powers.
Movement of Domestic Stock and Commodity Products	Farming practices such as selling domestic stock, grain based or hay commodities are a potential avenue for spreading contaminated plant pest stem/root fragments or seeds. This is particularly the situation for seeds like Chilean Needle Grass which are easily transported due to their biological characteristics.	Public, land occupier and contractor education programmes. Regulatory powers.
Aquarium Contents	Some garden ponds and aquariums harbour fish, aquatic plant species and other organisms, which may become an environmental threat if released into waterways.	Public, land occupier and contractor education programmes. Appropriate private and public dumping facilities. Regulatory powers.
Vessels and Water Related Equipment	Vessels and other equipment used in waterways pose a risk if contaminated and transported between various waterways. The contamination can occur through the movement of aquatic plant pests such as <i>Egeria densa</i> , <i>Didymo</i> or potentially salt water organisms such as sea squirts.	Public, contractor and commercial operator education programmes. Codes of practice with Industries.
Intentional Release	Members of the community may release terrestrial and aquatic organisms into the environment for their own personal benefit. An example would be the release of coarse (sport) fish into Marlborough waterways.	Public education programmes. Regulatory powers.

2.3.2: Monitoring and surveillance

Monitoring and surveillance is probably the most important method in the Council's overall pest management role. Without being aware of what pests we have in Marlborough, the extent to which they are present, and also being on the lookout for potential new pests, the Council's responsibilities for pest management would be very hard to carry out. In general therefore, the Council's programme of monitoring and surveillance helps to determine the location, nature and extent of pest infestations and establish the extent to which the objectives set out in Part Three of the Strategy are being achieved.

Monitoring and surveillance work also helps to establish whether, and to what degree, land occupiers are meeting their obligations and standards prescribed in Part Three of the Strategy. Inspections can also form part of the Council's regulatory response to enforcing rules where obligations are not being met.

2.3.3: Regulation

Rules in Part Three of the Strategy require land occupiers to carry out the control of certain pests e.g. Nassella Tussock. As a way to assist land occupiers to achieve the rules set out in the Strategy, the Council prepares and sends out programmes which map out a set of target dates by which work has to be completed.

In the event that an occupier fails to meet the rules set out in the Strategy, the Council has the ability to use powers set out in the Act requiring land occupiers to comply with Strategy rules or to take remedial action. In circumstances of continued non-compliance, the Council will use the enforcement provisions of the Act.

2.3.4: Direct control

The Council and Department of Conservation, carry out the direct control of some pests. This is generally for those pests with low numbers and at known sites, with the eventual aim being to eradicate them from Marlborough.

2.3.5: Biological control

The Council uses biological control agents for a range of plant pests where these are environmentally acceptable and both cost effective and sustainable. Biological control introduces and establishes natural enemies that prey on or adversely affect a pest. This control helps to restore the natural balance between a pest and its environment.

For pests that are well established, biological control in conjunction with other technical methods provides the most effective long-term control method. As a control method, it has high initial establishment costs, although the benefits of biological control accrue more widely than to just the individual land occupier. Consequently, the Council believes that there is substantial benefit across the district by the Council investing in appropriate biological control programmes. The Council will, for the duration of this Strategy, provide financial and logistical support to research agencies for a service that includes supplying biological control agents, managing release sites, collecting data and training field staff.

2.3.6: Species led control

All of the pest management programmes listed in Part Three of the Strategy are species led control type programmes. This means the focus is on getting rid of or controlling a specific pest rather than managing a particular area for a range of pests. The species led control programmes aim to eradicate pests where they are limited in number or distribution and to manage their spread where they are more widespread. These pest programmes generally apply to the whole of Marlborough.

2.3.7: Site led control

Widespread pests such as Old Mans Beard, Possums and Stoats have a serious effect on the natural ecological values of Marlborough. Many people in the community are concerned about the effects of these pests, however, realistically there are not the resources, either in terms of technology or finance to effectively manage them with physical control methods across the entire District at this stage. The most effective and efficient approach will be to target these pests at sites of high natural and ecological value where they can be realistically managed to protect particular values or areas. This approach to pest management is referred to as a 'site led' approach. Within Marlborough the Council hasn't developed this type of approach to a significant degree. However, the Council's recent role in identifying significant natural areas in southern Marlborough has resulted in the site led approach to pest management being used to assist in protecting some highly valued sites.

The Council will continue to identify areas with significant natural value under section 6(c) of the Resource Management Act 1991, which requires that the protection of areas of significant indigenous vegetation and significant

habitats of indigenous fauna are recognised and provided for. Where plant or animal pests are identified as a threat to the areas identified as significant, targeted pest control will be an effective method of providing protection and will help restore and improve ecosystem functions and maintain indigenous biodiversity.

The objective therefore of site led pest management, is to work in partnership with interested landowners to achieve the Council's broader objectives contained within its resource management documents for the protection and enhancement of biodiversity values. A range of ecological threats are discussed in section 2.4 and could be the subject of some form of control in the future.

2.4: Ecological Threat Programme

Table 2 below lists the main known plant and animal species which are identified as actual and potential threats to Marlborough's ecological and/or biodiversity values (and in some cases production values also). These species cannot currently be included within the pest management programme section (Part Three) of the Strategy, as they do not pass the required cost benefit analysis for intervention across the entire District. However, any voluntary future pest control initiatives are more likely to be based on a site led approach targeted to sites with significant ecological value where the reduction

of a range of pests would be effective in protecting those values. Vulnerable and important habitats like wetlands, coastal systems, forest fragments and waterways are often the type of sites where this approach to pest management can be preferred. Various mechanisms under the Biosecurity Act, the Resource Management Act or the Local Government Act could be used to undertake control.

Objectives and Policies

The Council will:

- Encourage community initiatives and site led management programmes;
- Provide information material and advice on impacts, threats and control options;
- Advise on identification of the ecological threats and the most appropriate method of control;
- Collect information and keep records relating to the distribution, impacts and spread of these species; and
- Identify sites with significant ecological value where the reduction of a range of ecological pest threats would be effective in protecting those values.

Table 2: Ecological Threats

Common Name	Scientific Name
Australian Magpies	<i>Gymnorhina tibicen tibicen</i> and <i>Gymnorhina tibicen hypoleuca</i>
Banana Passionfruit	<i>Passiflora mollissima</i>
Crack Willow	<i>Salix fragilis</i>
Feral Cats	<i>Felis catus</i>
Feral Deer	<i>Various sp</i>
Feral Goats	<i>Capra hircus</i>
Feral Pigs	<i>Sus scrofa</i>
Japanese Honeysuckle	<i>Lonicera japonica</i>
Mouse-Ear Hawkweed	<i>Hieracium pilosel</i>
Mustelids	Stoat (<i>Mustela erminea</i>), Weasels (<i>Mustela nivalis vulgaris</i>) and Ferrets (<i>Mustela furo</i>)
Old Mans Beard	<i>Clematis vitalba</i>
Pampas Grass Jubata and Selloana	<i>Cortaderia jubata</i> and <i>Cortaderia selloana</i>
Possums	<i>Trichosurus vulpecula</i>
Rats	Kiore (<i>Rattus exulans</i>), Norway Rat (<i>Rattus norvegicus</i>) and Ship Rat (<i>Rattus rattus</i>)
Wandering Jew	<i>Tradescantia fluminensis</i>
Wasps	<i>Vespula vulgaris</i> and <i>Vespula germanica</i>
Wilding Pines	<i>Pinus species</i>
Yellow Flag Iris	<i>Iris pseudacorus</i>

Australian Magpies (*Gymnorhina tibicen*)

Two species of Magpie, the Black-Backed Magpie (*Gymnorhina tibicen tibicen*) and the White-Backed Magpie (*Gymnorhina tibicen hypoleuca*) were introduced into New Zealand in the 1860s. They originate from Europe and feed mainly on the ground, taking a wide variety of invertebrate prey. They are accused by many of robbing the nests of indigenous birds, although there is no hard evidence to support this. They do act aggressively toward intruders when nesting.

Populations of the Black-Backed Magpie exist mainly in Hawkes Bay but the White-Backed Magpie is common throughout New Zealand. Localised infestations of the White-Backed Magpie exist throughout Marlborough.

Banana Passionfruit (*Passiflora mollissima*)

Banana Passionfruit is a vigorous, smothering climber that originates from tropical North and South America. It covers native trees and shrubs on forest margins and its seed is dispersed as part of a fleshy fruit. This fleshy fruit is eaten by birds and possums. Its presence will ruin the appearance of the forest landscape.

Banana Passionfruit is recognised as a weed in Hawaii and Victoria, Australia. It is widespread and abundant in the North Island and localised infestations are spread throughout the South Island although it is absent south of Dunedin. It is widespread in the inner Marlborough Sounds and localised infestations exist in the outer Sounds.

Crack Willow (*Salix fragilis*)

Crack Willow is a large tree that originates from Europe and West Asia. It grows in the margins of rivers, streams, ponds and lakes. It spreads through branches falling off (hence the term 'crack') and rooting elsewhere. It displaces native vegetation from stream and wetland margins and will restrict water flows causing flooding.

Extensive Crack Willow infestations exist throughout New Zealand. In Marlborough, Crack Willow is the dominant species in numerous wetlands and riverbanks.

Feral Cats (*Felis catus*)

Cats were brought to New Zealand in the ships of early European explorers, from 1769 onwards. They were kept on the ships to control the rats. Despite their early

introduction into New Zealand, they did not become feral here until at least 50 years later. Cats predate on possums, rodents, rabbits, birds and reptiles. They also feed on invertebrates to a lesser extent. Native and introduced birds form a large part of their diet.

Populations of Feral Cats exist on both the North and South Islands and on Stewart Island. Population levels vary from low to high depending on the food source. In Marlborough, the Feral Cat population is moderate to high throughout the region.

Feral Deer (*Various Sp*)

Various species of deer were released in New Zealand between 1850 and 1925 for recreational hunting purposes. Deer will browse and graze and have adapted well to New Zealand conditions. They remove all palatable seedlings when present in New Zealand's indigenous forest and will browse commercial forest species. They also have a detrimental effect on indigenous coastal shrubland.

Populations of Feral Deer exist in New Zealand's North and South Islands and on numerous offshore islands. Populations vary from low to medium depending on the habitat. Localised infestations of Feral Deer exist throughout Marlborough.

Feral Goats (*Capra hircus*)

The Feral Goat originates from Europe and was released in New Zealand in the late 1700s. They were liberated widely on the main islands and also on smaller islands to provide food for castaways. Goats are browsers rather than grazers and have adapted well to New Zealand conditions. They remove all palatable seedlings when present in New Zealand's indigenous forest and will browse commercial forest species. They also have a detrimental effect on indigenous coastal shrubland.

Populations of Feral Goats exist in the North and South Island in scattered locations but often over large tracts of country. Population levels vary from low to high depending on the habitat. Feral Goats are widespread in Marlborough. They are most abundant in South Marlborough and in the Marlborough Sounds.

Feral Pigs (*Sus scrofa*)

The Feral Pig was first released in New Zealand in the late 1700s to act as a food source for castaways. Over the next hundred years, releases were made on many offshore

islands and at numerous places throughout the mainland. Feral Pigs are omnivorous, opportunistic feeders that will eat grasses, roots, crops, seeds and other animals when available. They will eat indigenous snails, invertebrates, frogs, lizards and ground nesting birds and their eggs. They also cause damage to the forest floor and pasture by rooting up the ground in search of food.

Populations of Feral Pigs exist in New Zealand's North and South Islands and on numerous offshore islands. Populations vary from low to high depending on the habitat. Localised infestations of Feral Pigs exist throughout Marlborough.

Japanese Honeysuckle (*Lonicera japonica*)

Japanese Honeysuckle is a vigorous evergreen climber that originates from East Asia. It has tubular white flowers which are followed by egg-shaped glossy berries. It is often spread by the movement of stem fragments. It climbs over and smothers from the ground to the medium canopy. It can cause canopy collapse.

Infestations of Japanese Honeysuckle are found all over Marlborough with the worst infestations being in the Rai Valley and in the Marlborough Sounds.

Mouse-ear Hawkweed (*Hieracium species*)

Hieracium species are stoloniferous, low growing perennial herbs that originate from Eurasia. They grow in degraded short tussock grassland on poorly vegetated slopes, in gravel and on river terraces. Hieracium species spread by wind-dispersed seed and via stolons. They displace desirable pasture species and native tussock species and will become the dominant species in low fertility pasture areas.

Infestations of Hieracium exist in the drier areas of the North Island and throughout the South Island. The most extensive infestations are in the South Island's high country. In Marlborough, Hieracium is a serious problem in the Upper Awatere and the Upper Clarence catchments.

Mustelids - Stoat (*Mustela erminea*), Weasels (*Mustela nivalis vulgaris*) and Ferrets (*Mustela furo*)

Mustelids are a large group of small to medium-sized carnivores that originate from Europe. Three species of Mustelid, the Stoat, the Weasel and the Ferret, were

introduced into New Zealand in the late 1880s to control rabbits. They will prey on birds, feral mice, rabbits, hares, rats, possums and insects. They are all active hunters and have a detrimental effect on our indigenous fauna. They are also a recognised vector in the spread of the disease Bovine tuberculosis to domestic livestock.

Populations of Mustelids exist in the North and South Island. Population levels vary depending on habitat from low to high. Mustelids are found throughout Marlborough. Ferret populations are generally highest in rabbit prone areas while Weasels and Stoat populations are generally highest in areas of indigenous bush and scrub.

Old Mans Beard (*Clematis vitalba*)

Old Mans Beard is a vigorous perennial climber, which originates from Eurasia. It spreads by seed and re-sprouting. It will smother native trees and block out all available light. Because of this, it is a threat to many native species. It will invade rock areas, all types of forest, forest margins, open areas and home gardens.

Old Mans Beard infestations exist throughout the North and South Island except for Westland and Fiordland. It is also on Stewart Island and the Chatham Islands. Infestations exist throughout Marlborough.

Pampas Grass Jubata and Selloana (*Cortaderia jubata* and *Cortaderia selloana*)

Pampas Grass Jubata and Pampas Grass Selloana are large perennial grasses, which grow up to 5 metres tall and originate from South America. They spread by windblown seed that will blow over 2 kilometres. They have the potential to form dense infestations, which compete with pine forests and displace native species on forest margins.

Pampas Grass Jubata is recognised as a weed in Hawaii and Pampas Grass Selloana is recognised as a weed in Victoria, Australia. In New Zealand, infestations exist throughout the North and South Island and in Marlborough, Pampas Grass is considered to be widespread.

Rats - Kiore (*Rattus exulans*), Norway Rat (*Rattus norvegicus*) and Ship Rat (*Rattus rattus*)

There are three species of Rat present in New Zealand. Kiore arrived here with the Polynesians much earlier than the Norway Rat and the Ship Rat that got ashore from

sailing ships in the late 18th century. Rats are omnivorous and opportunistic and will eat anything palatable. They will eat indigenous birds, their eggs, lizards and invertebrates.

Populations of all three species of Rats exist in New Zealand's North, South and Stewart Islands. Population levels vary from habitat to habitat. In Marlborough, populations of all three species of rats exist in most habitats.

Wandering Jew (*Tradescantia fluminensis*)

Wandering Jew is a trailing perennial herb that originates from South America. It competes with native forest floor species and regenerating seedlings in disturbed forest and on stream margins. It spreads through seed and shoot fragments, which are often dispersed by water. It grows in damp, shaded places in semi-open forest and along stream margins. It is often found growing in gardens.

Wandering Jew infestations exist at localised areas throughout the North Island and in the South Island north of Canterbury. In Marlborough, localised infestations exist throughout the region.

Wasps (*Vespula vulgaris* and *Vespula germanica*)

The Common and German Wasp are introduced wasps, which are widespread in New Zealand. Both species have no natural predators in New Zealand and have thrived in some districts due to mild winters and a plentiful food supply. They consume large amounts of honey dew in beech forest and prey on our native insects, which are an important food source for our native birds and lizards.

Wilding Pines (*Pinus species*)

Wilding Pines are trees that have spread from plantings made for the prevention of soil erosion and for commercial forestry. Various *Pinus* species are spread by seed and are a problem in areas where native forest does not occur, such as above the bushline, in high country tussock grasslands and in low growing coastal vegetation. They can displace native tussock grassland species and native shrublands, and are deemed by many to be an aesthetic problem.

Wilding Pines are recognised as a weed in Australia. A range of infestations of Wilding Pines exist throughout New Zealand. Large areas of Marlborough are infested with Wilding Pine species, particularly in the Marlborough Sounds and in parts of South Marlborough.

Yellow Flag Iris (*Iris pseudacorus*)

Yellow Flag Iris is an aquatic perennial which grows up to 2 metres tall and originates from Europe and North Africa. It has yellow flowers which form brown seed capsules and dense rhizomes. It is poisonous to humans and animals and forms dense mats, which displace native vegetation and increase the risk of flooding.

Infestations of Yellow Flag can be found in many waterways on the Wairau Plain in Marlborough.