



5| PEST CONTROL - ANIMALS AND PLANTS

North Marlborough's relatively warm sheltered environment provides good conditions for a large array of introduced plant and animal pests. Some of these can have a serious impact on both native vegetation through browsing and grazing, and native animals through both competition for food and direct predation. For some areas of existing vegetation the best improvement in habitat values can be gained through carrying out suitable plant and animal pest control. This chapter describes the various threats that introduced animals and weeds can pose to native vegetation areas and also sets out control methods for a number of pest species.

DOMESTIC STOCK

Domestic stock (sheep, cattle, deer, horses, goats, etc) in general destroy native vegetation and undergrowth – particularly in forest and wetland sites – and prevent regeneration. They also favour certain plant species over others as food and therefore can change the composition of the vegetation. For instance, areas purely of kanuka or manuka are invariably the result of selective browsing of the broadleaved plants and ferns that would otherwise be present in substantial quantities. Fencing to exclude stock is therefore essential within a productive farming landscape if natural remnants or areas for restoration are to remain and flourish. Fencing can provide benefits for both the farming operation and conservation, particularly around the coast, on erosion-prone slopes and in gullies and swamps. However, in situations where severe weeds such as old man's beard and wilding pines are present, continued grazing by stock can prevent their spread so follow up weed control may also be required.



A remnant area of native vegetation which will be unable to regenerate unless it is fenced from stock.

FERAL ANIMALS

Feral pigs, deer, goats, possums and hares are present throughout North Marlborough, and are a general problem. Their populations appear to have built to quite high densities in recent years. All can have serious impacts on native flora and fauna, and in combination their effects can be devastating. As a result, much of the bush has a

“hollowed out” structure, lacking undergrowth. Pigs are extremely destructive of soil and litter and have nearly eliminated the large land snails. Goats can inflict intensive local damage. Possums are general browsers but target species such as kohekohe and southern rata, doing severe damage in places. Deer live throughout but can be locally damaging through grazing and extensive bark-stripping of trees such as five-finger. Chamois are present in the Richmond Range and contribute to degradation of high country vegetation.

Evidence of possum damage on kohekohe trees, favoured food along with other broadleaved species like five finger (left).

Dieback and complete destruction of areas of kohekohe forest can occur in the worst case scenario (right).



Mustelids (ferrets, stoats and weasels), rodents (rats and mice), feral cats and hedgehogs are throughout the region. Largely uncontrolled, they are responsible for great damage to the small native fauna (birds, lizards and larger invertebrates). Rabbits are beginning to spread into the Sounds and are already having a negative impact on the native vegetation, even well within bush remnants.

Some feral animal control is carried out by some landowners, but it is a difficult task and the extensive areas of public conservation lands and the wide roving habits of several of the pest species (especially if regularly hunted), means that continual re-invasion is an issue. Deliberate introduction for recreational hunting is another problem in some areas. The pest-free status of many of the islands in the Sounds is vital to their value as sanctuaries for native flora and fauna. The lack of possums on Arapawa Island, and the lack of both possums and goats on D’Urville Island also contributes much to the sanctuary quality of North Marlborough.

Several “mainland island” type sanctuaries are in the process of being established on private land in the Sounds, taking advantage of peninsulas with narrow necks that can be intensively managed or fenced to exclude farm stock and feral animals. Full exclusion could result in areas which offer the opportunity to reintroduce rare land birds, burrowing sea birds, tuatara, skinks, geckos and land snails. Kaipupu Point



near Picton, jointly administered by Port Marlborough NZ Ltd and the Department of Conservation, is also being managed as a “mainland island”, with Council encouragement and strong community involvement.



Domestic cats and dogs are an added threat to weka, listed as nationally threatened and the last of our remarkable flightless native birds. North Marlborough is one of the last strongholds for these birds (left).

Native land snails are very vulnerable to predation by possums, pigs, rodents, mustelids, cats and hedgehogs (right).

Feral animal control

Many landowners are motivated to carry out pest control in an attempt to lessen the impact of feral animals in their surrounding area. While any control effort is useful, to be effective in reducing the impact of feral animals over time, quite comprehensive pest control programmes are likely to be required. Because every situation is different, expert advice is probably required to set up these more comprehensive programmes. The information provided here gives a general overview of basic accepted control methods for the various feral animal pest species. Further detailed information is available from organisations such as:

Landcare Research www.landcareresearch.co.nz

Department of Conservation www.doc.govt.nz

Biosecurity New Zealand www.biosecurity.govt.nz

Sanctuaries of New Zealand www.sanctuariesnz.org

Pigs, deer and goats – The purpose of controlling these species is to reduce the impacts of grazing, browsing, bark stripping and ground disturbance on forest vegetation and habitat. High to moderate densities of these feral animals can significantly affect the habitat quality available for native animal species and over time potentially change the entire forest structure. Pigs also prey on ground dwelling organisms (insects, worms etc) and of particular significance, the threatened native land snail species.

Control methods: Control of these three species is best achieved through intensive ground hunting with appropriately trained dogs (ideally trained for the individual pest species). Initially an intensive hunting effort (two to four hectares per hour) by experienced hunters carried out in a systematic and planned way can effectively reduce the populations of these species, although migration of animals from non-hunted neighbouring areas is a factor to be considered. Ongoing follow up control is likely to be required. Experience has shown that for native vegetation to show significant recovery, the animal population needs to be reduced to a level where one experienced hunter and dog will only encounter one animal per day's hunting time. Control that does not achieve this level will still reduce the pressure on the native habitat but not to the extent that full recovery will be able to occur.

Possums – The purpose of controlling possums is to reduce general browsing pressure on native vegetation as well as targeted browsing pressure on some favoured species such as kohekohe and five-finger which can ultimately kill these species. Possums also prey on nesting birds, taking eggs and chicks over the spring and summer months.

Control methods: Possums can be controlled through a variety of both trapping and poisoning methods.

Trapping

Kill traps – the animal is killed almost instantly and these traps do not have to be checked daily. These traps are generally more expensive, but are suitable for small scale use.

Non kill traps (cage traps and leg hold traps) – have to be checked daily to meet animal welfare guidelines and require that the animal is then humanely killed. Recent legislation has banned various leg hold traps. Information on approved leg hold trap types can be found at:

www.biosecurity.govt.nz/regs/animal-welfare/stds/traps

For both types of traps if weka are present it is recommended that traps are positioned a minimum of 700mm off the ground. It is an offence to kill weka.

Poisoning

Anticoagulant type poisons are most commonly used in small scale possum control around smaller properties and baches. However some are highly lethal to mammals



and birds, and extremely lethal to fish. Strict adherence to label recommendations is necessary, to minimise secondary poisoning and negating it getting into the food chain, especially in scavenging feral pigs. The use of bait stations is a condition of use to circumvent access to the toxin by wildlife and livestock. Weka are particularly vulnerable to this. Anticoagulants do not produce signs of poisoning for several days after the toxic dose has been consumed therefore bait stations should be kept baited for three to four days and then bait removed for up to five days and then rebaited. This helps to prevent “over ingestion” of bait, beyond that required to kill the possum. Those animals requiring a greater dose will receive it in the second baiting.

Acute poisons such as Cyanide in both encapsulated pellet (Feratox) and paste form are commonly used for possum control, but require a licensed operator.

A summary of poison types can be viewed at;

www.landcareresearch.co.nz/publications/infosheets/possums/pros_cons_of_poisoning.pdf

Mustelids (ferrets, stoats and weasels) and rats, also cats

The purpose of controlling these species is to provide some relief from predation of breeding birds, as well as insect and lizard populations over the spring/summer months. Stoats and ship rats, in particular, are key pests in forest ecosystems. There can be quite a complex relationship between the various predators with impacts on one affecting another and this needs to be considered when control programmes are planned. Cats for instance, while preying on native species, also prey on both rats and stoats. Cats should be particularly targeted when numbers are known to be generally high or particular species are at risk from cats – eg, penguins at nesting time.

Stoats prey on nesting birds, including larger species like kereru and kaka. They have a large range being able to travel many kilometres per day.

Rats also prey on nesting birds with particular impacts known on robins, tomtits and kereru, but also prey heavily on invertebrates and feed on seeds and fruit, potentially reducing forest regeneration. Rat numbers build up seasonally in response to food availability, numbers can also build when there is effective control of stoats, as rats are preyed on by stoats. On the other hand when rat and mouse numbers are high, stoat breeding kicks in and rapidly accelerates. Rats have smaller home ranges (100 – 200 metres), and high productivity when conditions are favourable and therefore populations need monitoring and periodic control to be effective.

Cats are difficult to target, but can be caught in leghold or kill traps. They can also be caught in cage traps and then shot.

Control methods: Mustelids and rats can be controlled through both trapping and poisoning methods.

Stoats – Trapping for stoats includes approved kill traps such as the Fenn or DOC 250s, 200s or 150s set at approximately 200m intervals along tracks, ridges and prominent points. For larger operations the trap lines should be 1km or less apart. Rats are also likely to be trapped in these, but not to the extent that the rat population will be significantly reduced.

Rats – The current best practice for controlling rat populations involves installing bait stations on a 100m x 100m grid and using an anticoagulant poison (such as “Talon”). Typical active ingredients are: brodifacoum, diphacinone, warfarin, and others. Most of these products include green dyes to deter birds; however, dogs and cats have poor colour vision and to them these pellets may look like pet food.

Anticoagulant rodenticides do not produce signs of poisoning for several days after the toxic dose has been consumed therefore bait stations should be kept baited for three to four days and then bait removed for up to five days and then rebaited. This helps to prevent “over ingestion” of bait, beyond that required to kill the rat. Those rats requiring a greater dose will receive it in the second baiting.

However, in North Marlborough there is a problem with weka taking baits and eating poisoned rats. Bait stations are the most prudent way to apply the bait as it gives a measure of protection to birds from eating the bait.

Trapping of rats can be done in smaller areas using 100m x 50m grids or ideally 50m x 50m grids and checked weekly or as frequently as possible. Several kill trap types are available and need to be set up in a weka-proof tunnel.

Rat numbers can rebuild very rapidly, so to maintain them at low levels programmes need to be repeated at least every third year and if possible more frequently. Some mice will be poisoned/trapped using these methods also. Mustelids will also be reduced following a rat poison operation as a proportion of them die by feeding on the poisoned rodents.

Feral Cats – Cats can be trapped in any of the three trap types – kill traps, leg hold



traps or cage traps. Cage traps are only suitable for control in small areas but are useful in that they avoid pet cats being injured or killed in instances where this is an issue. For more serious control operations, an extensive network of either leg hold or kill traps can be used on 100-200 metre lines. Cat control is quite complex and currently there is no effective monitoring technique for feral cat control operations. The Department of Conservation has detailed fact sheets on feral cat control using the three trapping techniques available.

The Plaisier family of Tui Nature Reserve in the outer Pelorus Sound own about 40 hectares which they have put into a QEII covenant to ensure the area is protected for nature conservation in the long term. Along with their neighbours, they have been working to get animal pest numbers down to low levels so that the native plants and animals on their peninsula, can flourish. They know that research has shown that most native forest birds like tui, bellbird and robins have a less than 20% breeding success rate when no pest control is in place and they are determined to break this cycle in their own area. The Plaisiers have worked from large to small, firstly tackling the pigs, goats and deer on the property by hunting to low numbers, then getting to work on the possum population with an extensive trapping programme using Timms kill traps set up in trees to avoid wekas being accidentally caught.

More recently they have begun even more intensive work on rats, getting specialist help to design and set up grids of suitable traps every 50 metres and checking these every two weeks. By getting all these pest species down to lower numbers they are seeing good recovery of species with kohekohe trees flowering and fruiting prolifically, and insect and bird numbers increasing dramatically. The work is ongoing, but future plans to erect a deterrent fence along the neck of the peninsula will help reduce the long term effort needed to keep pests in this area at sustainable low levels.



The Plaisier family with sponsors at the Marlborough Environment Awards dinner in 2009 where they won both the Habitat Enhancement Award and the overall Supreme Award (left).

Kohekohe flowers growing directly out of the trunk and branches, a feature that indicates tropical ancestry. Possums seek out kohekohe and it would not be flowering like this if possum numbers were not very low (right).

WEEDS

Along with feral animals, introduced plants are placing North Marlborough's natural ecosystems under pressure. Some weed plants that are a threat to native vegetation are managed as "total control" plants through the Regional Pest Management Strategy (for instance boneseed, madeira vine and climbing spindleberry). However many more widespread weeds, including those discussed below, are too widespread to be eradicated and control generally relies on landowners or wider community efforts.

Brochures and information on all of the weeds discussed here are available at the Marlborough District Council.

Wilding Trees

Wilding conifers (mostly *Pinus radiata*) have become the greatest weed threat in North Marlborough, proliferating since the wind-down of pastoral farming and the advent of commercial exotic forestry in about the mid 1970s. They are throughout the region and are rapidly invading regenerating vegetation and sensitive places such as coastal scarps and ultramafic areas. Relatively easy to control at the early stages, they have the ability to rapidly proliferate and destroy the integrity of the native vegetation. Control programmes are underway in several places in the Sounds, where individual landowners are carrying out work. The Marlborough Sounds Restoration Trust is an independent organisation established in 2006 to work on a larger scale programme of wilding pine control in the Marlborough Sounds with the backing of the Marlborough District Council and the Department of Conservation.

Scattered wilding pines within regenerating kanuka forest that could be relatively easily controlled by poisoning at this stage.



Control methods – the most effective way to control large wilding pines where they are located within regenerating native vegetation and away from areas where people could be endangered by falling branches, is to poison them standing and allow them to die and break down over a period of several years. This method does not create gaps in the vegetation where seeds in the ground can germinate and become an



ongoing problem. The method involves drilling on a downward angle from 2-8 holes (depending on the size of the tree), into the growth layer of the tree under the outer bark layer (about 100mm), and filling with a chemical mix of high concentration metsulfuron based herbicide like Meturon, Escort or Matrix (200g per litre of water).

Young smaller pre-coning trees can be felled with a handsaw or chainsaw.

Graeme and Sue Moore – Hitaua Bay, Tory Channel – are pioneers in the wilding pine management field and after trialling other methods (helicopter removal and ring barking), have been controlling trees through stem poisoning for about 20 years. They have killed many thousands of trees with the help of local couple, Len and Helen Dunwoodie, who have steadily worked their way right over the property over the years, building expertise and experience as they went.

As the trees die off over a period of months, more light and moisture get to ground level and regeneration of native species is often rapid. Plots set up in some areas on the property found up to 18 native species established under trees after two years. The dead standing trees make ideal perches for birds which bring more seed into the system fairly quickly, including nearby podocarp species like rimu, totara and matai. Because there is no ground disturbance using this method few weed species tend to establish.

After 20 years the Moore's property is a great showcase for what can be achieved and the different stages and patterns that emerge depending on factors such as climate, soil fertility and so on. Trees disintegrate to single stems in anything from five to 20 years – these stems will gradually blow or fall down and the regenerating native vegetation will be dominant once again. More extensive wilding pine control using similar stem poisoning methods is now carried out throughout the Sounds by other landowners and since 2008 by the Marlborough Sounds Restoration Trust.



Graeme Moore and environmental consultant Paul Millen tour the property (left).

Trees poisoned about five years ago stand amongst vigorously regenerating native vegetation (right).

Old man's beard

Old man's beard is also a major and burgeoning problem. It is beyond the capacity of individual landowners to control in several places, even though biological control agents are present. The main control tools are grazing or cutting stems and painting the cuts with herbicide. Preventing the spread of this weed should be a regional aim.



Old man's beard plants showing prolific wind spread seeds after flowering.



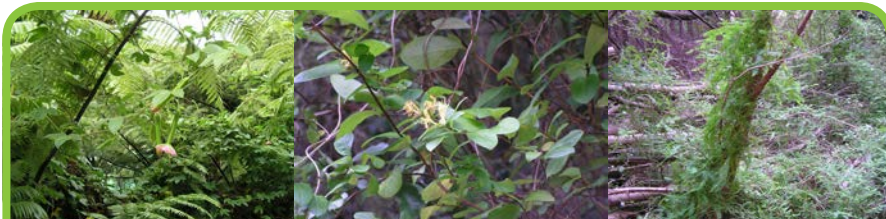
Old man's beard smothering native vegetation - the weed can take over areas of native vegetation if left uncontrolled.

Control - the most effective control method is to find and cut the vines near the ground and paint the stumps with herbicide, either Vigilant gel, one part Glyphosphate to four parts water, or, one part Grazon to 20 parts water. Ongoing control will be required for some years to continue removing seedlings. Hand pulling and grubbing is possible with smaller plants. As plants can re-grow from stem fragments ensure these are not left on the ground.

Other weed species

Banana passionfruit, Japanese honeysuckle and climbing asparagus are also becoming severe problems, though as yet they are more localised.

Willows threaten natural riparian sites and wetlands. They can be controlled by drilling and poisoning using similar methods outlined above for wilding pine trees.



Banana passionfruit, Japanese honeysuckle and climbing asparagus, all weeds that could become major problems if allowed to spread (left to right).



Willows spread vegetatively, so if they are going to be mechanically removed they should still be killed by poisoning first, otherwise any pieces left on the ground are likely to re-grow.

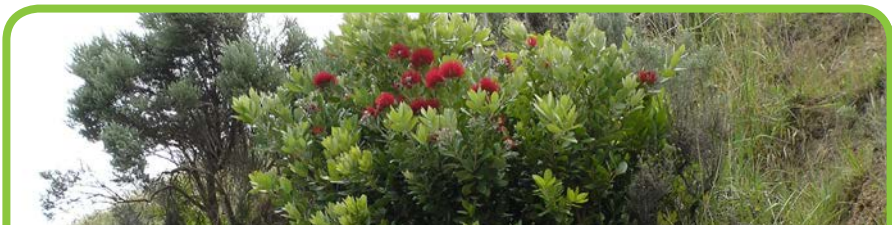
Cotoneaster, agapanthus and shrubby stonecrop (*Sedum praealtum*) – all garden escapees – are threats to coastal scarps and should be controlled wherever they become established in the wild.

Gorse and broom are threats to areas where native vegetation regeneration is slow, for instance ultramafic areas and some coastal scarps; otherwise they are benign and are generally quickly outstripped by regenerating native vegetation.

Spanish heath, hawthorn, barberry, Himalayan honeysuckle and blackberry are localised but widespread; they are not usually a threat to the native vegetation. For many of these weeds, exclusion of stock and prevention of fire and other disturbance may be sufficient for the regeneration of native vegetation to prevail.

On the few sand dunes, marram grass has invaded and is a severe threat to the natural sand dynamics, as well as to the last remnants of native sandbinding vegetation and mat daisy populations. Control of marram and planting of native sandbinders such as spinifex, pingao and sand tussock will be necessary for these special communities to survive long into the future.

“*Exotic natives*” – New Zealand native plants not naturally occurring in North Marlborough – also pose threats to the natural integrity of the region. They include beloved species such as pohutukawa, kauri, puriri and karo. Pohutukawa and karo have become established in the wild in several places in the Sounds. In terms of ecological integrity it is better not to plant these species but to plant the local equivalents instead: southern rata, totara, kohekohe and kohuhu. Even then it is preferable to use plants raised from the nearest available source, rather than what can be obtained “off the shelf” from a commercial nursery.



Although Pohutukawa is a native species and attractive to native birds, is not natural to Marlborough and is spreading in places. From an ecological perspective it is better to plant southern rata, which is natural to the region.