



Managing Your Bush Block

A guide to looking after indigenous forest remnants in the Wellington region



greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao



Contents

Why do we need to manage bush blocks?	2
Hatching a plan to manage your bush block	5
Fencing to exclude stock	9
Being wise to weeds	15
Getting on top of animal pests	19
Managing around the edges	24
Bringing back native wildlife	27
Making it legal – bush protection options	29
Finding out more	32
Useful websites	33
Appendix 1: Common weeds of bush blocks	35
Appendix 2: The Greater Wellington Regional Council first fifteen	45

Photo credits:

Cover, p5, p10, p12, p16, p25 – QEII National Trust

p4 (large), p9 (large), p18, p19 (top thumbnail) – Waikato Farm Environment Award Trust

p14 – Peter Nikolaison

p15, p19 (bottom thumbnail), p20 (large), p27 (all thumbnails), p28 (both) – Department of Conservation

p31 – Barbara Mitcalfe

Top photo on even numbered pages – Isobel Gabites

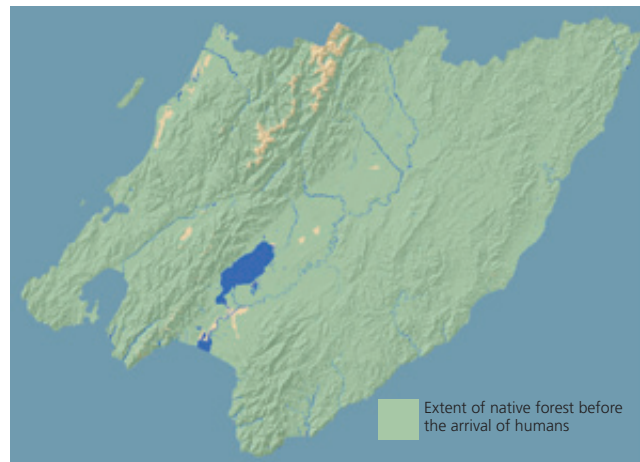
The production of this booklet has been made possible by a grant from the Biodiversity Condition Fund



Why do we need to manage bush blocks?

What are bush blocks?

Bush blocks are small patches of native forest or scrub, often referred to as forest remnants because these areas are all that remain of our once extensive native forests. The Wellington region, like much of New Zealand, was predominantly covered in forest before humans settled here. It is estimated that up to 98 percent of the region was forested. Clearance for settlements and agriculture dramatically reduced the area of forest, leaving us with about 28 percent native forest cover today. Of this, about 12 percent is privately owned. This is made up of the many isolated bush blocks we see in our working landscapes. Unfenced and unmanaged, these blocks face a bleak future without our help.



Since the arrival of humans to the region, the area of native forest has been significantly reduced, leaving only scattered remnants in many places.

Why are bush blocks valuable?

Although bush blocks are small and often disconnected from other forest ecosystems, they nevertheless are valuable. They provide us with opportunities to protect and manage examples of our unique natural heritage. While they are valuable as "museum pieces", showing us a glimpse of what pre-human New Zealand was like, they are also vitally important for the future of our biodiversity.

It is important to recognise that when we talk about bush blocks we are referring not just to areas dominated by forest trees but also to the areas of scrub that frequently flank and protect the interior of taller bush, or to scrub that exists in its own right. Once regarded as only good for clearing, native scrub supports a diverse range of native plants and animals. Scrub is also an excellent starting point for forest restoration as you already have the first stage of a vegetation cover that might take 5 to 10 years to achieve through restoration planting.



Bush blocks are often a mix of forest and scrub – both have important values.

Bush blocks (both forest and scrub) are valuable as they:

- Act as stepping stones through the landscape for our wildlife. For example, they allow native birds to move down from the mountains in winter to feed in the lowlands
- Are reservoirs of native plant seeds allowing natural regeneration to occur and supporting local restoration projects
- Are often the last refuges of rare or endangered native plants and animals, providing a base from which to rebuild populations
- Often occur in gullies and steep slopes where they protect our soils and streams
- Contribute to the visual diversity of our landscape



Even small bush blocks can support good biodiversity.

What are today's threats to our bush blocks?

The "traditional" threats of logging and clearance have been replaced by less obvious problems (although native scrub is still cleared with little appreciation of its values). Experts now recognise that much of our bush is in decline and will continue to deteriorate unless we intervene. The causes of this decline include:

- Stock browsing and trampling
- Animal pests such as possums, goats, deer, pigs, weasels, ferrets, stoats, cats, hedgehogs and rats
- Weeds that suppress regeneration of native seedlings (such as wandering willy) or smother mature trees (such as old man's beard)
- The effects of wind, causing wind-throw and drying out the forest floor
- The effects of surrounding land uses such as land drainage or spraying
- Subdivision resulting in fragmentation and the introduction of domestic animals

Because bush blocks were once part of much larger forest systems, they lack the ecological resilience to handle these threats and cannot survive without our help. By systematically dealing with these issues, it is possible to restore life to your bush block and ensure that future generations enjoy the pleasure and benefits they bring. The good news is that bush blocks respond well to relatively small management inputs and it can be very rewarding to see your actions having an immediate effect.

This booklet is intended to help you identify the threats facing your bush block and to develop a planned approach to dealing with them.



Stock grazing and trampling can leave the forest floor bare.

Hatching a plan to manage your bush block

Managing and protecting a bush block is not difficult but your chances of success are greater if you take the time to do some planning. If you are clear about what you want to achieve, it's easier to work out the best way to reach your goal.

Working out where to start

If there is more than one area of bush to choose from, it's a good idea to prioritise the area to protect first. To get the most bang for your buck, consider the following ideas:

- Larger patches of bush will be home to more types of native plants and animals
- Areas that are square or circular in shape will be cheaper to fence than awkward shaped areas and will have less vulnerable edges
- Bush blocks that are close to other natural areas will provide a good link for native plants and animals to move between
- Bush blocks on the edge of streams or wetlands will help protect water quality and reduce runoff
- Bush that is already healthy will provide the best return for the least effort
- More mature areas of bush are harder to replace, so are more of a priority for protection than young regenerating areas
- Areas that contain rare or threatened species or culturally important species (such as rongoa Māori – Māori medicinal plants) are a priority for protection



Where possible, when you're fencing off your bush block, link it to other natural areas for maximum benefit.



Sorting out your goals

If you have an area of bush on your property or in your community that you would like to protect and manage, start by thinking about your overall goal. Do you want to restore the bush to its original state or would you just like to stop the area from deteriorating any further?

To help you clarify goals that are appropriate to your situation, it is useful to talk to other people who have experience restoring and managing bush blocks. These people may be landowners, members of conservation groups, or staff from Greater Wellington Regional Council. Try to get an idea from them of the time and financial commitment that might be involved. You may find that some organisations have assistance programmes to lend you a helping hand.

Planning in a group

If you're part of a group planning a project, it's useful to think about your vision as a group and then work towards developing objectives and goals together.

- Ask your group what they want things to be like in the future. Write everyone's ideas up on a large piece of paper and check how they're different and similar. Pull together the main ideas to create a vision that everyone is happy with. For example, "Jim's gully is a thriving bush haven for native birds, with walkways so that people can easily enjoy it"
- Ask your group what they would need to achieve to realise their vision. Get everyone to write ideas on sticky notes and group similar ideas together to develop goal statements. Check what might get in the way of achieving the vision as well, to help identify any critical areas for action

Identifying threats and issues

The next step is to work out what things are threatening the health of your bush area.

Threat to your bush remnants	Signs of damage	Management options
Stock access	No regeneration on the forest floor Tree bark and roots are damaged Weed invasion Evidence of trampling and stock browsing	Fence bush remnant to exclude stock – see pages 9 - 11 for more information about your options
Feral deer, goats or pigs	No regeneration on the forest floor Tree bark and roots are damaged Evidence of trampling and rooting in soil (pigs)	Fence bush remnant – see pages 9 - 11 Undertake pest control – see pages 19 - 21 for more information
Possums	Tree leaves, fruit and berries heavily damaged from browsing Little regeneration Possum droppings	Undertake regular possum control – see pages 19 - 21 for more information
Rats	Seeds heavily chewed Little regeneration Rat droppings	Undertake regular rat control – see pages 19 - 21 for more information
Weasels, stoats, ferrets and cats	Little or no native bird life could mean predation by these animals Broken eggs on the forest floor Bird carcasses on the forest floor	Undertake regular pest control – see pages 19 - 21 for more information
Weeds	Weed growth on the forest floor or the forest edge, smothering native plants or preventing regeneration	Undertake weed control – see pages 15 - 18 for more information
Wind exposure	Plants on the edge of the bush look “burnt” or stunted Inside of the bush is dry and bare	Plant a buffer of fast-growing natives or non-weedy exotics around the edges – see pages 24 - 26 for more information
Lack of seed sources	Poor regeneration, even if other threats have been managed	Plant trees that attract more native birds. Consider improving links with other nearby bush areas – see pages 27 - 28 for more information

Once you have drawn up your list of threats and issues, put them in priority order. Decide which issues are the most important to deal with first, taking into account the resources you have available. For example, the cost of a permanent fence to exclude stock might be beyond your initial budget. An alternative might be to erect a cheaper temporary electric fence to start with, which would require regular checking but costs much less.

You could also consider drawing up a simple management plan. A plan need not be an elaborate affair (perhaps 3 or 4 pages) but can be a useful record of your goals, the issues you have identified, the management actions you are proposing, timing and approximate cost. This will help you budget and, if necessary, seek funding from external sources.

Keep an open mind (and good records)

There is no “one size fits all” restoration recipe. You need to be prepared to try different approaches, learn from your mistakes and draw upon the experiences of others. Talk to other landowners with bush blocks and see what has worked for them. Contact staff at the Greater Wellington Regional Council for advice.

As part of “learning on the job” it is important to keep good records. Keep a diary of actions you take, the timing, the cost and the end result. Inevitably some approaches you take will work and some won’t. It is only by looking back and comparing these approaches (for example the best time to control a particular weed or the most successful restoration planting technique for your situation) that lessons can be learnt.

An annual photo record taken from fixed photo points such as corner fence posts is very useful for measuring changes (and looking back and seeing the results of your hard work).

Useful sources of information

Some useful tools that might help you assess the health of your bush block include:

- A book called *Bush Vitality*. The first part of the book helps the reader to quickly and easily assess the health of their bush block through a simple scoring system. The second part gives guidance on how to improve bush health. The full reference for this book is on page 34
- A kit called *FORMAK*. This kit includes guidance on how to assess the health of a bush block and to monitor changes over time. The kit can be purchased and training in its use is available. For more information visit www.formak.co.nz
- Various websites (See list on page 33)



Fencing to exclude stock

Keeping stock out of your bush remnant should be your top priority.

Why are stock a problem?

Stock will affect your bush by:

- Compacting and eroding soil
- Browsing and trampling seedlings, reducing or even preventing natural regeneration
- Damaging tree bark and roots
- Changing the forest environment by opening up the understorey and creating gaps
- Introducing weeds by depositing seeds through their hooves and dung
- Increasing soil fertility, which favours introduced weeds rather than native plant growth

Some bush areas may have been grazed to reduce fire risk or weed growth. However, in the long term, grazing can increase the risk of fire by creating a more open, dry understorey with more broken and dead branches. Grazing can also increase weed growth by introducing seeds and creating more gaps where weeds can take hold.



Fencing bush blocks can produce remarkable results.

Fencing can meet multiple needs

When you're deciding where and how to fence off your bush remnant, there may be opportunities to achieve several goals at once. Before you decide where to put your fence, think about whether you could also:

- Use your fence to improve subdivision of neighbouring paddocks and enhance your farm business
- Maximise the potential of the fenced bush to provide shelter and shade to stock in neighbouring paddocks
- Include nearby areas of native forest and scrub or exotic trees into the fenced area, with the aim of planting in between to link the areas
- Include areas of low productivity that are difficult for stock management, such as steep eroding gullies, awkward corners or wet spots
- Include streams or wetlands in your fenced area to protect them from stock and reduce stock losses in dangerous areas
- Fence off a buffer area on the windward side of the bush to plant it up in forestry or tree crop species that will also provide shelter (make sure you use non-invasive species – check with Greater Wellington Regional Council Pest Plant Officers)
- Link the fenced area to shelter and other plantings to create corridors for native plants and animals to move between

The right fence for the job

A sturdy well-maintained fence designed to suit your stock types is essential. One sheep or cattle beast getting through your fence can undo years of regeneration in your bush block!

If you're running **sheep** or **goats** or if feral goats are a problem, you'll need a conventional 7-8 wire post and batten fence. Ideally, it's best to run goats in paddocks away from bush, as they are notoriously difficult to contain, or to add a mains-powered electrified outrigger to prevent jumping.



A sturdy 7 wire post and batten fence will keep most stock out of your bush block.

A conventional post and batten fence is also the safest option for **cattle**. A well-maintained three-wire electric fence can be a cheaper option for dairy cattle, providing your power source is consistent and you check the fence regularly. Some farmers recommend avoiding battens around bush blocks to reduce maintenance associated with fallen trees and branches.

An electrified outrigger can be a good idea for both **cattle** and **horses** to reduce fence damage from rubbing and leaning. If you're running **deer**, you will need a more expensive 2 metre mesh deer fence.

Thinking about costs

The cost of your fence will vary depending on terrain and the cost of materials. It's a good idea to shop around for materials, as price variations can be significant. Bulk orders can lead to substantial discounts but make sure you always use good quality materials. If you're planning on organising a contractor for the job, make sure you get several quotes.

Case study 1: Fencing bush a priority for Zabell Farms, Carterton

Zabell Farms is a 143 hectare dairy unit run by Aidan Bichan and Janne Zabell in the foothills of the Tararuas. The farm features numerous small patches of bush, including 3.6 hectares of black beech and 1.1 hectares of wetland that are protected by a QEII Trust Open Space Covenant.

The Forest and Bird Fensham Reserve borders the farm to the north, so Aidan and Janne try to work in with the group as much as possible. They enjoy seeing the enthusiasm of local school children who visit the Reserve, saying it is very heartening to see the younger generation appreciating our natural heritage.

Some 25 years ago, Janne's late husband had marked their beech block for clearance so the area could be replanted in pines to generate an income. However, Janne intervened on the day the bulldozer arrived and the beech remains standing today. It had been roughly fenced for many years but until recent years was still used to graze the bulls from time to time.

About five years ago, Aidan and Janne decided to formally protect the block and invited a QEII representative to come out for a visit. The rep spotted the wetland area as well and identified it as an ecologically important site, so both blocks ended up being covenanted. This involved proper fencing to permanently exclude stock. Aidan says they fenced more land in the beech block than they actually covenanted, resulting in more regenerating bush being protected and saving about 100 metres in fence by following a more practical line.

Aidan reckons that on a farm with bush, "stock are the biggest pest you've got", so fencing has been a priority. Aidan and Janne have both noticed a huge difference in the condition of their bush since they fenced it securely. Along the bottom side of the block, they used to have a 15 metre wide strip of gorse. Since excluding stock, they say "the bush has just grown over the top of the gorse and suppressed it – the regeneration is coming along nicely, which is quite exciting."

When it comes to other weeds, Aidan has cut and sprayed some old man's beard in places, which hasn't regrown. He says most weeds are just getting crowded out by the bush. Possums haven't been much of a problem for them either, as they are just inside Greater Wellington Regional Council's Tb buffer zone. This means the Council does plenty of possum control in the area, which together with the work done in Fensham Reserve, has resulted in very low numbers for Zabell Farms.

Cat biscuits are the secret to attracting hedgehogs, which Aidan controls because they predate on ground-nesting



Aidan Bichan (left) with QEII National Trust Chair Sir Brian Lochore in front of the bush he and his partner Janne Zabell have protected.

birds, eating their eggs and chicks. The job is made easier because they've chosen to build their new home on the edge of the beech block where they can appreciate the view of the bush and birds. They've also been trapping magpies using a Regional Council loan trap, and have now purchased their own trap to continue the campaign.

Aidan and Janne are also part of a Regional Council initiative to fence the Enaki River, which runs along the back of their farm. Almost all the landowners bordering the river have fenced and planted the bank with natives, helping to provide a wildlife corridor linking the Tararuas with the lowlands.

When it comes to reflecting on what they've done on their farm to protect natural areas, Aidan says: "We haven't regretted anything. There are no downsides. The initial fencing isn't a great cost and it's just the time to get out there and do it."

He adds: "You've got to have a medium-term view and be prepared to get out there and dig out weeds now and then,

because it takes time to look after itself." Janne comments: "So many farms are just paddocks and races – these bush areas are little treasures really – our real estate agent told me we didn't realise what we've got here!"

Case study 2: Fencing bush has improved production – Te Awa Station, Bideford

Over the years, Robbie Joblin has fenced off around 70 hectares of bush and all of the waterways on the Joblin family's 2,200 hectare sheep and beef property Te Awa Station at North Bideford, north east of Masterton. He has seen very clear benefits and few disadvantages for his efforts.

Robbie reports that since fencing, "the bush has changed hugely – it has an understorey and the bird life has dramatically improved." Much of the original riparian vegetation was retained during early farm development, so there are extensive corridors of native vegetation across the property, playing host to flocks of tui, kererū and bellbirds.

When it comes to pests, Robbie has been fortunate in that Greater Wellington Regional Council has undertaken extensive possum control work in the area. "Possum numbers are very low here and without them, we can see new growth on the trees." Weeds have not been a significant problem on the property either.

To help keep fencelines practical and easier to maintain, in many areas Robbie has fenced back from the bush line, leaving a gap between the fence and the bush.

Inside the fence, he has planted timber woodlots, which have the dual purpose of providing a future income to pay for replacing conservation fences in the future, as well as providing some extra shelter for the bush edges.

Making the decision to fence off the areas that weren't easy to farm because of contour or bush cover has meant that Robbie can concentrate his inputs on the good land. The remaining productive area of the property is highly subdivided and has almost doubled in production since he made the decision to take the challenging land out. "Once I sat down and worked out which bits to take out of production, I realised I could more intensively farm the better stuff and it made me more aware of the different classes of land we have here."

There has been a cost to put in stock water to the paddocks where waterways are fenced but Robbie says he's still well ahead financially. Having financial support from the QEII trust for fencing around 50 ha of covenanted bush, together with assistance

from the Regional Council, has meant around two thirds of the fencing cost has been subsidised.

Robbie says this makes a huge difference and emphasises that both organisations have been careful not to apply pressure on him – “it has all been very much a voluntary thing.”

For other farmers considering fencing bush areas, Robbie advises “Talk to people. QEII are very helpful. They help you see what the advantages can be and they understand how farming works. People worry about losing control of their land but it’s really all about preserving habitats and waterways. Make use of the help that is out there.”

In the long term, Robbie considers that having fenced bush on the property will increase the value, whether that is for resale or just increased security in the future. It also makes the farm a nicer place to work and live on. “I love those pieces of bush and they’re one of the things I’ll leave behind when I’m gone. It’s great sitting down to have your lunch listening to the birds – everyone on the farm enjoys the bush and is proud of it.”



Robbie and Deborah Joblin with one of their covenanted bush blocks behind.

Being wise to weeds

Fencing stock out of your bush can mean you quickly see lots of new seedlings coming away on the forest floor. However, some of these might be weeds rather than native plants! Or you may already have a weed problem in your bush block. Either way, early and regular control of weeds is an important part of protecting your bush.

The root of the weed problem

Weeds can be a problem in your bush block for a number of reasons, largely related to the way different weeds grow:

- Creepers can **smother** native trees, preventing them from getting enough light to grow – for example, old man's beard
- Weed trees establish quickly and **overtop** native canopy trees, reducing light levels – for example, tree privet
- Weeds that form a dense mat on the ground prevent native seeds from germinating, **preventing natural regeneration** – for example, wandering willy (*Tradescantia*) and wild ginger
- Climbers can **strangle** and constrict the growth of native tree trunks – for example, honeysuckle



Weeds such as Wandering Willy can form a dense ground cover, preventing any natural regeneration.



Unless controlled, climbers such as banana passionfruit can smother native bush.

On the other hand, some plants that are commonly viewed as weeds can actually help native seedlings to get started. For example, legumes (nitrogen-fixing plants) such as gorse and tree lucerne can provide ideal shelter and shade for native trees and shrubs to germinate and establish, in the absence of enough native shelter.

Before you decide how best to control weeds in your area, you need to know what you're dealing with. If you need help identifying weeds, take a specimen (including the stem, leaves and any fruit or flowers) to the Greater Wellington Regional Council. You can use the list of common bush block weeds with photos listed in Appendix 1 on page 35 to help you identify which species are on your property and select "General weed control brochure" at www.gw.govt.nz/pest-plants-3 to find out the most effective ways of controlling some of these weeds.

Look at the whole picture

Weed control can be time-consuming and expensive. It is important to step back, assess and prioritise your weed problem. It is easy to fall into the trap of putting time and energy into the most conspicuous (but not necessarily most damaging) weeds while more insidious species remain unchecked.

It is useful at an early stage to undertake an overall weed assessment of your block.

Keeping weeds out

If you don't currently have a weed problem, it's in everyone's best interests to keep it that way. Weed control can be expensive and time-consuming, so the best place to start is by preventing weeds from getting established in the first place.

To keep weeds out of your bush, make sure you:

- Remove any potential seed sources in the area – for example, infestations in nearby shelterbelts or individual trees in your garden or paddocks. It can also be a good idea to talk to your neighbours about a joint approach to removing local weed sources
- Don't leave bare areas in or on the edges of your bush – "nature abhors a vacuum" and will quickly fill up open clear ground with colonising plants, which are often opportunistic weeds. Planting up bare spots with locally-sourced native plants will fill in gaps and help prevent weeds from establishing

Secrets of successful weed control

If there are weeds present in or on the boundaries of your bush remnant, consider the following principles for successful long-term control:

- Remove all weeds from the site before you fence or do any planting
- Identify your weeds and get good advice about the most efficient and effective way to control them. Contact Greater Wellington Regional Council Pest Plant officers for advice about specific control methods or click on “General weed control brochure” at www.gw.govt.nz/pest-plants-3
- Take care with herbicides around native plants because they are very sensitive. Avoid blanket spraying as this will open up gaps for invasive weeds
- Use chemicals that are proven against your target weed and always apply them at the recommended rates
- Replant large open areas with natives to avoid new weed infestations. If possible, use mulch to cover the ground to prevent weed seeds germinating
- Tackle outlying weed patches first to slow the spread before you start on the worst areas. If the job seems too big, start with a small manageable area and work in stages
- Check on weed growth regularly, especially during spring and summer. Controlling weeds in the early stages is generally much easier than dealing with mature infestations.
- Consider paying someone else to control weeds in your bush areas during busy periods if you don't have time. It might save you considerable cost compared with leaving an infestation until it reaches challenging proportions
- Keep on top of shade-tolerant weeds
- Plant out weedy areas using larger plants at close spacing (no more than 1.5 metres apart) to reduce weed competition. Planting close may cost more upfront but will pay off in the long-term
- Start by planting a smaller area and maintaining it well, moving on to other areas once the initial site doesn't need so much attention. Use stakes to mark the position of plants – this can help you to find them for releasing

Weed control for new plantings

If you plan to plant up the edges of your bush or any clearings inside, clear any weeds beforehand to give your plants a head start and reduce your future workload.

Use either herbicide or a spade to clear weeds and grass in circles of about 1 metre round for each plant. Native plants are very sensitive to herbicides, so it's best to spray well before you intend to plant. Make sure you use herbicides at the recommended rates and spray in a s-shaped pattern to avoid overlap and excessive use of chemical. Use a spade to clear grass and weeds on smaller areas if you have the time.



Spot spraying gives new plants a good weed-free start.

Having mulch on hand can also help avoid weed problems later. A thick layer of wet newspaper weighed down with clods of soil, or a one-metre square of wool carpet or non-synthetic underlay split to place around the tree, will make effective mulch. Take care not to place any organic mulch up against the stems of native plants as it can damage them.

Getting on top of animal pests

Bush remnants can host animal pests, which cause significant damage to both native plants and animals. Animal pests can have a staggering impact on our natural ecosystems by:

- Eating or damaging native plants. In some places, pest browsing of particular species can significantly change the make-up of a forest
- Eating the annual seed crop of some plants, preventing natural regeneration
- Eating seedlings and opening up the understorey to weed invasion
- Killing native birds and animals
- Destroying nesting sites and depleting food sources for native birds

Regular control of animal pests is an essential part of successfully protecting your bush remnant. It is not a one-off job, so you'll need to schedule pest control in your ongoing work programme.

Possums

Possums are a significant threat to bush, causing considerable damage to trees, shrubs and seedlings. They also carry bovine tuberculosis, posing a threat to agriculture. While it is almost impossible to completely eradicate possums, regular control will reduce local populations to less damaging levels. In most areas, ongoing possum control will be necessary because of re-invasion. If you can afford nothing else, possum control is essential and will have the biggest positive effect on the condition of your bush.

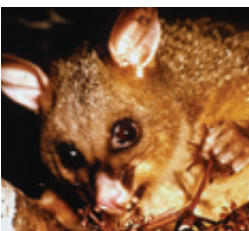
There are a variety of control methods available, each with their own benefits and tradeoffs. Using poison bait stations can be an effective low-input control method. Traps are higher maintenance, but once you've purchased them the only cost is your labour. Night shooting around forest/pasture margins can also help. Talk to the Biosecurity Pest Animal Officers at the Greater Wellington Regional Council for advice on which methods would be the most useful in your situation.

Rats and mice

Rats eat small animals, eggs and young birds, as well as a wide range of native fruits and seed. If you want to encourage native wildlife in your bush remnant, rat and mouse control will be necessary.



Possum bait station placed out of the reach of stock.



Possum control is essential to improve the health of your bush block.

The best way to deal with rats and mice is by poisoning using bait stations. The best time to bait your traps is between spring and summer to protect birds over their breeding season, when they and their eggs are most vulnerable to predation from rats. Talk to the Biosecurity Pest Animal Officers at the Greater Wellington Regional Council for more information.

Weasels, stoats, ferrets and cats

Mustelids (weasels, stoats and ferrets) and cats can have a devastating effect on native birds, eating both adults and their young. Stoats and cats are the most numerous and widespread.



Ferrets can have a devastating effect on native wildlife in bush blocks.

Controlling rats, mice, stoats, ferrets and cats will help keep your bush block a healthy habitat for native birds and animals. Most of these pests can be targeted together with certain poisons, but each requires a different trapping method if poisons aren't used. You'll need to make sure your traps are approved by the SPCA. Contact Greater Wellington Regional Council for advice about the best methods for your property.

Goats, deer and pigs

Feral goats and deer can make short work of young seedlings and damage the leaves and bark of trees up to around two metres high. They will get through most fences! Pigs can destroy years of seedling regeneration in a very short time. Shooting is the most common control method for goats, deer and pigs. Professional hunters can be hired to eradicate or control feral pest animals.



Goat damage on the bark of a karaka tree.

Hedgehogs

Studies by Landcare Research indicate that hedgehogs are not the benign snuffling creatures that many of us may have thought. Hedgehogs are a potentially serious threat to endangered native skinks and invertebrates (animals without a backbone). They are also known to predate on the eggs and chicks of ground-nesting birds. Landcare Research scientists suggest laying traps for hedgehogs at the beginning of the birds' breeding season, when hedgehogs may be at their most damaging, and in the autumn, when female hedgehogs can be specifically targeted.

Case study 3: Managing bush in an urban area – Te Oranga Whenua

Phil and Joyce Waddington bought their 22 hectare bush block in Stokes Valley nine years ago. It includes old beech forest, regenerating bush and some of the last remaining mature podocarps that would have once blanketed the valley all the way down to Petone.



Phil Waddington on-site at Te Oranga Whenua.

Phil has always had the goal of owning and protecting an area of bush. When he saw this property, which was bigger and more expensive than he was aiming for, he says "I just had to save it." The land was being marketed as ideal for residential development so Phil and his wife Joyce decided to take a financial risk to keep the place in its original state. Obtaining finance for a non-profit land purchase proved a challenge for the Waddington's, because Phil says: "Back then the banks didn't recognise the value of protecting bush. "

While there were always birds present in the bush, Phil suspects that his pest control has influenced the more recent increased numbers. "I saw 10 tui at a time a few weeks ago, not just feeding, they were looking for nesting sites." The area is also host to groups of fantails, bellbirds, kereru and whiteheads. When Phil finds a bird nesting in the bush, he moves his traps to the area to provide extra protection from predators.

He prefers to avoid poison when controlling pests and has developed his own innovative, affordable traps to control possums, rats, stoats and hedgehogs. His inexpensive trap designs were so successful that he worked with the Department of Conservation to perfect new trap designs that are now in widespread use.

Phil's pest control has been so thorough that he says they've had to test their rat trap designs elsewhere because they have trouble finding enough rats at his place these days. He cites white chocolate, along with peanut butter, as the best rat bait to use. He focuses on trapping from early spring onwards when birds are breeding, and checks his cage traps daily.

Domestic cats are a trickier problem in such an urban area, which is part of the reason Phil uses cage traps rather than kill traps. He believes people need educating about the impacts cats can have on native wildlife because "many people think their cats just go into the bush to play".

Te Oranga Whenua has 55 urban neighbours, bringing with it some particular challenges. Phil has ongoing issues with people cutting down trees in the bush that are shading neighbouring properties, removing punga logs for gardens, planting non-native species on the bush edges and introducing invasive weeds. He says it is hard to get across to people that the bush belongs there – "people especially don't recognise the value of regenerating bush, they think it is just worthless scrub".

In the long-term, Phil and Joyce's vision for the property is to provide a seed source for restoration in the local area and a base for scientific research. They see the area as a "source of life", saying "there are lots of breeding birds here now and they'll move out to other areas and spread seed around the local area". The name Te Oranga Whenua means both *healing land* and *land that heals*, and Phil believes that those who heal the land receive healing themselves as part of the process. In 2001, Phil and Joyce decided to protect the area permanently with a QEII Trust open space covenant.

Weeds have definitely been an issue for the Waddington's and are not Phil's area of expertise. Rather than trying to tackle japanese honeysuckle and old man's beard himself, Phil has been grateful to the QEII Trust for supporting a specialised contractor to do the job.



Phil reckons: “It’s best to leave weed control to the experts because sometimes amateurs can do more harm than good.” While planting hasn’t been a big part of his management approach, this spring Phil plans to put in some locally-sourced plants in the gaps created by weed control.

There are three or four mature pines on the property that Phil wants to remove to prevent seeding, so he plans to ring-bark them. He says this will mean the trees will slowly die, rot and break down in pieces, having much less impact on the surrounding bush than felling and creating a large gap in the canopy.

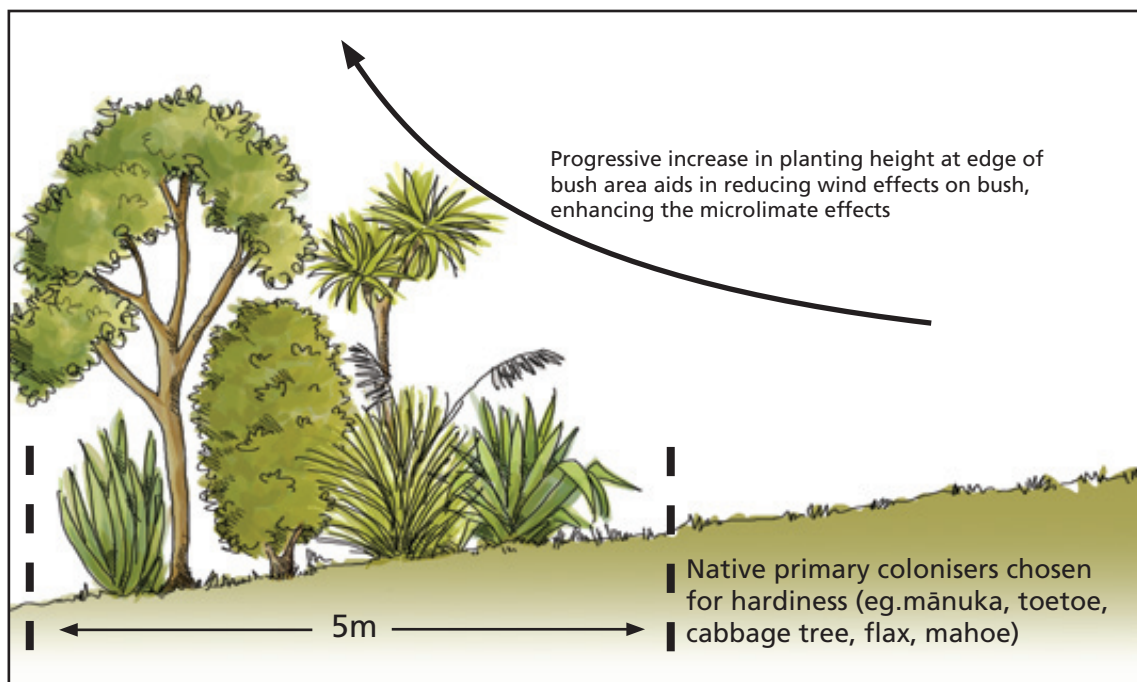
Phil’s advice to anyone embarking on a bush protection project is simple: “Don’t give up, no matter how big the obstacles in your way. Just keep at it! It can happen even if the odds seem insurmountable, and it’s all worthwhile!”

Managing around the edges

In a natural situation, we don't usually find a sharp boundary between grassland and bush. Instead, there is a gradual change in vegetation cover from grassland to tall forest, with the height of the vegetation gradually increasing over a reasonable distance. This streamlined effect lifts the prevailing wind up and over the forest, preventing it from damaging the understorey. A sheltered forest environment results in a moist humid microclimate that encourages the germination and growth of native plants.

In today's patchwork of different land uses, bush remnants often have an abrupt edge bordering farmland or urban areas. This means the bush edges are much more exposed to wind and light, leading to dry, cool conditions that are less ideal for native plants to flourish. This is known as the "edge effect". As a result of edge effects, in the first 50 metres or so into your bush block, you are likely to notice:

- Fewer seedlings
- Less and fewer different types of perching plants
- A more open forest floor
- More weedy plants in the understorey



Planting a buffer of hardy native "colonising" species on the side of your bush subject to the prevailing wind will help to improve the microclimate within the block.

Seal up the gaps

To reduce edge effects in your bush, it's a good idea to seal off the forest edge from wind and light. There are a few options you can consider:

- Fence your bush and control weeds well on sheltered sites – this may be enough to allow good natural regeneration of seedlings to build up a buffer of shrubs and small trees around the bush edge. Make sure you place your fence a few metres outside the bush edge to make room for a buffer to grow
- Plant around the edges with hardy, colonising natives that can cope with high light levels (See Appendix 2 for a list of the Wellington region "First Fifteen" hardy native plants). If the prevailing wind is severe, you might need to consider using a nurse crop to help natives get established. Swamp flax is a particularly useful "front line" plant. Over time taller plants, benefiting from the flax's shade, will shade them out. Use plants grown from locally-sourced seed, as they will be most suited to your local environment



Non-invasive exotic conifers have been planted on the northern edge of this bush block to seal the edge.

- Plant an exotic timber or shelter crop on the windward side of your bush block. This could eventually provide an income. Careful planning and planting over a number of years could reduce the impact of harvesting (and the resulting sudden removal of shelter) on the bush block. Be very careful not to plant weedy tree species that could invade your bush block – for example, sycamore, holly and wattle. Check with Greater Wellington Regional Council Pest Plant Officers if you are unsure.
- Reduce the amount of edge around your bush block by planting up areas between fingers of bush. This could also

make your fencing easier and cheaper by creating a more regular shape to your bush block. If you have a few small blocks of bush close together, consider planting in between to connect them up.

Connecting the dots – landscape linkages

If your bush remnant is close to other natural areas, consider how you can create links between the two environments. In areas that are mainly farmed, it can be difficult for native birds and animals to move between natural areas to breed and find alternative food sources. The more we can provide links across the landscape, the healthier our native ecosystems will be.

Think about how you can help connect the dots for our native birds and animals:

- Can you establish shelter plantings between your bush block and any wetlands or streams on your property? Remember that these links don't have to be native plants; any vegetation can help birds move between native areas
- How can you link your natural areas with those of your neighbours? Consider getting together with your neighbours and wider community to discuss ideas to create better links between natural areas in your district

If you are designing shelterbelts or other farm plantings, consider incorporating some native plants. Even the humble flax plant provides valuable nectar supplies for birds such as tui.



Silvereye, fantail and kingfisher.



The presence of Tui is an early sign of improvement in the condition of your bush block.



Native birds such as the kereru play a vital role in forest restoration by spreading native seed.

Bringing back native wildlife

Although your bush block probably won't have the range of native birds and animals found in large areas of bush, it could provide an important refuge, food source and stepping stone for many native species. And with careful management, you can encourage even more birds and insects back to your natural area.

Birds

In most bush blocks larger than five hectares you will find at least six species of native bird:

- Fantail (pīwakawaka)
- Grey warbler (riroriro)
- Silvereye (tauhou)
- Shining cuckoo (pīpīwharauoa)
- Morepork (ruru)
- Kingfisher (kōtare)

Fruit and nectar-eating native birds such as tui, bellbirds (korimako) and kereru (wood pigeon) are rarer. However, many of these birds visit bush blocks at certain times of the year to nest and feed.

Native forest birds need year-round food supplies and safe nesting sites. This means regular pest control so there are few predators prowling your bush. You'll need to focus on control of stoats, cats, rats and possums, which are the main cause of nest failure. Control is most important in spring, just before nesting.

You can also attract more birds by planting fruiting and flowering trees such as mahoe, wineberry, karamu, five-finger, lemonwood, putaputaweta, miro, kōhūhū, cabbage tree and kohekohe. Even individual fruiting or nectar-producing trees planted in your garden can provide a food source that birds may return to every year. Make sure you plant only species suitable to the local area and use plants sourced from local seed.

Invertebrates

Invertebrates are animals without a backbone – generally insects of various types. Invertebrates are a key part of healthy native ecosystems, but are often overlooked. Different types of invertebrates have important roles in keeping your bush remnant functioning:

- Decomposers break down wood and leaves on the forest floor to release nutrients back to plants – for example, ground weta



Invertebrates are a key, but often forgotten, part of the forest ecosystem.

- Pollinators – for example, flies, beetles and night-flying moths
- Perbivores feed on leaves, branches and twigs – for example, stick insects and scale insects
- Predators or parasites prey or feed on other invertebrates – for example, native preying mantis
- Prey – invertebrates are important sources of food for native lizards and birds such as morepork, kingfishers, fantails and grey warblers

To provide a healthy home for invertebrates, your bush remnant needs to have moist soil, shade, thick leaf litter, rotten wood, rocks, dead trees and a range of plants. To help encourage invertebrates in your bush:

- Control predators such as possums, rats, mice and hedgehogs
- Keep stock out so that you have a healthy forest floor

Skinks and geckos

Native skinks and geckos are likely to return to, or increase in numbers in your bush block as a result of management actions such as sealing the edge and controlling animal pests. Like insects, skinks and geckos need a diverse range of “micro habitats” such as dead branches, good undergrowth and rocks. Don’t tidy your bush block or remove dead branches!

Check out the article by Tony Whitaker listed on page 34 to find out more about these fascinating native creatures.



Pest animal control creates a favourable environment for native skinks to thrive.

Making it legal – bush protection options

If you want to secure the long-term protection of your bush block for future generations to enjoy, you could consider legal protection measures. Legal protection will mean that, regardless of who owns the land in the future, the protected area must be managed in a specified way.

Having legal protection over your bush block may also enable Greater Wellington Regional Council to assist with some aspects of management, such as plant and animal pest control.

Legal protection options include:

Queen Elizabeth II National Trust Open Space Covenant

A QEII National Trust covenant is an agreement between a landowner and the Trust, under which the owner agrees to manage the defined area in a way that is detailed in the covenant. You retain ownership of the land and a Trust representative will visit every two years to assist with specialist management advice. The covenant is registered against the title of your property and binds subsequent owners. The Trust provides assistance with the establishment of the covenant and covers standard legal and survey costs.

The Greater Wellington Regional Council works in partnership with QEII National Trust to offer assistance in some circumstances with costs associated with a covenant. The Regional Council can give landowners advice on the covenanting procedure and may also assist with initial pest control.

Covenant with Department of Conservation (DOC) or a Territorial Authority

These are similar to QEII National Trust open space covenants but are agreed between the landowner and either DOC or a territorial authority (city or district council).

Protected Private Land Agreement with DOC

Through DOC, a landowner can set aside an area of natural value as "protected private land" under the Reserves Act 1977. The notice is registered on the land title and is normally binding on subsequent owners in a similar way to a covenant.

Case study 4: Te Marua Bush – a partnership for protection

Tony Druce and Ian Atkinson first discovered the 0.6 hectare Te Marua Bush remnant in the late 1950s during a Hutt Catchment survey. Ian describes the area as very special, largely because it is one of the few remaining stands of lowland matai, tōtara and maire left in the western Wellington region. He estimates that some of the matai in the stand are 200-300 years old and says he was very surprised to find it surviving, despite being grazed by stock, on the edge of State Highway 2.

At the Wellington Botanical Society 50th Jubilee in 1989, Ian chose Te Marua Bush as the subject of his address. As a result, in 1990 the Botanical Society approached Greater Wellington Regional Council, the owners of Te Marua bush, with a view to forming a partnership to ensure the survival of this special slice of natural heritage. The Regional Council responded positively to the approach.

Work to protect the area began in February 1991. The major management challenge faced was weed control. Large sycamore trees were a big problem inside the bush, requiring continued cutting and poisoning or removal over the years.

Saplings still appear today, requiring ongoing vigilance. Barbara Mitcalfe, an active Botanical Society member, recalls with a grimace the thigh-high *Tradescantia* (wandering willy) carpeting the forest floor. Both Ian and Barbara say that in the early days they used to feel quite depressed at times about the size of the task.

In the early days of the project, they rolled up endless mats of the groundcover weed *Tradescantia* into giant rolls "like Bremworth carpet", which were removed from the site by Regional Council staff. "It became clear that we weren't winning the battle," says Barbara, "so we approached the Greater Wellington Regional Council for help. They funded a contractor to spray the *Tradescantia*, with great success, and we can now control it ourselves." Barbara describes how these days group members walk shoulder to shoulder from one side of the block to the other, collecting every tiny piece of *Tradescantia* they can find.

Fencing the site was another important step, undertaken by the Conservation Corps in 1998. Even though the area was no longer grazed, Barbara says the fence was important to create a physical boundary defining the area being managed.

Some planting has been done on the site by the local Forest and Bird branch and the Wellington Botanical Society, using plants grown from seeds from the Bush, with the Regional Council funding their potting soil. The planting has been around the edges in places to provide shelter and wind protection, and to fill a light gap in the canopy that resulted from weed control. Over time, Barbara and Ian have seen the natural re-introduction of tawa

seedlings in the bush, probably as a result of bird seed dispersal and the removal of *Tradescantia* allowing seeds to germinate and grow. Ian guesses that these tiny tawa seedlings will replace the mature canopy podocarps on the site in hundreds of years to come, if they don't succumb to droughts.

Other challenges faced by the group include the dumping of rubbish. One of the initial jobs was to remove a legacy of dumping, including things like old TVs. Greater Wellington Regional Council has erected signs reminding people that dumping is illegal. The group also faced the threat of road widening on the adjacent State Highway and lobbied hard to make sure the bush was impacted as little as possible.

The group is adamant that the continued survival of this special remnant depends on conservation management. Ian says, "We've got to go on making an input to the area, because nature doesn't care if we don't and the weeds will quickly take hold again in such a small fragment." Ian and Barbara both emphasise the need to speak up when help is needed to protect areas such as Te Marua Bush. Agency funding is often available but you need to keep records and provide well-documented information to support your requests for help.

The group have now reached the point where they've dealt with the harder management jobs and the Wellington Botanical Society has drafted a set of principles to guide their future actions for the site. They'll be looking at things like what sort of species should be planted on the site to maintain its ecological integrity, and how much replanting is necessary. Barbara says a management plan is a useful tool and can be as simple as one page outlining the main priorities for the area, to help guide working bees.



A volunteer at an early Te Marua bush working bee helps with the weed battle.

Finding out more

If you want to find out more about any of the subjects covered in this guide, check out the information sources below. Don't forget to ask for help if you need it! There's a wealth of experience throughout our community when it comes to protecting and managing bush – it's just a matter of asking around.

Greater Wellington Regional Council

Greater Wellington Regional Council can provide you with help and advice on:

- Enhancing biodiversity on your land
- Managing and enhancing streamside areas, wetlands, bush remnants, dunes and escarpments
- Legally protecting natural features on your land
- Controlling plant and animal pests

For advice on plant and animal pest control, phone our Biosecurity Officers on 04 526 4133 or 06 378 2484. You can also email us at pest.animals@gw.govt.nz or pest.plants@gw.govt.nz.

Visit our website for more information about restoring natural areas at www.gw.govt.nz or email us at biodiversity@gw.govt.nz.

Queen Elizabeth II National Trust

The QEII National Trust helps private landowners protect natural areas by using covenants. For more information, visit www.openspace.org.nz or phone 04 472 6626.

Department of Conservation

The Department of Conservation (DOC) can provide advice on how to identify, maintain, legally protect and enhance native vegetation. Contact your local office:

- Wairarapa – 06 377 0700
- Pōneke – 04 472 5821

You can also visit DOC's website at www.doc.govt.nz.

New Zealand Landcare Trust

The New Zealand Landcare Trust helps with community group projects and can sometimes provide funding. Contact them at www.landcare.org.nz or phone 0800 526 322.

Ballance Farm Environment Award Trust

The Ballance Farm Environment Award Trust runs an awards programme for farmers promoting sustainable farming. The Trust has a range of information available about sustainable farming practices, including protection of natural features such as bush blocks. For more information, contact the Wellington Region Ballance Farm Environment Award Co-ordinator at wellington@bfea.org.nz.

Useful websites

[New Zealand Biodiversity – www.biodiversity.govt.nz](http://www.biodiversity.govt.nz)

Provides information about our native biodiversity, what is being done to help conserve and manage it, and who is involved. It includes a list of different information resources on all sorts of topics including protection of native bush.

[Nature Space – www.naturespace.org.nz](http://www.naturespace.org.nz)

Nature Space is a webportal for community groups and landowners involved in ecological restoration. You can find and share information about ecological restoration and promote restoration projects.

[Formak – www.formak.co.nz](http://www.formak.co.nz)

Formak is the name of a system for monitoring native forests designed for use by individuals and groups. The system provides opportunities to share information, understand wider trends in forest ecosystems, and learn how to better manage native forests.

[Department of Conservation – www.doc.govt.nz](http://www.doc.govt.nz)

The Department of Conservation website provides information about conservation on private land and includes several useful publications.

[Greater Wellington Regional Council – www.gw.govt.nz](http://www.gw.govt.nz)

The Greater Wellington Regional Council website provides information about plant and animal pest control, key native ecosystems in the Wellington region, wetland restoration and much more. You can also access and order several useful publications.

[Landcare Research Plant Database – http://nzflora.landcareresearch.co.nz](http://nzflora.landcareresearch.co.nz)

This site has a wealth of information about native plants.

[New Zealand Plant Conservation Network – www.nzpcn.org.nz](http://www.nzpcn.org.nz)

This website provides information about native plants and their conservation in New Zealand. The Network's main focus is the nationally threatened plants and plant communities that require conservation management for their continued survival, but their website also contains excellent information about most native plants and many weed species as well.

[Wellington Botanical Society – www.wellingtonbotsoc.wellington.org.nz](http://www.wellingtonbotsoc.wellington.org.nz)

The Wellington Botanical Society advocates for the conservation and protection of native plants. Their website provides information about upcoming trips, events and meetings, publications and links to other groups.

[Weedbusters – www.weedbusters.co.nz](http://www.weedbusters.co.nz)

Weedbusters is a nationwide weed awareness and education programme. The website provides information to help you identify weeds, and general tips on the most effective methods of controlling them.

References and Further Reading

Department of Conservation 2001: *Protecting and Restoring our Natural Heritage – a practical guide*. Canterbury Conservancy. Department of Conservation, Wellington.

Environment Waikato 2001: *Forest Fragment Management Factsheet Series*. Environment Waikato, Hamilton.

Farm Environment Award Trust 2003: *Managing Natural Features on Farms*. Farm Environment Award Trust, Hamilton.

Greater Wellington Regional Council 2010: *Wellington Regional Native Plant Guide*. Greater Wellington Regional Council, Wellington

Greater Wellington Regional Council 2004: *Mind the Stream - A guide to looking after urban and rural streams in the Wellington region*. Greater Wellington Regional Council, Wellington.

Greater Wellington Regional Council 2014: *Restoration Planting: A guide to planning restoration planting projects in the Wellington region*. Greater Wellington Regional Council, Wellington.

Hamilton City Council 2002: *Gully Restoration Guide – A guide to assist in the ecological restoration of Hamilton's gully systems*. Second edition. Hamilton, New Zealand.

Janssen, Helmut 2004: *Bush Vitality – A Visual Assessment Kit*. Horizons Regional Council, Palmerston North.

Porteous, Tim 1993: *Native Forest Restoration – A Practical Guide for Landowners*. Queen Elizabeth II National Trust. Wellington, New Zealand.

Weedbusters 2004: *Weedbusting: A guide to recognising and controlling invasive species*. Available from www.weedbusters.org.nz, Federated Farmers, DOC and regional councils.

Whitaker, Tony 1999: *Lizards in the garden*. *Forest and Bird*, Number 294: 14-18

Appendix 1: Common weeds of bush blocks

Before starting any weed control make sure you do a thorough weed survey of your bush block. This will allow you be strategic in your approach and put effort into controlling the most important weeds. These are ones that currently pose the most threat to the ecological sustainability of the bush or have the potential to do so.

Avoid the trap of putting energy into the most obvious weeds as these may not be the most threatening and may only be short-lived. If in doubt seek advice from Greater Wellington Regional Council Pest Plant Officers.

For up to date information on the best methods of controlling each weed, click on "General weed control brochure" at www.gw.govt.nz/pest-plant-3 or contact Greater Wellington Regional Council Pest Plant Officers for advice.



Arum lily (*Zantedeschia aethiopica*)

An evergreen, clump-forming perennial up to one metre tall, with large, arrow-shaped leaves and distinctive white, funnel-shaped flowers.



Banana passionfruit (*Passiflora mollissima*)

A vigorous climbing vine with three-fingered leaves. Pink tubular flowers throughout the year develop into oval fruit that turn yellow when ripe.



Barberry (*Berberis glaucocarpus*)

A spiny, woody, evergreen or semi-deciduous shrub growing up to three metres tall. It has very sharp spines that are single or divided into three. Small yellow flowers are followed by small purple berries covered in a yellow bloom.



Blackberry (*Rubus fruticosus*)

A scrambling prickly shrub, up to three metres tall. Stems are erect, arching and covered with numerous prickles. Leaves are dark green with a lighter underside. White or pink flowers in summer are followed by black fruit. Roots can spread for metres making mature plants difficult to dig out.



Broom (*Cytisus scoparius*)

An erect, much-branched, almost leafless, deciduous shrub up to three metres tall. It produces beautiful golden-yellow flowers in spring, followed by explosive pods.



Buddleia (*Buddleja davidii*)

A many-stemmed shrub, up to four metres tall with dull green, narrow, tapering leaves up to 20cm long. The leaves are usually serrated and often hairy, as is the stem. In early summer, the plant produces numerous tapering heads of sweetly scented lilac flowers with orange centres.



Cape ivy (*Senecio angulatus*)

A scrambling perennial up to two metres tall. Stems usually form a dense mass. It has thick, fleshy, coarsely toothed leaves, with one to three teeth each side. It produces yellow daisy-like flowers in loose heads during winter.



Climbing dock (*Rumex sagittatus*)

A climbing or scrambling perennial with shoots up to three metres long. Small green, pink or reddish flowers in late spring or summer are followed by green or reddish fruits. The leaves are large and arrow-shaped.



Great bindweed (*Calystegia silvatica*), also known as convolvulus

A robust, sprawling, climbing, hairless perennial, growing to four metres and producing very large, white, trumpet-shaped flowers. It has large triangular or arrow-shaped leaves. The aerial parts usually die down in winter, while an extensive underground rhizome system makes the plant difficult to control.



Cotoneaster (*Cotoneaster franchetii*)

An evergreen shrub or small tree up to four metres tall with grey-green leaves (younger leaves have a white, hairy underside). It has white flowers in summer, followed by bunches of glossy red fruit.



Fennel (*Foeniculum vulgare*)

An upright, aniseed-smelling perennial up to two metres tall, with many stems and tall, finely divided leaves that die down in winter. It produces yellow flowers in large, showy umbels (umbrella-like flower arrangements) on the stem.



German ivy (*Senecio mikanioides*)

A scrambling or climbing vine three to five metres tall, with ear-shaped appendages at the base of the leaf stalks. It produces yellow daisy flowers.



Gorse (*Ulex europaeus*)

A very spiny, woody perennial shrub up to two metres tall. It produces glorious yellow flowers, mostly in autumn and early spring, followed by explosive seed pods.



Hawthorn (*Crateagus monogyna*)

An erect, many-branched shrub, up to six metres tall. The stems have numerous small branchlets armed with spines and thorns up to 25mm long. The leaves are variable, triangular to ovate (egg shaped) and coarsely serrated. It forms white, cream or pink scented flowers in clusters at the branchlet ends, which are followed by clusters of shiny red berries.



Hemlock (*Conium maculatum*)

An erect annual or biennial herb, up to three metres tall. The leaves are 50cm long, glossy green and fernlike, and carried on hollow hairless stems marked with purple blotches. Hemlock has a long, branched taproot. It forms white flowers in dense umbels (umbrella-like flower arrangements) on the ends of stems, followed by white or grey fruit in autumn.



Japanese honeysuckle (*Lonicera japonica*)

A vigorous, climbing shrub capable of growing up to 15m, with opposite paired leaves. From September to May, tube-like white to yellow flowers appear in pairs, followed by glossy black berries.



Jasmine (*Jasminum polyanthum*)

A vigorous, evergreen climber growing to 10m that can twine up through supporting vegetation and smother host plants. Jasmine has small, shiny, dark green leaves with seven leaflets. The younger foliage is often tinged with red. The flowers are white-pinkish, tube-like and fragrant.



Large-flowered mallow (*Malva sylvestris*)

A shrub up to two metres tall, usually with a single main stem. The lilac or deep pink flowers are four centimetres in diameter, in clusters of two to seven. The velvety leaves are almost round, up to 20cm in diameter.



Mexican daisy (*Erigeron karvinskianus*)

A sprawling perennial herb up to four centimetres tall with lawn-daisy-like flowers often tinged with pink. The stems are long, thin and much branched and the leaves are small, narrow and fragrant when crushed. The plant flowers all year round in warmer parts of the country.



Mile-a-minute (*Dipogon lignosus*)

A vigorous scrambler/climber whose leaves have three roughly heart-shaped leaflets, each up to 5.5cm long. The flowers are pea-like and coloured white to pink or lavender.



Montbretia (*Crococsmia x crocosmiiflora*)

A plant with broad, stiff, grass-like leaves growing from perennial corms (bulbous underground plant stems), with attractive orange-red flowers in summer. It often forms large colonies along roadsides and streams.



Nasturtium (*Tropaeolum majus*)

A scrambling, hairless, pleasant-smelling annual or short-lived perennial climbing to two metres tall, with large, shield-shaped leaves. It produces beautiful scarlet, orange or yellow flowers about four centimetres in diameter.



Old man's beard (*Clematis vitalba*)

Property owners have an obligation to remove this plant from their properties (Regional Pest Management Strategy 2002-2022).

A deciduous woody vine with strongly ribbed stems and leaves arranged in groups of five. It produces small, creamy flowers from December to February, followed by masses of fluffy seeds.



Onion weed, three cornered garlic (*Allium triquetrum*)

A perennial with grass-like leaves, growing from small bulbs, with snowdrop-like flowers on stalks up to 50cm long. The leaves and flower stalks are triangular in section and have a strong garlic smell when bruised.



Pampas (*Cortaderia selloana/jubata*)

A very tall grass (up to three metres) with large, fluffy seed heads – very similar to toetoe, although pampas snaps easily when pulled and toetoe does not. The leaves are dark green on both surfaces and the leaf sheaths of mature plants have long hairs. The seed heads are either cream or pink.



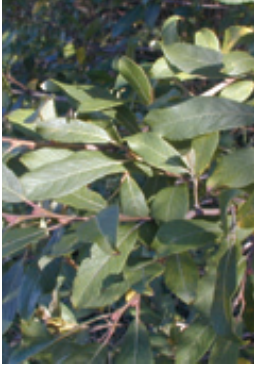
Periwinkle (*Vinca major*)

Periwinkle forms a dense mat of long-running, hairless stems with roots at the nodes. It has dark green, glossy, sometimes variegated leaves up to four centimetres long. It produces purple-blue tubular flowers up to five centimetres in diameter all year round.



Plectranthus (*Plectranthus ciliatus*)

A very vigorous runner that spreads along the ground. The undersides of the leaves, and the veins that show through to the upper side, are purple.



Pussy willow (grey willow) (*Salix cinerea* and *S. fragilis*)

A deciduous, shrubby, thicket-forming small tree, sometimes growing as tall as five metres. Several sturdy branches arise at ground level, and the tree has a rounded crown. Its oval leaves are shiny above and covered with soft, usually grey hairs underneath. Abundant yellow or silky white catkins appear before the leaves in early spring.



Selaginella (*Selaginella kraussiana*)

Also known as african club moss, this is a small carpet-forming fern-like ground cover. Stems creep along the ground rooting at every node. Leaves are in row and are narrow, 2-4mm in length.



Snakefeather (climbing asparagus) (*Asparagus scandens*)

A scrambling, shade-tolerant climber with tuberous roots. Feathery leaves support small orange berries in autumn.



Wandering willie (*Tradescantia fluminensis*)

A dark green creeping ground cover, also known as wandering jew. It has shiny, fleshy leaves and small white flowers. Tradescantia forms dense mats, smothering all native ground cover and preventing seedlings from establishing.



Watsonia (*Watsonia bulbifera*)

A plant with broad, stiff, grass-like leaves growing from perennial corms (bulbous underground plant stems), with attractive brick-red flowers in summer. It often forms large colonies along roadsides. Similar to montbretia but has aerial corms along flowering stems.



Wattle (*Paraserianthes lophantha*)

A fast-growing evergreen up to five metres tall with greenish-yellow bottlebrush-like flowers. It has flat, green or brown seedpods up to 15cm long and each tree can produce large quantities of black seed.



Wild ginger (*Hedychium gardnerianum* and *H. flavescens*)

Kahili and yellow ginger produce thick beds of rhizomes, forming a dense ground cover. Sweetly scented flowers appear in late summer.









Consent requirements for weed control activities

Before applying agrichemicals like herbicides, you should first check the requirements under the Hazardous Substances and New Organisms (HSNO) Act 1996 and the Regional Plan. Find out about the HSNO requirements on the following website: www.epa.govt.nz. You can check out the Regional Plan at www.gw.govt.nz or contact the Greater Wellington Regional Council on 0800 496 734.

Appendix 2: The Greater Wellington Regional Council first fifteen

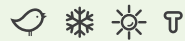
The 15 native species listed below are hardy and are well suited to planting around the edge of a bush block to help seal-off the edge. They can also be used to extend blocks or create linkages to other natural areas.

For more information on establishing native plants get a copy of *Restoration Planting: A guide to planning restoration planting projects in the Wellington region*. The booklet is available on the Greater Wellington Regional Council website – www.gw.govt.nz.

Suitable conditions key	
	Tough
	Frost-hardy
	Frost-hardy when mature
	Full sun
	Partial shade
	Full shade
	Attractive to birds
	Coastal



Mānuka (*Leptospermum scoparium*)

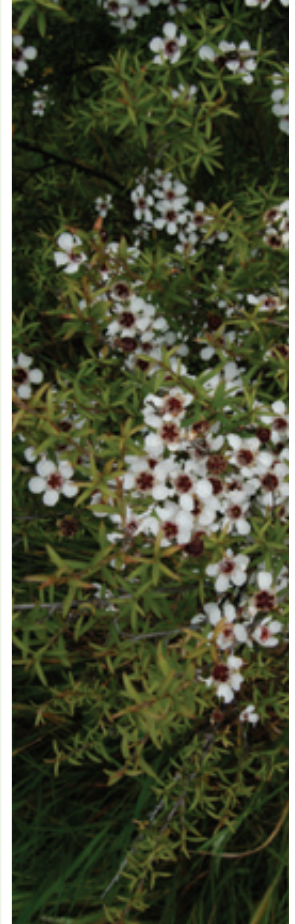


Mānuka is found mostly in open habitats throughout New Zealand. It is a fast growing, frost hardy shrub, up to 4 metres tall, which establishes well on disturbed land. Flowers and seed capsules can be present from spring to early winter. The insects that pollinate mānuka are attractive to fantails and other insect-eating birds. The roots of young mānuka are extremely sensitive to handling so never untangle the roots during re-potting or planting. In restoration planting, less hardy species can be planted later under established mānuka or the area can be left to regenerate naturally.

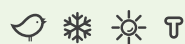
Kānuka (*Kunzea ericoides*)



Kānuka is a hardy small tree, growing up to 15 metres tall. When young, kānuka looks similar to mānuka except the leaves are less prickly. Kānuka bark is light brown, shedding in long strips. This species thrives in open conditions and can withstand wind, frost and relatively dry conditions.



Tī kōuka or Cabbage tree (*Cordyline australis*)

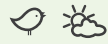


An iconic New Zealand tree that reaches up to 20 metres tall, tī kōuka grows along the edges of forests, swamps and river banks. Cooked tap roots, the core of the trunk, and the tender shoots were all important food for Māori. Leaves were an important source of fibre. Tī kōuka is tough, likes open sunlight and flowers in early summer, with berries from mid-summer to mid-autumn. It provides food for bellbirds and tūi and is extremely good at establishing even in open pasture. Damaged trees can sprout new branches.





Puahou or Five-finger (*Pseudopanax arboreus*)



Five-finger is a common native tree found from sea level to 760 metres in forests and open scrub from North Cape to Southland. It reaches 8 metres in height and has a characteristic leaf with five to seven 'fingers'.



Akiraho (*Olearia paniculata*)



From the daisy family, this very hardy shrub to small tree grows up to 6 metres tall, can stand poor soils and is found along forest margins and in scrub. Akiraho is mostly a coastal and lowland plant which likes open sunlight and is frost hardy when mature. Akiraho is very leafy year round and flowers in mid summer, after which the seeds disperse into autumn.



Ngaio (*Myoporum laetum*)



A leafy tree up to 10 metres high, ngaio's spreading branches shade out understorey vegetation. Ngaio likes open sunlight and is frost hardy when mature. It can recover from light frosts when young. Ngaio flowers from mid-spring to mid-summer and the berries ripen through summer and autumn, providing food for bellbirds and tūi.





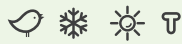
Mānatu or Lowland ribbonwood (*Plagianthus regius*)



Mānatu is a common lowland forest tree up to 15 metres tall. Unusually, it is regularly leafless in winter. Mānatu flowers from mid-spring to mid summer and fruits through summer to early autumn. It likes open sunlight and is frost hardy.



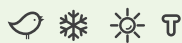
Kōhūhū (*Pittosporum tenuifolium*)



Kōhūhū is a coastal to lower mountain forest tree, growing up to 8 metres tall. It is found throughout New Zealand except in the west of the South Island. Kōhūhū is tough, frost hardy, likes sun, and flowers from mid to late spring. Seed capsules mature from mid summer to early autumn, providing food for bellbirds and tūi.



Karamū (*Coprosma robusta*)



This shrub or small tree with leathery leaves grows up to 6 metres tall and is found throughout New Zealand in lowland forests. It is tough, likes open sunlight, and is frost hardy. Summer berries are food for waxeyes, bellbirds, kererū, and tūi. Karamū is extremely good at establishing even in open pasture and its hardiness and popularity with birds makes it an essential revegetation species.





Tarata or Lemonwood (*Pittosporum eugenioides*)



Tarata is a tree which grows up to 12 metres tall. When crushed, leaves have a strong lemony smell. It has attractive showy flowers in October, followed by distinctive black seed capsules. It is found throughout New Zealand along forest margins and on stream banks from sea level to 600 metres. Tarata is frost hardy and tolerates a wide range of conditions (although it can be vulnerable to drought) and is a useful quick growing restoration plant.



Makomako or Wineberry (*Aristotelia serrata*)



Makomako is a very common, fast growing semi-deciduous small tree, growing up to 10 metres tall. It is found throughout New Zealand in forests and scrubland, along forest margins and roadsides. Makomako likes open sunlight and is frost hardy, although it can be vulnerable to drought. Flowers and berries provide food for bellbird, tūī, kererū and waxeyes from spring through to early summer.



Koromiko or Hebe (*Hebe stricta* var. *stricta*)



Koromiko is a common, fast growing, hardy shrub with a rounded shape, growing to 2 metres. Koromiko is found throughout the North Island on stream banks, shrubland and on the edge of forest remnants. With attractive white flowers in mid to late summer, it thrives in full light and is a useful colonising plant.

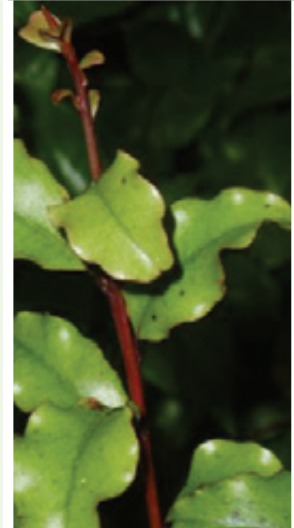




Māpou or Red matipo (*Myrsine australis*)



Māpou is a closely branched shrub or small tree, growing up to 7 metres tall. It has distinctive red branchlets and glands dotting the wrinkled leaves. It is a hardy plant occurring throughout New Zealand on forest margins.



Toetoe – spring flowering (*Cortaderia fulvida*)



This native grass is tough and likes open sunlight. Toetoe grows up to 2 metres high within two to three years of planting. It can be planted on the windward side of a planting area to provide quick shelter. Toetoe is also a useful streamside plant as its roots help to stabilise stream banks.



Tōtara (*Podocarpus tōtara*)



Tōtara is found throughout New Zealand, mostly in lowland forest on fertile alluvial well-drained soils. It grows up to 30 metres tall, likes open sunlight, and is frost hardy and attractive to birds. One of the largest trees in the forest, this has been the most prized tree to Māori. Tōtara timber was the best for building massive war canoes and was the main timber used for carving. Tōtara flowers in early summer and smooth red berries form in late summer. Tōtara look good planted in groups.



The Greater Wellington Regional Council promotes **Quality for Life** by ensuring our environment is protected while meeting the economic, social and cultural needs of the community

For more information contact the Greater Wellington Regional Council:

Wellington office
PO Box 11646
Manners Street
Wellington 6142

T 04 384 5708

Upper Hutt office
PO Box 40847
Upper Hutt 5018

T 04 526 4133

Masterton office
PO Box 41
Masterton 5840

T 06 378 2484

Follow the Wellington
Regional Council



info@gw.govt.nz
www.gw.govt.nz

March 2014
GW/BD-G-14/39



Please recycle
Produced sustainably