

weeds lose vigour and can be more easily knocked back.

To find out sprays and application techniques appropriate for a specific weed, refer to the Taranaki Regional Council's weed control Information Sheets. The Council's weed management officers can also make site visits to inspect and advise, where there is a particularly severe infestation.



Figure 6: A well-established bush retirement, showing good regeneration beneath the canopy

## BENEFITS TO LANDOWNERS

### Farmers

On grazed parts of the farm, bush trees rarely occupy a large percentage of paddock area. They often remain on parts where stock don't graze much, on account of steep contour or difficult access. So fencing trees off may make little difference to the length of time that stock can be grazed in a paddock. A fence may actually make grazing management easier, excluding stock from parts that are difficult to muster, and concentrating them where pasture growth is greater, but perhaps not effectively utilised at present. Once fenced, bush remnants can still provide shelter and shade for animals in adjacent paddocks. Where fenced off on steep slopes or in gullies, they also have the advantage of protecting soil from erosion, and reducing the runoff that contributes to flooding elsewhere on a farm.

### Foresters

Land intended for commercial forestry may contain a few deep gullies with near-vertical walls, or some extremely steep faces where shallow soil is interspersed with bare slip scars. Such sites often have bush remnants "hanging on", or scrub at an advanced stage of regeneration. They are also difficult sites to grow commercial timber species - seedlings can be planted, but are difficult to access for silviculture and harvest. The economic return from a forestry block will actually be better, if these gullies and steep faces are left as

bush retirements enclosed by the planted tree stand. This way, a forest owner avoids the expense of forestry operations on sites that actually have a low recoverable timber yield at end of the rotation.

### Lifestylers

Bush retirement is popular amongst lifestyle block owners, who typically have income from other sources, so don't feel that they have to graze every hectare. A bush retirement on part of the property enhances their sense of living close to nature and away from the noise and rush of town environments, on return from work at end of the day. It also provides scope for hobbies such as bee keeping, harvest of plant leaves, flowers or fruit for essential oils and dyes, birdwatching and observation of other native wildlife like skinks and insects.

### Carbon sequestration

Many landowners express interest in the concept of bush retirement for carbon sequestration. This is worth doing, though they need to be aware that under the government's current proposals, saleable carbon credits would only be available for tree planting or scrub regeneration on land that was substantially in pasture before 1990. Standing bush or closed canopy scrub would not qualify.

### Hunters

Particularly in the hill country, Taranaki farms have large blocks of standing bush, or extensive scrubby areas of manuka and tree fern. On these steep parts of the farm, limited pasture growth would be obtained, and reversion would be difficult to control, if they were cleared. Such areas are now valued for hunting goats, pigs and deer. Most remain attached to a farm, though an increasing number are being subdivided and sold to new owners as private hunting blocks.

### Ecotourism ventures

Large bush remnants (several hundred hectares or more in extent) provide scope for ecotourism adventures like guided walks, four wheel drive tours, and educational trips to study plants and wildlife. Although they presently compete for a limited number of tourists, such ventures offer extra income for back country properties where the prospects for farming and forestry are limited.

## FURTHER INFORMATION

Any landowners who are particularly interested in assessment of bush condition, may wish to obtain the Bush Vitality Assessment Kit, published by Horizons. For bush restoration, the best publication is QE2 Trust's Native Revegetation Manual.

For further advice or information about sustainable land management contact:

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# Bush retirement

SUSTAINABLE LAND MANAGEMENT

Number 61



Figure 1a: Remnant bush stand, still grazed by stock, gradually deteriorates.

## INTRODUCTION

Bush remnants are a feature of many properties in Taranaki. Landowners' reasons for retaining bush are diverse: enhancement of farm landscape, habitat for native birds, protection of rare plants, or as a block for hunting game animals.

Bush remnants are unlikely to persist long-term in the presence of other land uses, unless they are retired. Retirement is often taken to mean "retirement from grazing", to avoid browsing of foliage by stock, and allow regeneration of plants from the bush floor. However it can equally entail retirement from other use; for instance preservation of a large block on part of land that's otherwise used for forestry; or retention of a small tree stand in the middle of land that's cropped or grazed.

This information sheet outlines matters to consider beforehand when contemplating the retirement of a bush block. It also sets out steps to take, that will help ensure retirement is a success.

## BUSH TYPES AND SPECIES PRESENT

Most landowners can recognise the trees in their bush remnants. But they may be surprised to find out why those particular species grow on their land. It's not just a matter of climate: forest composition is also influenced by soil, by competition between faster-growing and slower-growing plants, and by plant succession (different species colonise after disturbance by storms, landslides or fire).

Taranaki has a great range of bush types. Broadleaf and nikau forest near the coast, passes through rimu, rata and kamahi on the ringplain, to totara and kaikawaka on the mountain. In the eastern hill country, forest is dominated by broadleaved trees such as tawa and rewarewa, but is diversified by ribbons of kahikatea along alluvial valley bottoms, and beech on narrow ridges where soil is shallow and stony. Much hill country bush is a mosaic of climax forest (several hundred years old) with patches of scrub (a few decades old) where forest canopy has been disturbed by windthrow, landslides, or clearance for farming.

Some good information about the ecology of Taranaki's bush is contained in the Egmont National Park Handbook (recent editions published by The Department of Conservation (DOC), based on older editions by Department of Lands and Survey). Detailed descriptions of forest types are given by DOC's Ecological Districts of New Zealand publications for Taranaki.

## RULES AND REGULATIONS

There are no rules or regulations that enforce preservation of bush remnants on private land. The decision to do so, is voluntary on a landowner's part.

The Regional Council encourages retention of bush remnants:

- on erodible Class VII land that has low potential for grazing or forestry
- on Class VI and better land, if bush remnants provide habitat for

endangered birdlife, or are refuges for rare plant species

- along riparian margins, where bush remnants contribute towards water quality in streams, lakes and wetlands.

Several statutes and plans restrict indigenous forestry (refer to the Council's Information Sheet 11 for details); though these only apply to bush where commercial timber harvest or complete clearance is envisaged.

## FUNDING SOURCES

Through the Queen Elizabeth II National Trust (QE2), central government offers funds to assist with bush retirements. To be eligible, a landowner must first initiate a proposal. The bush remnant will be assessed by a Trust representative as to whether it qualifies for protection; and if so, the landowner will have to agree to register a covenant against land title, to ensure future protection should the land change hands. The QE2 Trust will then contribute towards cost of survey, covenanting, and fencing, in whole or in part.

Taranaki Tree Trust is a regional organisation that can provide limited contributions towards the cost of bush retirements. It will consider helping with items that QE2 doesn't cover, for instance tree plantings to plug canopy and edge gaps, or to assist regeneration.

The New Plymouth, Stratford and South Taranaki District Councils make funds available for community environmental initiatives each year. A landowner contemplating bush retirement might be

eligible for a grant from one of these funds, particularly if there is a community component to the proposal eg: public access.

Taranaki Regional Council does not make money available, though can assist in three other ways:

- Property plans (riparian, conservation, farm, agroforestry), which identify bush remnants suitable for preservation.
- Supply of native seedlings at cost, through the annual plant programme.
- General advice about establishing and maintaining bush retirements.

## PRACTICAL ASPECTS OF BUSH RETIREMENT

### Layout

This is the first consideration, to ensure that the area to be retired remains integrated with farm management. Is the bush remnant in good enough condition to be worth preserving? If a large stand, how can it be fenced in a way that doesn't cut off stock access to other parts of the farm? Is an access lane needed through the stand, or around its edge? Does it make sense to fence off an extremely small bush stand? Where only scattered trees are left, with good pasture beneath, would it be better to plant young trees inside good tree protectors, so that grazing isn't lost? Can smaller fragments be linked to create corridors or stepping stones (for instance along streams or over ridges) that connect larger bush areas? What does the neighbour have by way of existing bush, that could be connected?

For advice about layout, contact the Council. A land management officer can

visit to assess the stand, and prepare a conservation plan with a map showing layout of the area to be retired, fence positions and cost estimates.

### Fencing

The next consideration is a good fence. Permanent fences, with posts every 3 - 4 m, battens at 0.3 - 0.5 m spacings, and 6 - 8 wires, have been required for QE2 covenants in past years. Today, modern fence designs with wider post spacings (5 - 10 m, few or no battens, and close-spaced high-tensile wires, may be acceptable. Where bush remnants aren't covenanted, the number of wires may be reduced. Two will suffice to exclude livestock on cattle farms, though at least four will be needed on sheep farms.

Another consideration when fencing is the perimeter length of fence, relative to the area of bush enclosed. It may be more economic to put a single fence around several small bush remnants, and encourage regeneration between them, than to fence each stand individually in an attempt to preserve stock access to a small grazeable area between the stands.

Remember to put rails in the fence, so that any stock which get inside, can be mustered out without having to cut wires.



Figure 3: A modern retirement fence design

### Edge protection

Small remnants of bush have long perimeters relative to their area. They are prone to excessive die-back caused by wind damage along these exposed edges. This can be reduced by a protective planting, which will also create a better microclimate for regeneration, sealing the interior of the stand from draughty winds and direct sunlight. Weed take-over will also be reduced, if direct sunlight can be excluded from the bush floor.



Figure 4: Edge planting with fast-growing light-tolerant native shrubs

Ideally edge plantings would be native species that grow on stand edges and tolerate light eg: manuka, karamu, lemonwood; but these take time to establish. For quick protection, a fast-growing row or woodlot of exotics may be worth considering, particularly on the windward side; but choose species that are narrow and upright in growth form, so they don't crowd out natives farther in, and fell them once regeneration has thickened up the bush edge.

### Gap revegetation

A bush remnant will have gaps, particularly if it has been logged in past years, or if old trees have collapsed and seedling re-growth has been suppressed by browsing animals. Options in these situations, are to wait for natural regeneration which will take many decades, or to speed up the process by planting gaps. The former option has one great advantage, which is no cost. If the latter option is chosen, select shrubby native successional species which establish quickly on sites exposed to sunlight and wind. Native shrubs listed in the Council's Information Sheet 25 (Plants for Riparian Margins) perform equally well in bush gaps. Within a decade, they will form a low shrub canopy, creating shade and shelter for forest tree seedlings. These may be planted at a later stage; but they will often establish anyway from natural seeding, once birds start frequenting the shrub canopy (wear your hat!). Birds play a major role in the dispersal of many native forest plants. A return to forest can be hastened by planting species that will attract them. Winter food plants like five-finger, karamu, lemonwood, kohuhu and putaputaweta, encourage birds to stay all year round.

### Planting tips

If undertaking plantings to assist bush regeneration, some key elements in successful establishment are:

- Select good-sized plants with plenty of root and leaf, propagated from local seed sources.
- Harden out seedlings in open for about a month before planting.
- Plant in winter when dormant.
- Plant at an initial spacing wide enough for growing plants to form a canopy without crowding one another.
- Spray or hand-weed planting sites, about two months prior.
- Dig good-sized planting holes, with plenty of space for roots.
- Tamp soil back into holes, so that seedlings stand firm.
- Fertilise with slow-release pellets or granules.
- Release by hand-weeding or spot-spraying in late spring or early summer.



Figure 5: Ribbonwood planted to plug a canopy gap.

The Regional Council's Information Sheet 26 (Establishing Riparian Vegetation) contains specific advice about each step. The advice applies just as much to native plant establishment at other sites such as gaps in bush remnants, so is worth reading.

## ONGOING MAINTENANCE

### Fence

Remember the fence isn't just there to protect the bush, it also borders a paddock, so keeping it stock-proof is part of a farm's routine maintenance. Check the fence regularly for damage, and repair as needed.

### Animal pest control

Animal pest control is perhaps the most important aspect of maintaining a bush retirement, next to fence repair. Excluding farm livestock with a fence, will do little to enhance bush regeneration, if goats or possums take up residence inside. For possums, an annual shoot is the bare minimum. Regular monitoring of a bait-line or trap-line will be a better way to keep numbers low. A single shoot may suffice to eliminate goats, but remember to check regularly for signs of their presence (also deer and pigs), in case they cross the fence again. Hares and rabbits are not common in bush retirements, but can enter and damage regrowth or planted seedlings, by biting the tops off plants. If this happens, try night shoots in adjacent paddocks.

Shooting possums is something landowners can easily undertake without outside help. Trapping or poisoning on the other hand, involve the use of devices or substances that may be unfamiliar. Specific advice about setting up trap-lines and bait-lines is contained in information sheets available from the Council. Contact the pest management officers for advice and site visits if required.

### Weed control

A few exotic weeds are usually present in bush remnants, and once grazing animals are excluded, the weeds may take over. Particular problems in Taranaki are blackberry and gorse (in sunny clearings); also wandering jew, old man's beard and japanese honeysuckle (under and up the canopy). If it isn't possible to spot-spray weed seedlings as they appear, try to schedule an annual spray programme for late autumn; a time of year when most



Figure 2: A retirement can often be laid out as a corridor, connecting remnants and providing better paddock subdivision