

Caring for forest fragments

We can all be part of protecting, restoring and connecting Auckland's biodiversity.

The Auckland region was once covered in a rich, diverse rainforest.

Massive kauri, and towering rimu, rātā, tōtara and kahikatea emerged above leafy canopies of taraire, pūriri and tawa. The bush teemed with birds including tūi, bellbird, kererū (native pigeon), kākā, kōkako, saddleback and piopio, while several species of moa browsed below. At night, the kiwi and kākāpō stalked the forest floor.

Today, due to clearance, milling and disturbance these forests have been broken into thousands of individual patches ("forest fragments") ranging in size from less than 1 hectares to the 17,000 hectares of forest in the Hunua Ranges. Most existing areas of native forest in the Auckland region (approximately 80 per cent) are small forest fragments of less than 10 hectares and many of these are located on private land.

In some parts of the region these small fragments are all we have left, making their protection and restoration crucial for the future survival of Auckland's native wildlife and plants.

Forest fragments are vulnerable to animal pest damage, weed invasion, livestock grazing and trampling, wind exposure, and physical isolation from similar areas. Good management can enhance natural processes such as plant establishment and growth, reduce wind damage to forests and reduce the mortality of birds, lizards and invertebrates (e.g. insects, spiders and worms) from introduced pests. Successful management may reduce the need for further intervention.

New Zealand's lowland forests (e.g. kauri, kahikatea, pūriri, taraire) have been reduced significantly (more than 90 per cent) from their former (pre-human) extent. In the Auckland region native vegetation now covers 24 per cent of the land area. However, most of this comprises only a few major areas - the Waitakere and Hunua Ranges, and the Hauraki Gulf islands.

Protect. Restore. Connect.



Female Weta – Bryce McQuillan



Native pigeon - Lee-anne Parore

How to keep your forest fragment healthy

Having a forest fragment on your property can provide many benefits and is a feature to be treasured. Landowners, community groups and Auckland Council are working to protect, enhance and restore forest areas throughout the region.

There are several key things you can do to help keep your forest fragment healthy and ensure it will continue to thrive in years to come.

Animal pests

It is important to control introduced predators and browsers (e.g. possums, cats, stoats, ferrets, rats and goats) to keep your forest patch and the wildlife within alive and in healthy.

Animal pests can harm forest fragments by:

- competing with native birds, reptiles and invertebrates for food from fruit, flowers, leaves and nectar
- preying directly on native birds, insects and reptiles – stoats, ferrets, rats and even possums will eat skinks, geckos, frogs, native insects, bird eggs and chicks
- inhibiting forest regeneration. animals like deer and goats browse on young native plants and pigs dig up the ground destroying seedlings and tree roots
- destroying mature trees. possums browsing on the leaves of native trees can kill the trees.

Possums, deer and ferrets can also act as carriers of bovine tuberculosis that they can pass to cattle and other farm stock.

Weed management

It is important to control invasive weeds to keep your forest patch healthy. Many forest patches have been invaded by plants that were originally in people's gardens

Pest plants can destroy natural areas by:

- forming a dense mat on the ground, smothering seedlings and preventing germination
- growing faster than native plants, and competing with them for resources such as water and light
- climbing as vines and eventually strangling or smothering trees.

The best way to stop weeds establishing is to act quickly once new weeds are found, so that they don't mature and produce seeds and strong root systems. Avoid dumping garden waste into forest fragments and only plant native species appropriate to your area.

Kauri dieback

There is a high risk of spreading kauri dieback (the deadly kauri disease caused by *Phytophthora taxon Agathis*) around the Auckland region in contaminated soil and plant material. The Auckland Council recommends extreme caution when using kauri in restoration plantings. kauri seedlings should only be used where ecologically appropriate i.e. in diversity plantings. Kauri seedlings should be sourced from healthy disease free adult plants. Check that your nursery sources their plants and seeds from areas free of kauri dieback. Don't remove soil or plants from areas known to be infected with kauri dieback. Kauri seed can be tested for kauri dieback disease, free of charge, please contact the Auckland Council's biosecurity team 09 301 0101. For more information visit www.kauridieback.co.nz

For more information on how to control animal pests and weeds in your forest fragment contact the Auckland Council's biosecurity team or check out the information available on the Auckland Council website www.aucklandcouncil.govt.nz



Wild ginger



Possum



Feral goats

Clearance

Vegetation clearance within and around forest damages natural areas, and destroys the habitat and food sources of birds, reptiles and invertebrates. It can also lead to further fragmentation of forest areas into smaller, less viable patches.

Clearing undergrowth within natural areas can affect the natural balance of the forest, changing light, wind and humidity levels. Clearance of native plants also provides opportunities for weed invasion.

Native plants should not be removed from forest fragments. Many natural areas will regenerate themselves if given a chance to do so.

Paths

Keeping to a single walking track through your forest will help prevent understorey trampling, allowing young plants to flourish throughout the area. Keep your path as informal and narrow as possible, to avoid unnecessary impacts within the fragment. Paths can act as highways for animal pests so keep the number of paths to a minimum.

Enhancing forest fragments

Forest fragments can vary greatly in their level of health and viability. Some bush patches need little assistance, especially if they are regenerating well on their own, are large or located near large native forest areas that act as a source of seeds, birds and insects.

Other fragments that have been isolated from other forest areas for some time, or are noticeably declining in health may need some additional help to kick start natural processes and ensure their long term survival.

Enhancement planting

Once permanently fenced off from stock, most forest fragments will begin to regenerate naturally.

However, you may wish to plant supplementary natives around or in your patch of bush to speed up this process, or enhance the forest with native trees, shrubs and ferns that have been lost.

Eco-sourcing

It is important that ecologically appropriate species are planted, and where practicable, to source plants that have been grown from local seeds (i.e. eco-sourced). These plants are better adapted to the local conditions and have a greater chance of surviving.

If you are purchasing plants, find a nursery that eco-sources to ensure the plants you buy are best suited to your area's climate and soils. Avoid using unnatural cultivars of native plants such as variegated flax and garden variety *Hebes*.

To stop the spread of invasive pests please check all mulch, plants, their soil and containers (before you move them to your planting site) for contaminants, eggs and live animals i.e. Rainbow skinks and Argentine ants. Please avoid using contaminated mulch, soil and plant material in your restoration planting.

You may be able to grow some of your plants from seeds. Collect ripe seed from a nearby piece of bush (natural not planted). Collect seed from many individuals to ensure diversity – remember to ask for permission before taking any plant material from any land area that you do not own.





Forest gecko – Dylan van Winkel

Buffer planting

Planting bush boundaries with fast growing, wind tolerant native trees (such as lacebark or wineberry) guards against wind, high light levels and temperature changes. This helps to create the sheltered conditions needed by future forest giants such as young kauri, rimu, taraire, puriri and kahikatea to thrive.

Planting around an existing area also enlarges it, increasing its chances of long term survival.

Reconnecting fragments and systems

Linking your forest fragment with other natural areas with plantings helps to provide pathways and networks that are very important for native plants and animals. Many of our native species are effectively trapped in isolated forest fragments, unable to move across modified landscapes to other natural areas.

Connecting small forest fragments together increases the overall size of the natural area, which greatly improves the long term survival of the plants and wildlife within.

In addition, linking up different types of natural areas such as streams, wetlands and the coast provides opportunities for plants and animals to colonise new areas and gives birds access to different types of food throughout the year.

Creating a good home for native wildlife

Our native wildlife needs favourable conditions to survive in forest fragments successfully. Forest birds need year-round food supplies and low predator numbers during nesting.

Reptiles and invertebrates also thrive in fragments with low pest numbers and plenty of moist soil, rotting logs, shade and thick leaf litter. Fish living in the streams running through forest fragments need shaded, cool water with few aquatic weeds.

Here are some ways you can help create these conditions to ensure your forest fragment is ideal habitat for native wildlife:

- Preserve the litter layer, woody debris and dead trees to provide habitat for lizards, invertebrates and birds
- Forest fragments with a dense undergrowth of native plants provide the best gecko habitat, and are also warmer in winter for small birds
- Plant trees like miro, pūriri, taraire, karamū, kōhūhū, korokio, five-finger, putaputawētā and kohekohe for a winter supply of fruit and/or nectar. Some species have separate male and female (fruit bearing) plants, so plant many saplings of each species to ensure there plenty of fruit
- Stoats, cats, rats and possums eat young birds and eggs. Regularly control these pests, especially just before nesting in late winter to early spring
- Leave large old or dead standing trees as habitat for tree wētās, kingfishers, kāka and bats
- Control the animals that feed on invertebrates – especially possums, rats, mice and hedgehogs.

Fragments with streams running through them are likely to contain eels, fish, freshwater insects, and kōura. Replant stream banks to provide shaded, cool water, improved water quality and a good supply of leaf litter for insect food.

Looking after urban natural areas

Forest fragments in urban areas and on the city fringes can be vulnerable to a variety of threats.

For example, stormwater discharge, pollution, weeds, animal pests and the impacts of subdivision and development. Natural areas close to human settlement are more at risk from weed invasion and cats.

Local communities, the council and neighbourhoods can work together to look after these areas by:

- controlling weeds in and on the edges of reserves
- replacing weeds with native plants
- keeping cats indoors at night
- controlling stormwater discharges
- assisting with reserve management
- working with other community groups and schools.

Hochstetter's frog - Rob Suisted



Why forest fragments are important

Bush and forest patches are vital to the survival of our remaining native plants and animals because they:

- provide habitat, food, and shelter for our native species
- are used by birds and other native fauna as 'stepping stones' to move between larger forest areas
- provide a source of native seeds that birds or the wind can disperse across the landscape to other natural areas
- help reduce flooding and erosion, and improve the water quality of the streams that flow through them
- may contain native insects that help pollinate nearby crops or control pests
- can act as windbreaks to shelter stock in nearby paddocks
- beautify our landscape and provide recreational opportunities
- contribute to ecological linkages beside wetlands and along streams and coastal areas.

Livestock

Most native forest fragments in rural parts of the Auckland region are on private land. Many are not fenced, and are regularly grazed by livestock. The first priority for all forest fragments should be to fence livestock out permanently and provide stock with alternative shade and shelter.

Unfenced forest fragments are easily damaged by livestock. New Zealand's plants and animals evolved without any large grazing mammals. Our soils and plants can't cope with the trampling, grazing and waste from stock.

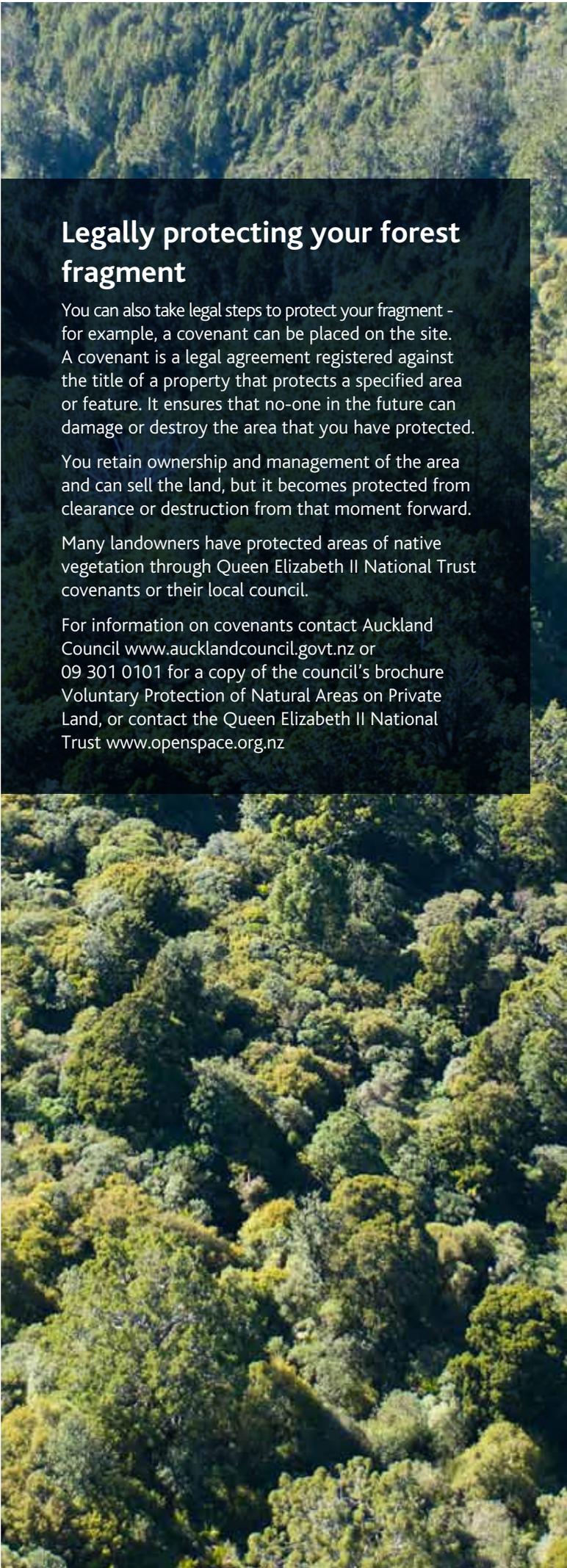
Cattle, sheep, goats and deer in unfenced fragments graze palatable native seedlings and saplings, and open up the forest understorey. Livestock can also weaken and sometimes kill trees by browsing the bark, rubbing against trunks and trampling roots. Fragments continually visited by stock will become a stand of sick, old trees, with no young plants to replace the older ones when they die. Eventually the whole forest will collapse.

Damage from livestock can also decrease the water quality of streams in forest fragments, adversely affecting the life within them and in the catchment as a whole.

Some fragments have been grazed to reduce potential fire risk and to suppress weeds. However, stock damage may increase the risk of fire as the vegetation under the trees is eaten. The area can become open, breezy, and dry with an increased build-up of broken branches and dead trees. Keeping stock out may result in weed growth, but most non-invasive weeds will disappear within a few years as native plants eventually block out their light.



Pukeko with grazing sheep - Ambury Regional Park



Legally protecting your forest fragment

You can also take legal steps to protect your fragment - for example, a covenant can be placed on the site. A covenant is a legal agreement registered against the title of a property that protects a specified area or feature. It ensures that no-one in the future can damage or destroy the area that you have protected.

You retain ownership and management of the area and can sell the land, but it becomes protected from clearance or destruction from that moment forward.

Many landowners have protected areas of native vegetation through Queen Elizabeth II National Trust covenants or their local council.

For information on covenants contact Auckland Council www.aucklandcouncil.govt.nz or 09 301 0101 for a copy of the council's brochure Voluntary Protection of Natural Areas on Private Land, or contact the Queen Elizabeth II National Trust www.openspace.org.nz

Need more help?

Funding

You may be eligible for funding to help you protect and care for your forest. The Auckland Council can assist both landowners and community groups with funding of ecological restoration projects. For more information contact the Auckland Council www.aucklandcouncil.govt.nz or 09 301 0101.

Workshops

The Auckland Council holds free workshops on ecological restoration, forest health monitoring, and riparian planting. For more information on workshops contact the biodiversity team on 09 301 0101.

Further information and factsheets:

- Auckland Council Wonderful wetlands factsheets – #1 and #2
- Auckland Council Coastal planting guides – #1 – #6
- Auckland Council Riparian Zone Management Guidelines, (TP148)
- Auckland Council Pest Facts
- Voluntary protection of natural areas on private land
- The Good Start Guide – Planting Guide for Volunteers
- Auckland Council Ecosourcing Booklet
- Native Forest Restoration: A practical guide for landowners, Tim Porteous, QEII Trust

Need more information?

The Auckland Council biodiversity team can provide further information on maintaining the health of forest and bush fragments. Phone 09 301 0101 or visit www.aucklandcouncil.govt.nz.