

One Billion Trees Programme

Helping New Zealanders plant the right trees, in the right place, at the right time

Wider benefits of planted forests – ecosystem services



Credit: Peter Scott
www.abovehawkesbay.co.nz

Planted forests provide many benefits beyond timber, fuel and fibre. Benefits that people get from the environment, including forests, are known as ecosystem services. Ecosystem services from forests include the following.

Carbon sequestration

This is the process of capturing and storing carbon dioxide from the atmosphere. Forests store carbon mainly in trees and soil, and trees store more carbon as they grow bigger. While trees mainly pull carbon out of the atmosphere, they also release carbon dioxide. This happens naturally, when a tree dies and decomposes (releasing carbon dioxide, methane, and other gases). There are also carbon losses when trees are thinned or harvested. Carbon sequestration is important because less carbon in the atmosphere helps reduce greenhouse gas effects like global temperature changes, and lessen the impacts of climate change.

Erosion control

Plantation forestry can potentially reduce soil erosion by up to 95 percent. Trees protect landscapes from erosion, especially during severe storms, by:

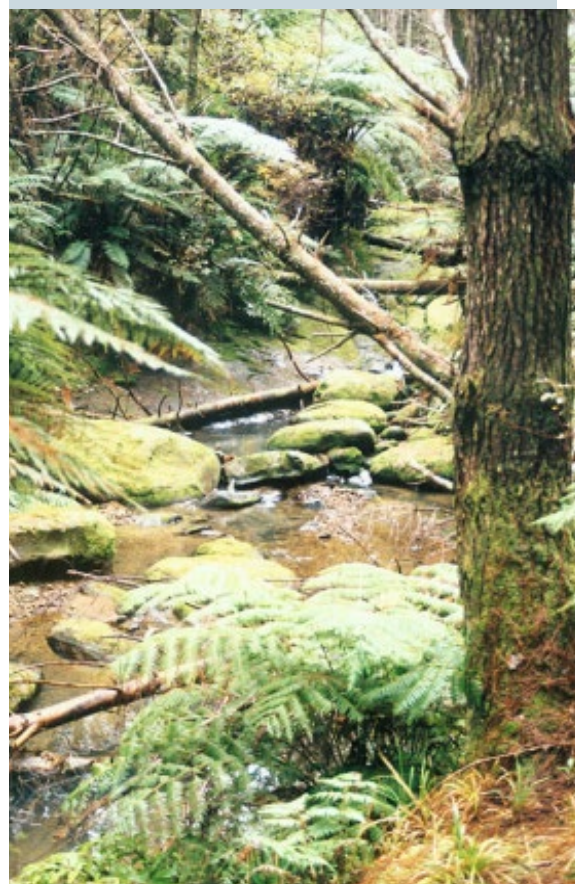
- providing a canopy that intercepts rainfall and reduces the amount of water in the soil
- having roots that bind the soil together, making it less likely to wash away.

Flood mitigation

Forests soak up rainwater, preventing runoff and damage from flooding. Forests have:

- complex canopies
- layers of non-tree vegetation
- extensive root systems
- leaf litter.

These features intercept and absorb water into the soil, helping prevent flooding caused by falling and running water.



Credit: Scion

Improving water quality

Forests act as natural water filters. When it rains, any water that doesn't soak into the ground becomes runoff. This runoff picks up nutrients from things like fertiliser, other chemicals, and animal waste as it runs across the land, and ends up in the closest stream, river or lake.

Tree roots:

- help absorb nutrient pollution before it reaches water sources
- hold soil in place, reducing erosion and helping to keep that sediment from ending up in waterways.

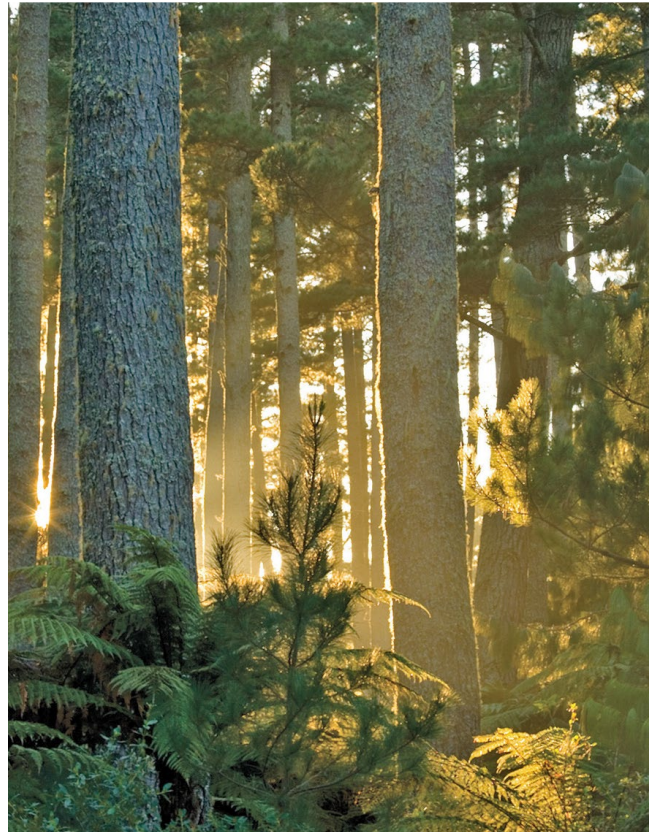
Improving biodiversity

Forests extend the habitat available for native plants and animals. They are home to many different species, including over 100 threatened species.

Riparian planting (planting around waterways) also provides new habitats, like tree roots and undercut banks, for fish and other aquatic creatures. This helps support more species.

The added value of ecosystem services

Many of the ecosystem services that forests provide don't have a market value. This means benefits like avoided erosion or better water quality are less understood or appreciated compared with timber values.



Want more information?

Read the Summary report – [Planting eroding hill country in the Hawke's Bay region](#) (p38)

See p63 in the Technical report – [Planting eroding hill country in the Hawke's Bay Region: Right tree, right place, right purpose](#)

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One Billion Trees: www.mpi.govt.nz/1BT

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