Woody wetlands

New Zealand's precious wetland forests

From woody to weedy

When people first arrived in New Zealand, about 9% of the landscape was covered with some form of wetland—mostly swamp or peatland forest and scrub. As the land was developed for crops and farmland, the forest was burned or felled and 90% of native wetlands were drained. Many that remained were minus trees but have since been invaded by pest plants such as crack and grey willow. Despite the loss, there are still three distinctive types of wetland forests: **swamp** forests, **peatland** forests and **intertidal** forests.

Wildlife

Healthy swamp forests are home to secretive birds such as the Australasian bittern, marsh crake, spotless crake and banded rail, and may support short- and long-finned eels, and various species of kōkopu and mudfish.

Kahikatea and rimu trees dwarf visitors to Waihora Lagoon in Pureora Forest Park, west of Lake Taupo. *Photo: Karen Denyer.*

Australasian bittern. *Photo: Peter Langlands.*

Giant kōkopu. *Photo: Nadine Bott.*

Swamp forests—wetland giants

Kahikatea is the dominant swamp forest species and our tallest native tree. It grows to monstrous heights of 60 m or more, with trunks measuring up to 2 m across.

In fertile, seasonally flooded areas, kahikatea trees grow densely on matted roots and silt, along with swamp maire, pukatea, cabbage trees, pōkākā, and occasionally rimu.

Kahikatea seedlings won't establish in the deep shadow of their parent's canopy. Dead plant matter and silt slowly builds up under kahikatea forest, allowing shade-loving dryland trees like tawa and tītoki to flourish. But every so often, powerful floods flatten the drying forest, creating a well-lit, damp nursery for young kahikatea, and re-setting the course to swamp forest.

Today only 2% of kahikatea forest is thought to remain. Stopbanks control floods and restrict the natural cycle of wetland and dryland forest. Many of the remaining mature stands have been drained, leaving the earth so shrivelled around their bases you can see right under their roots from one side to the other.

Some facts about kahikatea

- Also called white pine, *Dacrycarpus dacryidioides*, kahikatea are found only in New Zealand.
- Both male and female trees exist, and seeds are distributed by birds.
- Dating back to the Jurassic Period, they are able to live for 500 years or more.
- Kahikatea is the only native conifer that doesn't produce resin (which made it ideal for butter boxes, a trait that hastened its demise).

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Peatland forests–cool characters

Peatland forests occur in the cool uplands on the central volcanic plateau, the rain-drenched lowlands of the South Island's west coast, and on blustery Stewart Island. They grow in poorly drained areas where high rainfall and low temperatures hinder the activity of microbes, allowing thick beds of undecomposed plant matter (peat) to build up.

Cabbage trees and swamp maire sometimes form forests of their own, but are more often found in kahikatea swamp forest. *Photo: Karen Denyer.*

The most common peatland forest tree is silver pine (manoao, *Manoao colensoi*). Found throughout New Zealand, it typically grows in cooler areas on poorly drained, leached soils, forming forest stands in the western South Island pākihi. In the sodden infertile soil and cool climate, silver pine may reach just 15–20 m.

Silver pine is often joined by other conifers, such as yellow silver pine (*Lepidothamnus intermediuis*), mountain celery pine (*Phyllocladus alpinus*), and the shrubby pink pine (*Halocarpus biformis*), sporting an understory dominated by shrubby rōhutu (*Neomyrtus pedunculata*) and bush lily (*Astelia fragrans*).

The tiny brown creeper (pīpipi) forages for insects amongst the canopy, along with other small insect-eaters, including yellow-breasted tit, grey warbler, fantail and silvereye.

Silver pine grows slowly, forming dense timber once highly sought after by European settlers for fence posts, poles and railway sleepers. As with kahikatea swamp forest, silver pine is likely to be replaced by rimu and broadleaf forest species as the soil builds up and dries out.

Some facts about silver pine

- It's the only representative of its genus with no related species.
- It has very different juvenile and adult leaves.
- It can grow as shoots from the roots of old trees.

Intertidal forests–northern coast guards

The mangrove (mānawa, *Avicennia marina* subsp. *australasica*) is New Zealand's only tree able to live in the sea. Flooded twice daily with salty or brackish water, they are then left standing high and dry as the tide recedes. Mangroves form dense intertidal forests in sheltered harbours in the sub-tropical north of New Zealand's North Island. Since they are sensitive to frost, they reach only as far south as Ohiwa Harbour in the Bay of Plenty on the east coast, and Aotea and Kawhia Harbours on the west coast.

In the soft muddy or sandy bottoms of estuaries, their trunks and peg roots form ideal surfaces for algae, barnacles, oysters, sponges, and bryozoans to settle on. Mud crabs and snails feed on decaying mangrove leaves, releasing nutrients for other bottom feeders. Mullet, flounder, and young kahawai swim among the tangle of trunks, branches and roots at high tide, while rare banded rail and marsh crakes feed under the dense canopy as the tide recedes.

Mangroves are often seen as barriers to recreation, yet they play an important role in our intertidal ecosystems. They also help guard our shoreline from storm surge damage, and trap contaminants washed off our roads and roofs, reducing the amount released into the sea.

Some facts about mangroves

- Their peg-roots allow them to 'breathe' in oxygen-depleted mud.
- Seeds produce buoyant coats and roots before falling from the tree, ready to float off on the tide and settle far away.
- 'Sacrificial' leaves accumulate excess salt and drop off, helping the plant cope with saline water.

Looking after wetland forests

While most of our peatland forests are now in reserves, many swamp forests remain as fragments on private land. Some have protective covenants but all require ongoing weed and animal pest control to help ensure they last for future generations to enjoy.

Visit www.wetlandtrust.org.nz for a directory of wetlands to visit in New Zealand or www.doc.govt.nz/wetlands for further information about wetlands.

Spotless crake. *Photo: P.J. Devlin.*

Mangroves guard our northern coastlines, buffering the land from storm surge and tsunami damage. *Photo: Karen Denyer.*

Published by Publishing Team, Department of Conservation, PO Box 10420, Wellington | April 2011