

No.1



Auckland
Regional Council
TE RAUHITANGA TAIAO

Wonderful Wetlands

Wetlands form a vital link between land and water and are magical and dynamic places. Their special nature lies in the contrasting textures and colours of the plants (e.g. kahikatea, harakeke, purei, oioi, ti), the subtle changes in species across gradients (wet to dry; salty to freshwater) and the fluctuating nature of water levels. Secretive native bird and fish species such as bittern, fernbird, kokopu and eels make their home in wetlands.

Often regarded as places to drain for farmland or urban development, or somewhere to dump rubbish, wetlands have only recently been widely recognised as special places in the New Zealand landscape, taonga or treasures to be handed on for future generations.

Wetlands, as their name suggests, are areas on the margins of the land that are wet. In the Auckland Region, they typically form on the edges of streams and lakes and in estuaries or damp, boggy places where water collects. They support plants and animals specially adapted to living in wet conditions.

"...Shallow open water and soft yielding bog.
Tall kahikatea and tiny carnivorous sundew plants.
Rare birds and strange fish.
Sponges that soak up floods and release water in drought.
Spawning ground for coastal fisheries.
Landscape features unique to New Zealand." *

* Stephenson, G., in "New Zealand's Wetlands – A Management Guide",
R. Buxton. Department of Conservation, 1991.

Going, going....

Wetlands are among the most threatened ecosystems in NZ and have been reduced significantly from their former extent. In the Auckland region the vast majority have been drained or modified for farming and urban development. Nationally, it is estimated that less than 10 percent of the original wetlands now remain.

The low-lying western suburbs in Auckland City were once full of cabbage trees and flax, and formed habitat for weka, banded rail, bittern and pukeko. The swamp astelia (*Astelía grandis*) was once found near Ponsonby Road. On the Auckland isthmus, swamps developed behind beach deposits at the mouths of streams, along streams restricted by lava flows, in ponds in volcanic craters and on the surface of lava flows.

Swamp forests with kahikatea, pukatea, swamp maire, raupo, cabbage trees and harakeke (flax) would have once covered large expanses of the low lying areas of the Kaipara and Franklin districts and also parts of Rodney. These swamp forests would have graded into saltmarshes with oioi and sea rush at the coast.

Freshwater wetlands now comprise less than 0.5% of the region's land cover.

Examples of freshwater wetlands can be found in the Rodney and Kaipara districts and on the Awhitu Peninsula. They also occur in association with dune lakes at Pakiri, South Kaipara and Awhitu. Significant areas of wetlands remain on Great Barrier and Waiheke Islands. The largest coastal freshwater swamp on the mainland of the Auckland Region can be found at Te Henga.

Saltmarsh and mangrove ecosystems are found in the harbours and estuaries throughout the Auckland Region.



Why Are Wetlands So Important?

Globally, wetlands have a vital role in maintaining healthy ecosystems. They improve water quality, control floods, regulate global carbon levels and provide habitat for plants and animals uniquely adapted to living in wet conditions.

- They act as “kidneys” and giant sponges – purifying and slowing the flow of water off the land, controlling flood water and pollutants.
- Water is stored in wetlands during summer drought, thereby maintaining water supplies.
- Wetland plants trap sediment and reduce silt build up in streams, rivers and estuaries.
- Bacteria living in wetlands absorb and break down about 90 percent of nitrogen in farm runoff, thereby greatly reducing water pollution.
- Wetlands act as significant storehouses (sinks) of carbon – it is estimated they may store as much as 40 percent of global terrestrial carbon.
- Destruction of wetlands (drainage) is a significant threat to biodiversity and contributes to global warming – wetland drainage releases carbon dioxide, a greenhouse gas.
- Wetlands support a high number of New Zealand’s threatened plants and animals – some of these species live only in wetlands. Wetlands provide a major habitat for at least eight species of native freshwater fish as well as invertebrates, frogs and birds. They are the main habitat for about 20% of New Zealand’s native bird species.
- In the Auckland region, there are 51 regionally and nationally threatened wetland plant species. Close to 30 percent of the threatened plants in the region live in wetlands, e.g. swamp maire, purei and toetoe upoko tangata (giant umbrella sedge).
- Many of New Zealand’s wetland plants and animals are found nowhere else in the world.

Wetland Types in the Auckland Region

No two wetlands are exactly alike. The mix of plants and animals living in a wetland will vary with local conditions (e.g. climate, water flow, salinity, nutrient levels and substrate). Several different types of plant/animal communities will be present in larger wetlands and all wetlands will change over time as environmental conditions change.

Wetland types found in the Auckland Region include the following:

Swamp forests – (dominated by forest species such as kahikatea, swamp maire, pukatea, cabbage tree). Remnants of these former swamp forests can still be found in places around the region such as the kahikatea forest at Omaha. The swamp maire or maire tawake is now an uncommon species in the Auckland Region, it grows in association with species such as kiekie, rushes and sedges. Swamp forests with kahikatea, maire tawake, cabbage trees and flax were probably the most common wetland type prior to human land clearance. Examples of this wetland type can be found at the Omaha kahikatea forest, and in patches of swamp maire forest on the North Shore and in the Rodney, Waitakere and Awhitu districts.

Raupo swamps – are found in many gully and stream systems in the Auckland Region and around the edges of lakes and ponds. Fernbird, bittern and spotless crane often make their home in these wetlands. Numerous examples can be found in the Rodney Ecological District and on Waiheke Island.

Sedgeland and Rushlands – these wetlands are usually dominated by a mix of rushes and sedges such as *Carex*, *Juncus*, giant umbrella sedge, *Baumea*, *Eleocharis* and *Isolepis*. Wetlands dominated by exotic *Juncus* species have usually been damaged by grazing and farming activities. Regionally threatened wetland herbs such as *Epilobium pallidiflorum* can sometimes be found in these wetland systems. Numerous examples of these wetlands can be found in gullies throughout the region and on offshore islands such as Great Barrier and Waiheke.

Flax/cabbage tree swamps – flax (harakeke) often grows in association with scattered cabbage trees in lowland swamps, and these species often occur with raupo, rushes and sedges, e.g. parts of Te Henga wetland. Most of the flax swamps that once covered large stretches of low lying land in the region, such as in the Kaipara district, have now gone. Remaining examples include the Te Henga wetland, which contains areas of cabbage trees and flax (plus many other vegetation types).

Manuka shrubland bogs – manuka often grows in association with swamps and alongside species such as cabbage trees, karamu, putaputaweta, tangle fern, *Sphagnum* moss, sundews, rushes and sedges. These can still be found in small areas in the Rodney district.

Dune lakes and associated wetland vegetation – often with edges fringed by raupo, *Baumea articulata* and *Eleocharis sphacelata*. Examples include the Pakiri dune lakes; Lake Ototoa; Lake Pokorua and Lake Kuwakatai. Complexes of freshwater and saline wetlands can also be found in association with the dune systems of Kaipara South Head and at Whatipu.

Saline (saltwater) wetlands in the Auckland Region include:

Mangrove swamps – these are characteristic of the harbours of the Auckland Region.

Saltmarsh – dominated by sea rush, oioi and saltmarsh ribbon wood.

Sea meadows – with glasswort, remuremu, bachelor's button and maakoako. Examples of these can be seen at Awhitu Regional Park.





Guidelines for Wetland Protection and Restoration

The conservation and restoration of wetland ecosystems can make a real and positive difference for wetland species. Many landowners and local community groups are caring for wetlands in their local areas and there are exciting projects being undertaken in many parts of the country.

Many land practices have negative effects on the biodiversity of wetland ecosystems. Drainage or modification of a wetland and clearance of native vegetation in and around a wetland will affect its biological and hydrological values. Practices which change the natural functioning of streams and wetlands include channelling or diverting of streams, piping waterways, removing stream side or wetland edge (riparian) vegetation, constructing weirs to dam water and creating artificial drains to control the water table.

To protect or enhance a wetland area, consider the following:

- Controlling weeds and animal pests (e.g. willows, possums, rats, stoats, ferrets and feral cats).
- Fencing the wetland from stock to prevent trampling and browsing of vegetation and pugging of the ground. Fencing wet areas will encourage plants to regenerate from natural seed sources, but you may need to control some invasive weeds.
- Restoring the edges of wetlands by planting suitable native species, which are sourced from the local area.
- Restoring natural water flows and hydrology to the wetland. Note that damming streams to create open ponds is not encouraged as a method of restoring wetlands and will require a Resource Consent, which may not be easy to obtain. Seek advice from the ARC.
- Protecting the wetland legally by way of a conservation covenant or QEII Trust covenant.

Often all that is needed to give a wet area a kick-start is to fence it, control weeds and see what happens. You could be surprised how quickly wetland plants will recover once grazing pressure is removed.

Refer to the Auckland Regional Council's Wetland Planting and Restoration Guide for more information.

Useful Wetland References

Auckland Regional Council, 2001. **Riparian Zone Management Guidelines**, Technical Publication 148.
Buxton, R., 1991. **New Zealand Wetlands: A Management Guide**. Department of Conservation.
Cranwell, L., 1981. **The Botany of Auckland**. Auckland Institute and War Memorial Museum.
Environment Waikato, 1999. **Wetland Restoration**. Environment Waikato Wetland Factsheet No. 1.
Environment Waikato, 1999. **Wetland Wildlife**. Environment Waikato Wetland Factsheet No. 2.
Environment Waikato, 1999. **Wetland Planting Guide**. Environment Waikato Wetland Factsheet No. 3.
Johnson, P. & Brooke, P., 1998 (reprint). **Wetland Plants in New Zealand**. Wellington, DSIR Publishing.
Neumann, R., 1998. **Native Plants for Stormwater Ponds and Wetland Restoration. A General Guide to the Use and Requirements of Indigenous Wetland Plants in Auckland**. Forest & Bird Protection Society Brochure.
Stephenson, G., 1986. **Wetlands: Discovering New Zealand's Shy Places**. Government Printing Office.
Specialist native plant nurseries provide useful brochures - contact the ARC or your local council for contact details.

Other Auckland Regional Council Wetland Factsheets:

- Wetland Restoration and Planting Guide
- Wetlands - Vital and at Risk

Useful Wetland and Other Related Websites

National Wetland Trust - www.wetlandtrust.org.nz

Landcare Research - www.landcareresearch.co.nz

Ducks Unlimited - www.ducks.org.nz

Department of Conservation - www.doc.govt.nz

Fish and Game - www.fishandgame.org.nz

Wetlands of International Significance (Ramsar Convention) - www.ramsar.org

Environment Waikato - www.ew.govt.nz/ourenvironment/water/wetlands/index.htm

NZ Freshwater Fish Society - www.nzfreshwater.org.nz

NIWA - www.niwa.cri.nz

Waitakere City - www.waitakere.govt.nz

Wai Care - www.waicare.org.nz

NZ Ecological Restoration Network - www.bush.org.nz

Open Polytechnic New Zealand Wetlands Course - www.openpolytechnic.co.nz

QE II National Trust - www.nationaltrust.org.nz



Need More Information?

The Auckland Regional Council (ARC) can provide further information on wetland restoration, plant and animal pests, consent requirements and funding opportunities.

You can contact the ARC via Enviroline on (09) 366 2000 or visit www.arc.govt.nz

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FOR WAYS TO HELP THE ENVIRONMENT, JOIN THE BIG CLEAN UP, www.arc.govt.nz OR PHONE 0800 JOIN IN (56 46 46)