

3. WHEN HANDS HEAR THE LANDSCAPE SPEAK RECONCILING TE REO O TE REPO AND LANDSCAPE DESIGN

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(TE ATIHAUNUI A PĀPĀRANGI, NGĀTI APA,
NGĀTI RANGI), KATRINA CHRISTISON (TIDY GARDENS)
ILLUSTRATIONS BY MONICA PETERS

Ngā mihi

Introduction

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Inā kei te mōhio koe ko wai koe, i anga mai i hea, kei te mōhio koe kei te anga atu ki hea

If you know who you are and where you are from, then you will know where you are going

We would like to express our thanks to Monica Peters for her stunning illustrations that help visualise our different wetland systems. We also would like to thank the many people who have inspired us on our landscaping journeys: our whānau, teachers, mentors, colourful clients, design colleagues, and peers. Most important, the plants and spaces we love to work in, be inspired by, and hopefully, continue to 'hear' loudly with our hands.

– Ngā mihi, nā Cheri māua ko Katrina

Previous page: Repo in a pot – designed and implemented by Cheri at the Hamilton Botanical Gardens, Waikato.
Photo: Cheri van Schravendijk-Goodman

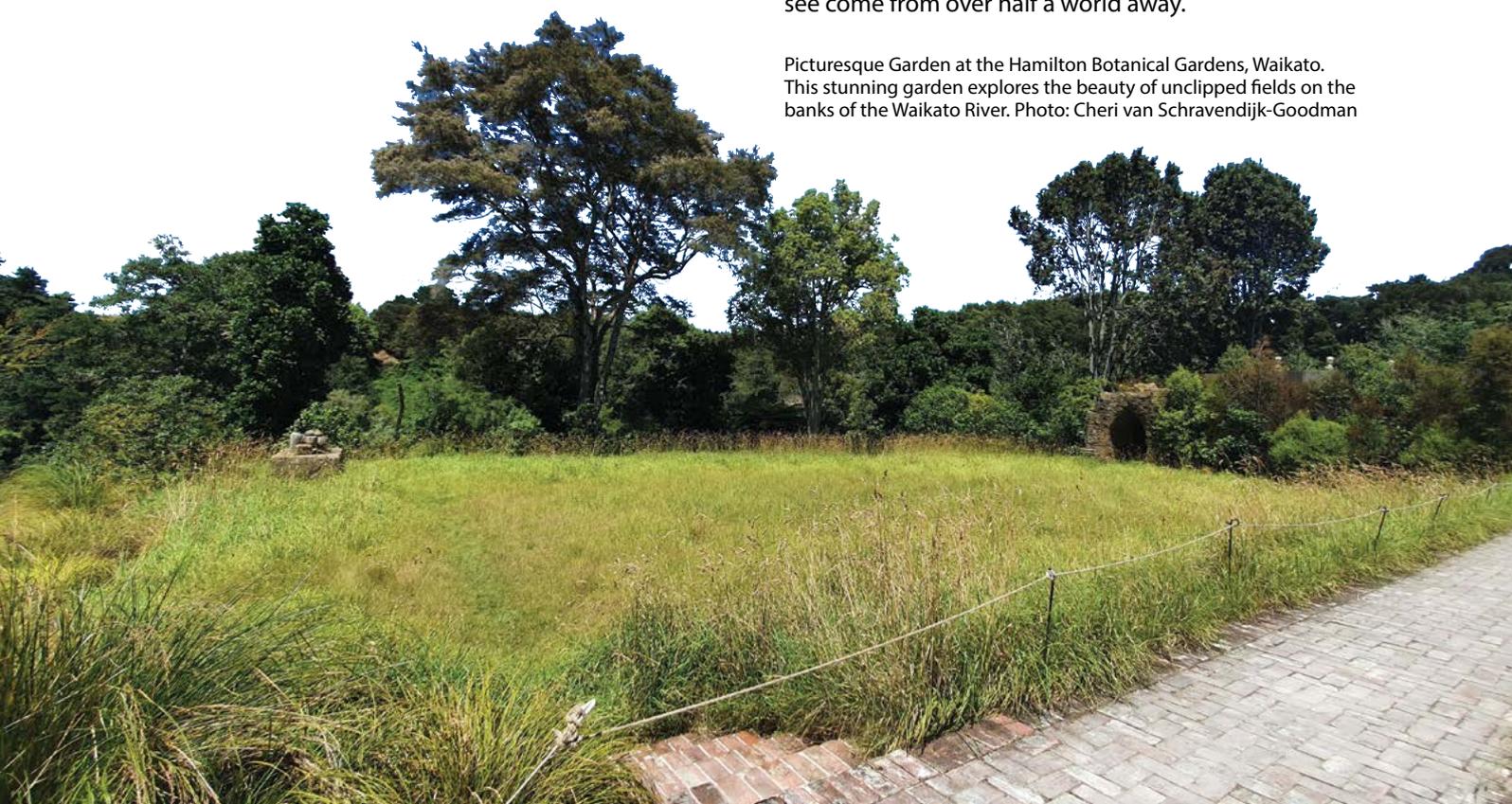
¹ Grimsdale 2018

'How can the indigenous landscape become manifest in the city? ... through the expression of the design that we have cause to question; What has come before? What is lost? Where are we now? What does this mean?'

– Bela Hinemoa Te Ngaro Po Grimsdale (Te Ātiawa, Ngāti Raukawa, Ngāti Toa)¹

Consider taking a walk across our modern-day urban landscapes. Every day we are greeted with straight lines of concrete, steel, glass and timber buildings, marked tar-seal roads, concrete, or gravel-covered pathways. We sit under strategically placed trees in the heat of the summer sun (usually exotic trees like oaks; *Quercus* spp.), or lie on the vast stretches of (usually) carefully manicured lawn in parks, reserves or along river and lake edges. Aotearoa New Zealand wasn't always like this. To try and imagine anything beyond our idea of 'greenspaces' as inspired by and manifest in the urban environment, can be difficult when 'control of nature' is all we know – and when the influences we see come from over half a world away.

Picturesque Garden at the Hamilton Botanical Gardens, Waikato. This stunning garden explores the beauty of unclipped fields on the banks of the Waikato River. Photo: Cheri van Schravendijk-Goodman



Take the idea of a lawn, for example. Lawns didn't exist until after colonisation (post-1840), when European settlers introduced their colonial concepts of clipped, manicured, formal gardens set among 'wild landscapes' created with trees and shrubs to frame the green spaces. 'Grass-covered fields' observed by the first non-Māori botanist arrivals to Aotearoa, were not monocultural grass lawns. Instead, uneven swards of tallish native grasses, with erect, or drooping seedheads, graced our repo (wetlands) and associated habitats. Of special mention are:

- the sweet smelling kāretu (*Hierochloa redolens*) and *Microlaena* spp.
- the clumps of swamp millet (*Isachne globosa*) found in peatlands, swamps, and along waterways
- the diverse and stunning toetoe (*Austroderia* spp.) found across Aotearoa in almost all ecosystems – from high in the mountains, to the edges of repo (swamps), to the dunes
- the versatile tussocks (*Chionochloa* spp.) at higher elevations and latitudes – those masses of coppery-reds or silvery-yellows that grace many postcards from Aotearoa.

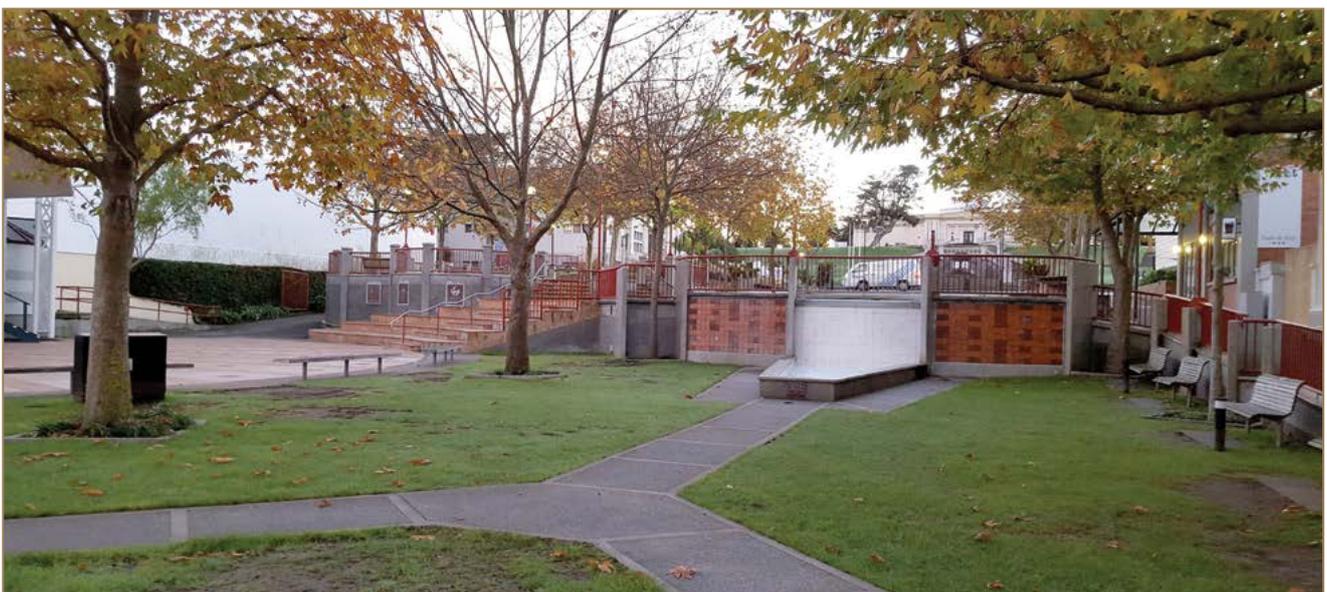
Then there are the sedges – the 'cutty grasses' such as pūrekireki and pūrei (*Carex secta*, *C. virgata*), *C. gaudichaudiana*, and rautahi (*C. geminata*) that we find along the fringes of waterways. Most New Zealanders do not realise how many of these grassy-type plants we have, and the diversity is beautifully overwhelming. However, none of these fit the concept of a lawn, despite representing the pre-colonial landscape that our tūpuna (ancestors) were familiar with. Yet, here we are, with our lovingly maintained patchworks of trimmed green, from the mountains to the sea.

This sounds like a love letter to our native grasses and sedges – and to a degree, it is. The lawn is a good metaphor for highlighting the impacts we have on nature, and the impacts that nature, in turn, has on us, both as landscape designers, and as an appreciative audience. Most of us have only ever known the clipped lawns as we see them today – anything beyond this is difficult to conceive.

Without realising it, in conditioning our environment to behave a certain way, 'clipped-nature' has conditioned us to believe that this is the only way it should be. So, we tolerate the hard edges of tar seal, concrete, steel, and timber, provided we can continue to accommodate the manicured and strategically placed trees and gardens – and lawns – within it. Sadly, in doing so, we erase the historical and identity-rich picture that lies beneath it. So, yes, while we are fond of our native grasses and sedges, it's the story of repo beneath the lawn and concrete that pulls on the heartstrings – and is the reason why we chose to write this story.



Kāretu (*Hierochloa redolens*).
Photo: Cheri van Schravendijk-Goodman



A reserve in central Whanganui City, North Island – this used to be part of a very large swamp and fen wetland well used by tangata whenua. This is also part of the Whanganui River floodplain. Now it is concrete, paved, manicured lawns, and strategically placed exotic trees.
Photo: Cheri van Schravendijk-Goodman

REACTIVATING REPO ON COLONISED LANDSCAPES

We are landscape designers. We play with design to suit the needs and wants of our clients. At the same time, we are trying to bring an energy and movement to a space that is seasonally, architecturally, and culturally diverse enough to generate year-long interest. We do this through colour, plant forms, and their natural movements and placement, including contrasting the softness of plants, against harder landscaping like paving. Wetland plants in this regard provide architecturally interesting variations in height, and texture into gardens (Fig. 1 and Table 1).

As design students, an important skill we learn is landscape. We are invited to test our understanding of the spaces we see, and then to think about the parts we can't understand – the layers that underlie an urban space. Archaeologists and anthropologists know this area of work well because they are trained to carefully

pull the human layers apart and to make sense of them. It is the role of scientists to describe the historic plants, megafauna, microorganisms, rocks, and minerals that make up the layers that we can't see. Comparatively, landscape designers don't always have the benefit of being able to look at the same layers. Instead, we rely on the best available information, while also drawing on our experience, creative training, limitless imaginations, and sometimes, our gut instinct.

Increasingly, part of this kete (toolkit) of important information gathering is in speaking with tangata whenua (Indigenous people of the land) to help shape and inspire designs (refer to Te Aranga Principles to learn more about this key approach for urban design). Discussions like this are informed by hundreds of years of occupation and interactions by Indigenous peoples with those spaces.

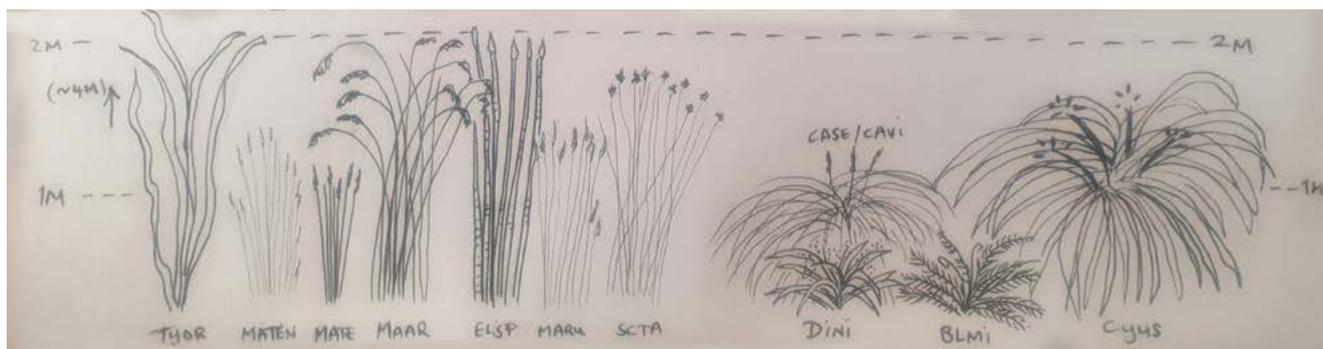


Figure 1. A sketch showing clients the heights and forms of some native wetland rushes and sedges as part of a planting design for a subdevelopment. Illustration: Cheri van Schravendijk-Goodman

Table 1. Plants in figure 1 found in peat, fen, and swamps of the Waikato

| CODE in image | Waikato name | Common name | Latin name |
|---------------|-------------------|---------------------------------|--|
| TYOR | Raupō | Raupō | <i>Typha orientalis</i> |
| MATEN | Wiwī | Sedge | <i>Machaerina tenax</i> |
| MATE | | Sedge | <i>Machaerina teretifolia</i> |
| MAAR | | Jointed twig rush | <i>Machaerina articulata</i> |
| ELSP | Ngāwhā, kuta | Giant spike sedge | <i>Eleocharis sphacelata</i> |
| MARU | Wiwī | Soft twig rush | <i>Machaerina rubiginosa</i> |
| SCTA | | Soft stem bulrush | <i>Schoenoplectus tabermontanii</i> |
| CASE/CAVI | Pūrekireki, pūrei | Sedge | <i>Carex secta</i> , <i>C. virgata</i> |
| DINI | Tūrutu | Swamp dianella, swamp blueberry | <i>Dianella haemata</i> |
| BLMI | Kiokio | Swamp kiokio | <i>Blechnum minus</i> |
| CYUS | Ūpoko-ā-tangata | Giant umbrella sedge | <i>Cyperus ustulatus</i> |

TE ARANGA PRINCIPLES

In 2006, Māori practitioners working within the fields of resource management, architecture, urban planning, and landscape design gathered together to develop a draft National Māori Cultural Landscape Strategy. Seven 'Te Aranga Principles' were developed and named after Te Aranga Marae, Flaxmere, Hastings, where they were formulated.

'The key objective of the Principles is to enhance the protection, reinstatement, development and articulation of Mana Whenua cultural landscapes enabling all of us (Mana Whenua, Mātāwaka, Tauwiwi, and Manuhiri) to connect to and deepen our 'sense of place.'

The principles are outlined and we strongly recommend that landscape designers and other practitioners seek to implement them meaningfully within the urban space.

Rangatiratanga – the right to exercise authority and self-determination within one's own hapū and iwi realm

Kaitiakitanga – managing and conserving the environment as part of a reciprocal relationship, based on the Māori world view that humans are part of the natural world

Manaakitanga – the ethic of holistic hospitality whereby mana whenua have inherited obligations to be the best hosts they can be

Wairuatanga – the immutable spiritual connection between people and their environments

Kotahitanga – unity, cohesion, and collaboration

Whanaungatanga – a relationship through shared experiences and working together which provides people with a sense of belonging

Mātauranga – Māori and mana whenua knowledge and understanding

A large number of important cultural sites identified by hapū (sub-tribes) and iwi (tribes) across the motu (country) were within or adjacent to repo; in particular, key places where many whānau (families) and hapū congregated seasonally. Sadly, these were among the first natural areas that were targeted following colonisation, resulting in the drainage of large tracts of repo to support urban development, farming, and industry; particularly in our larger cities like Auckland, Hamilton, Wellington, and Christchurch. The challenge rests in the level of attention we pay to those landscapes when we are tasked with designing. The next challenge lies in the implementation – is it realistic to bring those landscapes back, or are there other ways we can represent them?



Pātaka at Te Parapara – a garden inspired by the traditional māra kai (food gardens) that were once found around the area where the Hamilton Botanical Gardens are now located. Native plantings surround Te Parapara. Photo: Cheri van Schravendijk-Goodman

'The language of landscape is our native language..... The language of landscape is a habit of mind'

– Anne W Spirn (1998)²

As landscape designers, exploring the return of landscapes can generate some of the most exciting opportunities for re-surfacing the narratives, and physical nature of these spaces. One way to do this is through the recreation of wetlands for stormwater management, like the St Kilda subdivision in Cambridge, Waikato. There is a catch – **we must always do our homework**. Not all wetlands are created equal, and not all plants used in these recreations – particularly in stormwater wetland design – are necessarily the right choice for that space. If we are to commit to allowing a landscape to sing, talk, and dance with us, we must do our homework on what the 'choir' used to sound like, and the form of the 'dancers' that once shimmied across the surface. We provide some examples of this diversity and we recommend that our colleagues use the illustrations and Te Aranga Principles as inspiration.

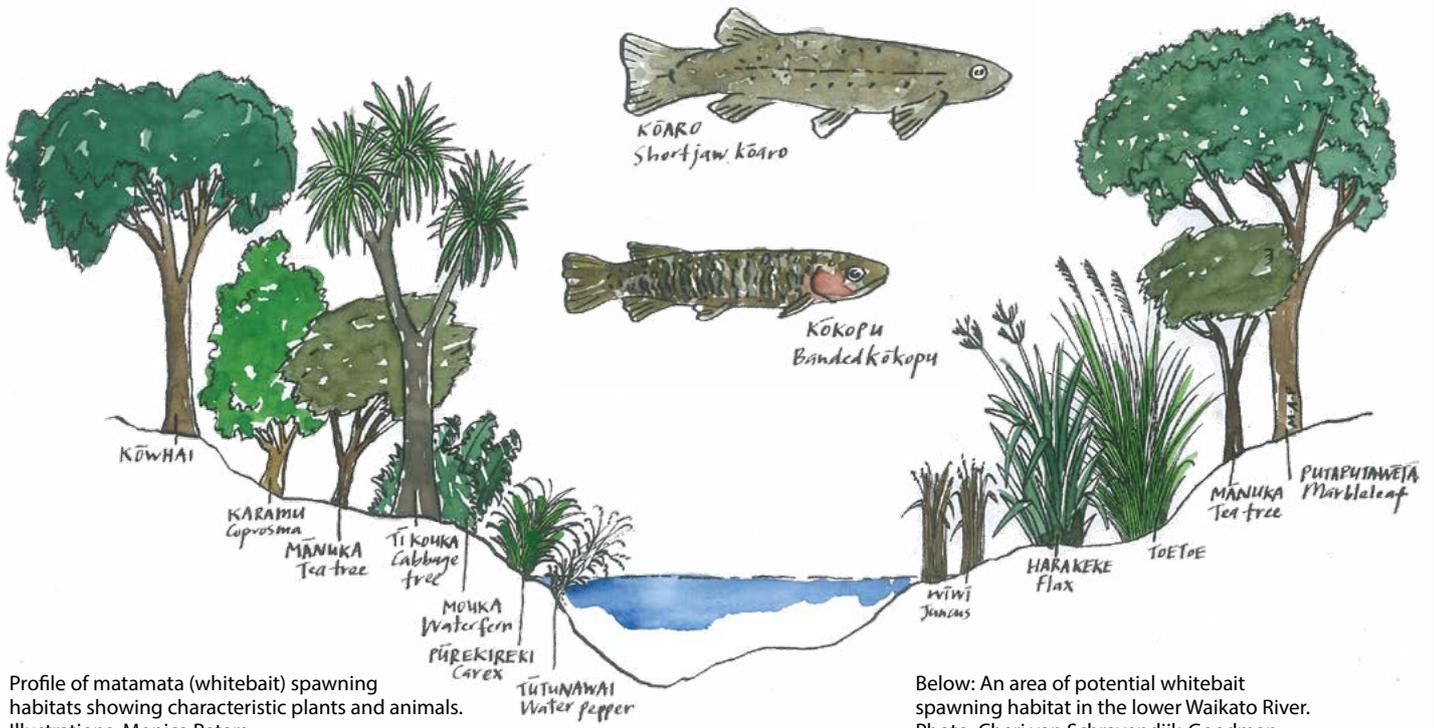
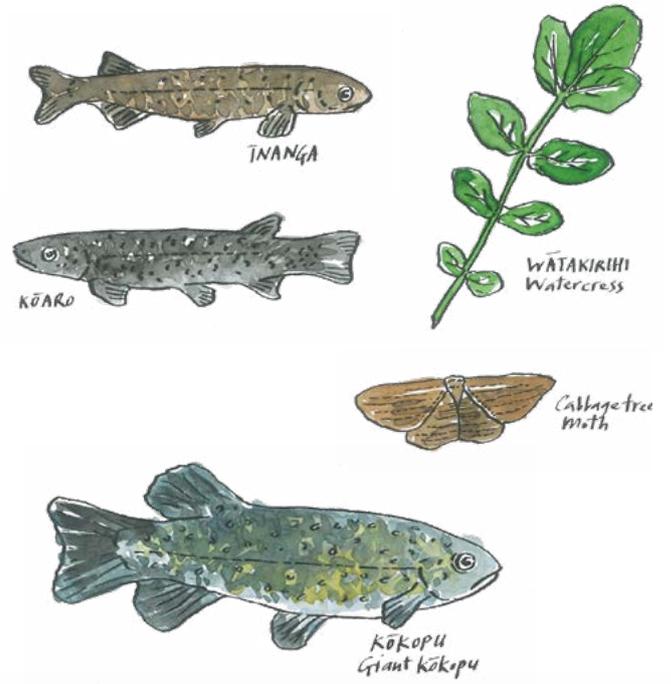
² Menzies 2017

WEAVING MĀTAURANGA AND DESIGN

MATAMATA SPAWNING HABITAT

Matamata spawning habitat illustration is unique to Te Puuaha o Waikato (Port Waikato), and provides an example of how working with tangata whenua, and acknowledging and respecting their local knowledge can enhance planting plans; both from a restoration and landscape design perspective. Here, mātauranga highlights interconnections across the plant life. As all good designers know, a garden is about getting the right balance in layering and texture. When we pay attention to the narratives of the local people, we open ourselves to beautiful insights about how those layers can be aesthetically pleasing, as well as ecologically practical. In this example, incorporating these plants into urban tributaries can enhance important spawning habitat for matamata (īnanga, inaka; *Galaxias masculatus*), and adding wātakirihi (watercress; *Nasturtium* spp.) supports cultural practices.

Check: Chapter 5.5: Matamata – eating with our tūpuna



Profile of matamata (whitebait) spawning habitats showing characteristic plants and animals. Illustrations: Monica Peters

Below: An area of potential whitebait spawning habitat in the lower Waikato River. Photo: Cheri van Schravendijk-Goodman



OUR WETLAND LANDSCAPES

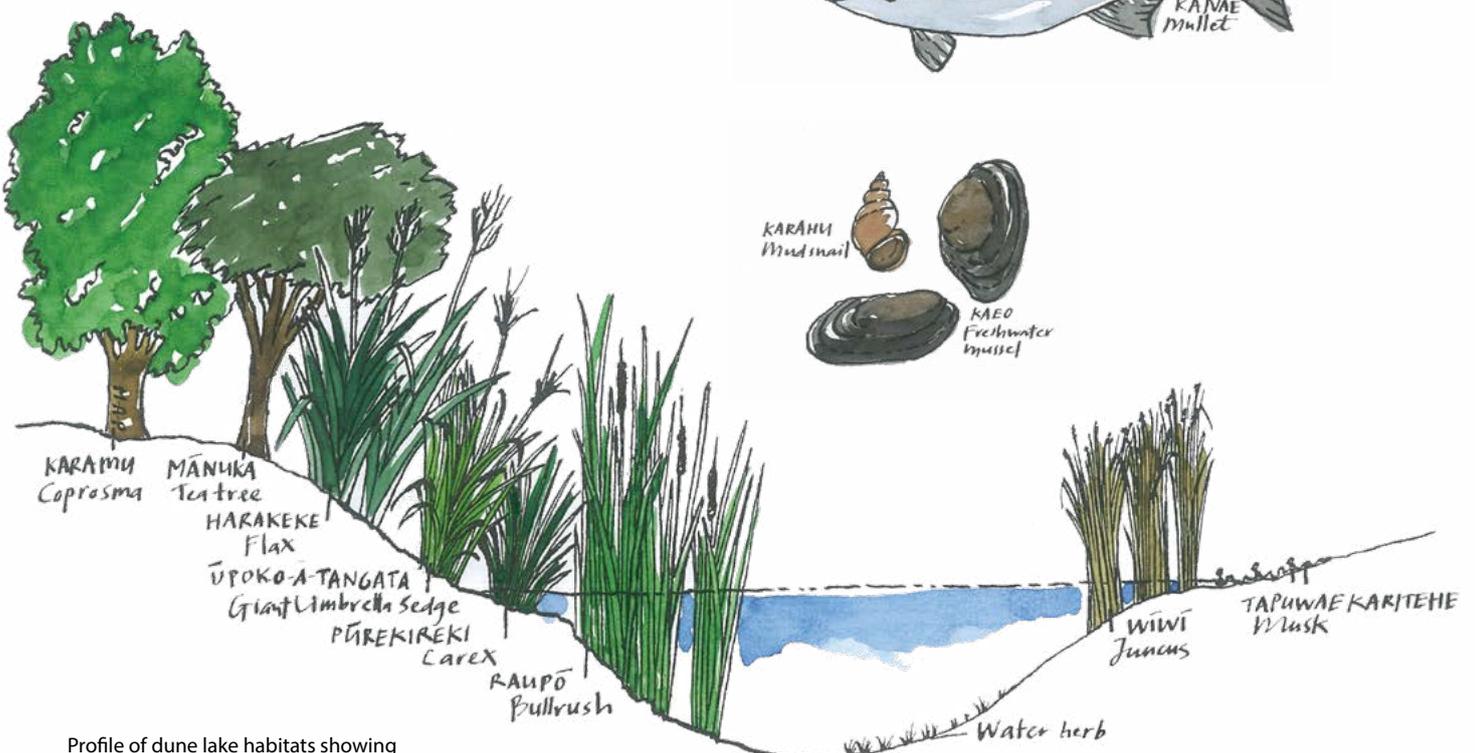
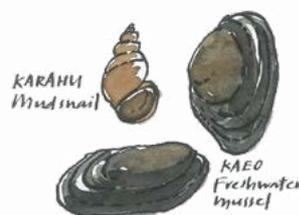
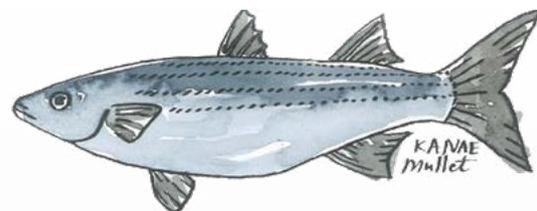
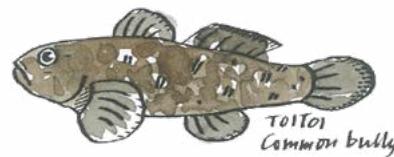
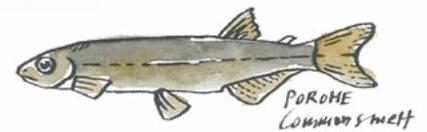
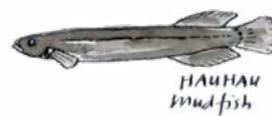
Illustrations by Monica Peters

DUNE LAKES

Dune lakes are found mainly along the west coast of the North Island and, in particular, they dominate the Northland region. They are among the rarest lake-wetland systems in the world. As with other wetland types, they are at high risk of ecosystem failure due to human-induced impacts from surrounding land uses like farming and urban encroachment.

Key considerations for landscape designers:

- The cultural history and relationship with dune lake systems: these narratives should form part of the final design story.
- Unique species that are not necessarily found in wetlands anywhere else: for example, tapuwae karitehe (NZ musk, *Mazus* spp.) should be prioritised in planting designs to support more visual awareness of their place in that landscape. Note, that specialist nurseries may need to be engaged for propagation.
- Habitat for special fauna that utilise dune lakes: landscape designers should think about how their project can provide a stepping stone habitat for birds and insects, and also a connector-habitat to existing dune lake systems for fish, and amphibians.



Profile of dune lake habitats showing characteristic plants and animals. Illustrations: Monica Peters

ESTUARIES

Estuaries are impressive systems where freshwater and marine merge, resulting in unique interactions between some distinctive flora and fauna. Yet they can often be the most underappreciated and overlooked systems, particularly where they are adjacent to urban environments. Estuaries were historically often targeted for industry, with resultant damage generated through heavy metal pollution, and tributary channelisation for faster water movement.

Key considerations for landscape designers:

- Estuaries are systems to accentuate 'vistas', because many of the plants are short. This allows you to play with levels at the ground plane to frame and enhance 'big sky' views.
- From a landscape design point-of-view, vast expanses of harakeke, rushes, and sedges can be used to tell estuarine stories in a simple and beautiful way. The restiad, oioi (*Apodasmia similis*), which commonly grows in estuaries, is rapidly growing in popularity for design.
- Interesting plants like ureure (*Salicornia quinqueflora*) and pānakenake (*Lobelia angulata*) can create stunning groundcover mosaics. With careful planning, these plants could also be incorporated into planting designs within a town centre.



Landscaped estuarine habitat along the beach in Wellington City. In the background is the Waitangi Park Wetland landscape project where hundreds of salt marsh rushes were reintroduced into this urban centre. Photo: Cheri van Schravendijk-Goodman



A salt marsh with ureure and oioi at Paihia, Bay of Islands. Photo: Cheri van Schravendijk-Goodman



Profile of estuary habitats showing characteristic plants and animals. Illustrations: Monica Peters

GUMLANDS

Gumlands are often referred to as heathlands in Aotearoa because they are similar in appearance to those in Europe. Few realise they are actually a wetland type – as evidenced by the influence of seasonal saturation on their ecology – and usually associated with ancient kauri (*Agathis australis*) forests and fossilised gum deposits.

Considered critically endangered systems, greatly reduced due to kauri gum extraction and conversion to farmland, gumlands are unique as they occupy very infertile soils, and are characterised by low growing heath shrubs, sedges, and ferns. Some of the more interesting and unique plants found on gumlands are the waewae kahu (tangle fern; *Gleichenia dicarpa*), fountain sedge (*Lepidosperma neozelandicum*), and gumland grass tree (*Dracophyllum lessonianum*).

Key considerations for landscape designers:

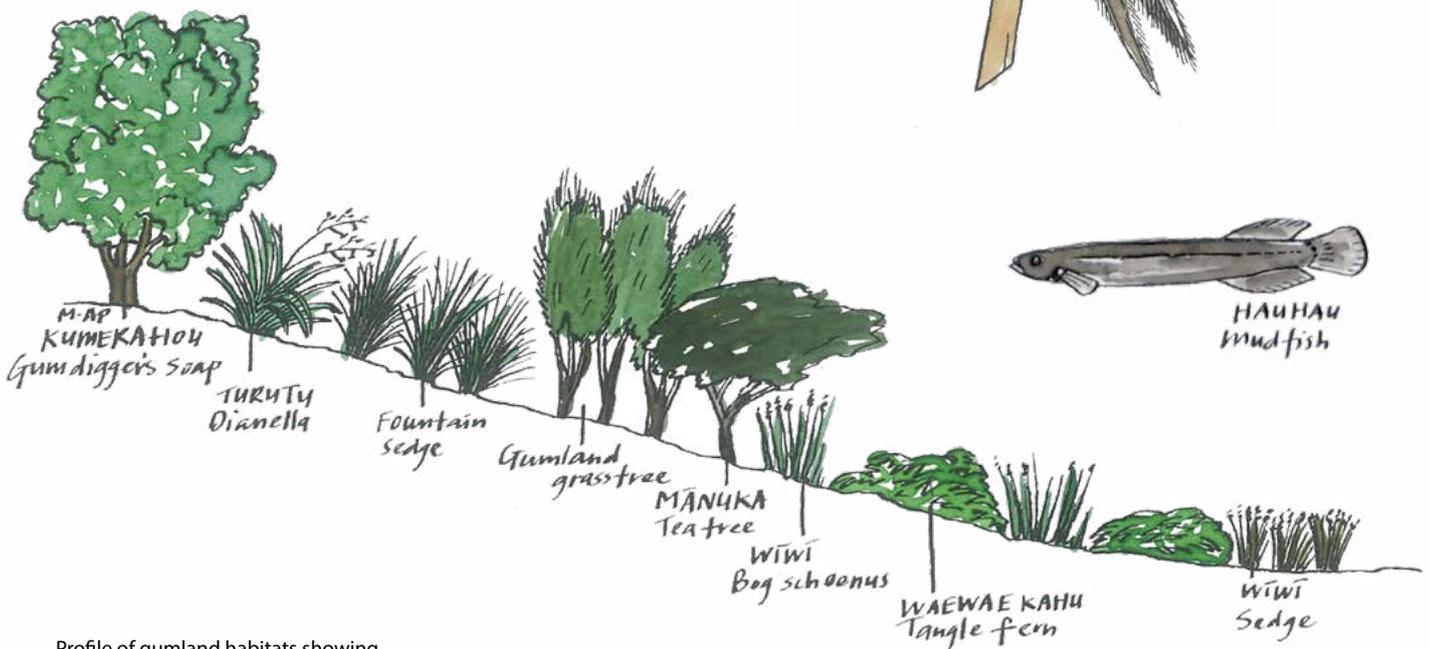
- Gumlands are key habitats for over 160 species of native moths and butterflies (Lepidoptera). This presents opportunities to investigate the potential to couple gumland representation in urban centres with Lepidoptera restoration/conservation as part of the broader design narrative.
- Don't try to recreate gumlands where they did not exist naturally. However, there are plants within these systems that can easily be translated into gardens, like the stunning kūmarahou (*Pomaderris kumeraho*). Turutu (swamp dianella; *Dianella haemastica*) is also a neat addition to gardens, and provided there are nurseries prepared to propagate them (and you have the clients prepared to wait), then the waewae kahu, fountain sedge, and grass tree should also be considered.



Waewae kahu, tangle fern. Photo: © Neil Fitzgerald



MĀTĀTĀ
Fernbird



Profile of gumland habitats showing characteristic plants and animals. Illustrations: Monica Peters

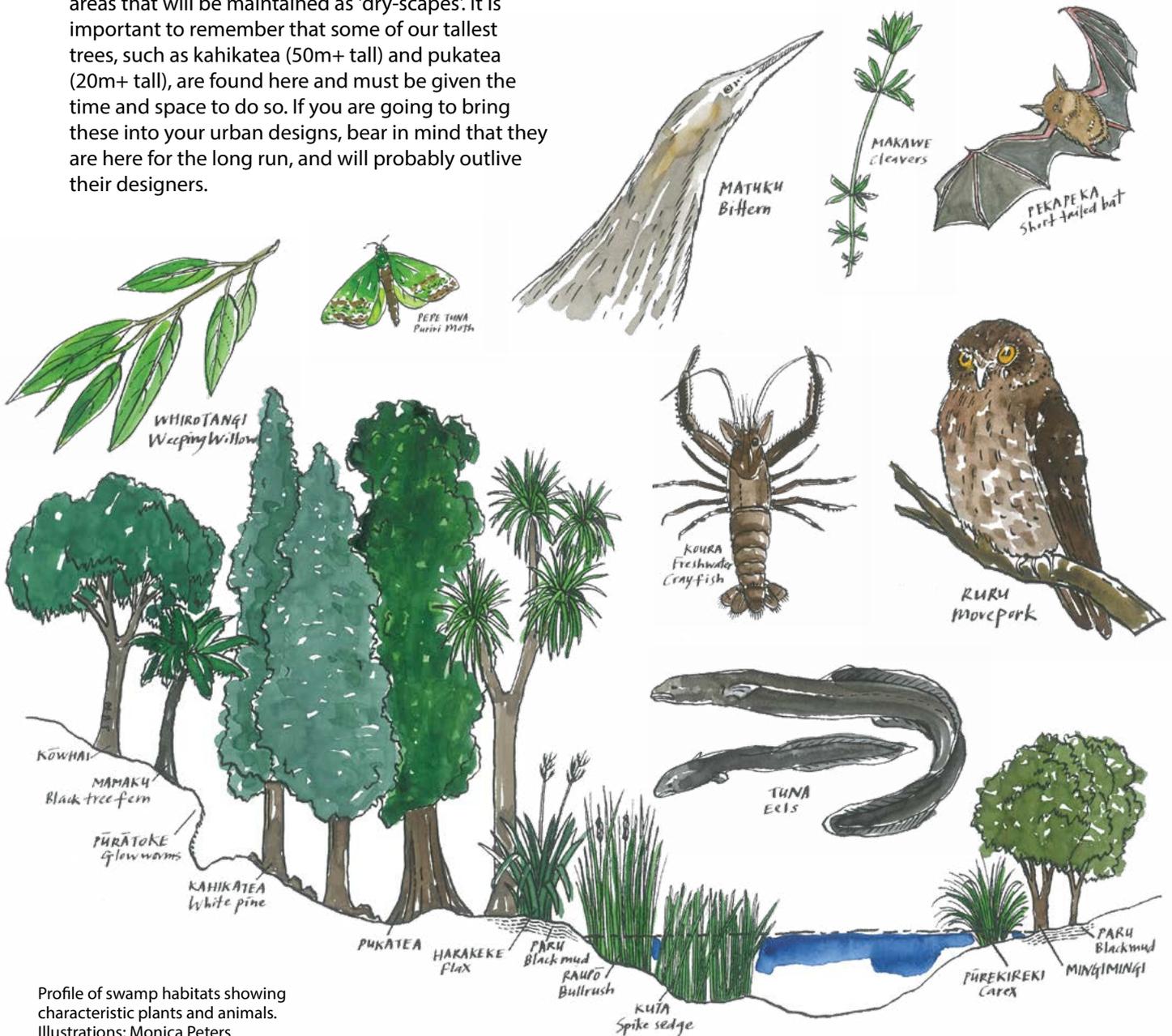
SWAMPS

Swamps are most easily recognised by the average New Zealander. They are found across the motu, and have suffered some of the highest levels of conversion and decline. The exceptional features of swamps are the stands of kahikatea (*Dacrycarpus dacrydioides*), pukatea (*Laurelia novae-zelandiae*) or maire tawake (swamp maire; *Syzygium maire*) forests that border them. These majestic stands are located within the most diverse and fertile repo and were also the trees most utilised by our tūpuna.

Key considerations for landscape designers:

- Bear in mind that a swamp feature will be a habitat, not just for aesthetics. Do your homework about the fauna, so that you can design appropriately to support them; and to get client (and community) support for the design intent.
- Swamps are wet systems – they are not suitable for areas that will be maintained as 'dry-scapes'. It is important to remember that some of our tallest trees, such as kahikatea (50m+ tall) and pukatea (20m+ tall), are found here and must be given the time and space to do so. If you are going to bring these into your urban designs, bear in mind that they are here for the long run, and will probably outlive their designers.

- Some swamps have hidden gems like native climbers, e.g. kiekie (*Freycinetia banksia*) or native jasmine (*Parsonsia heterophylla*). The ground can also offer surprises, like ferns, e.g. maidenhair (*Adiantum* spp), and pukupuku (*Doodia media*). Herbs like native watercress (*Rorippa* spp.) and nāhui (*Alternanthera nahui*) can make stunning additions around ponds or water features.
- Work closely with tangata whenua to explore their relationships with swamps both pre- and post-colonisation. You might be surprised by the cultural value given to some exotic plants as well, which will not necessarily impede wetland restoration, and also form an important part of a broader landscape narrative. Note that two such plants feature in the illustration, based on dialogue from Te Puuaha – whirotangi (weeping willow, *Salix babylonica*) and makawe (cleavers, *Galium aparine*).



Profile of swamp habitats showing characteristic plants and animals. Illustrations: Monica Peters

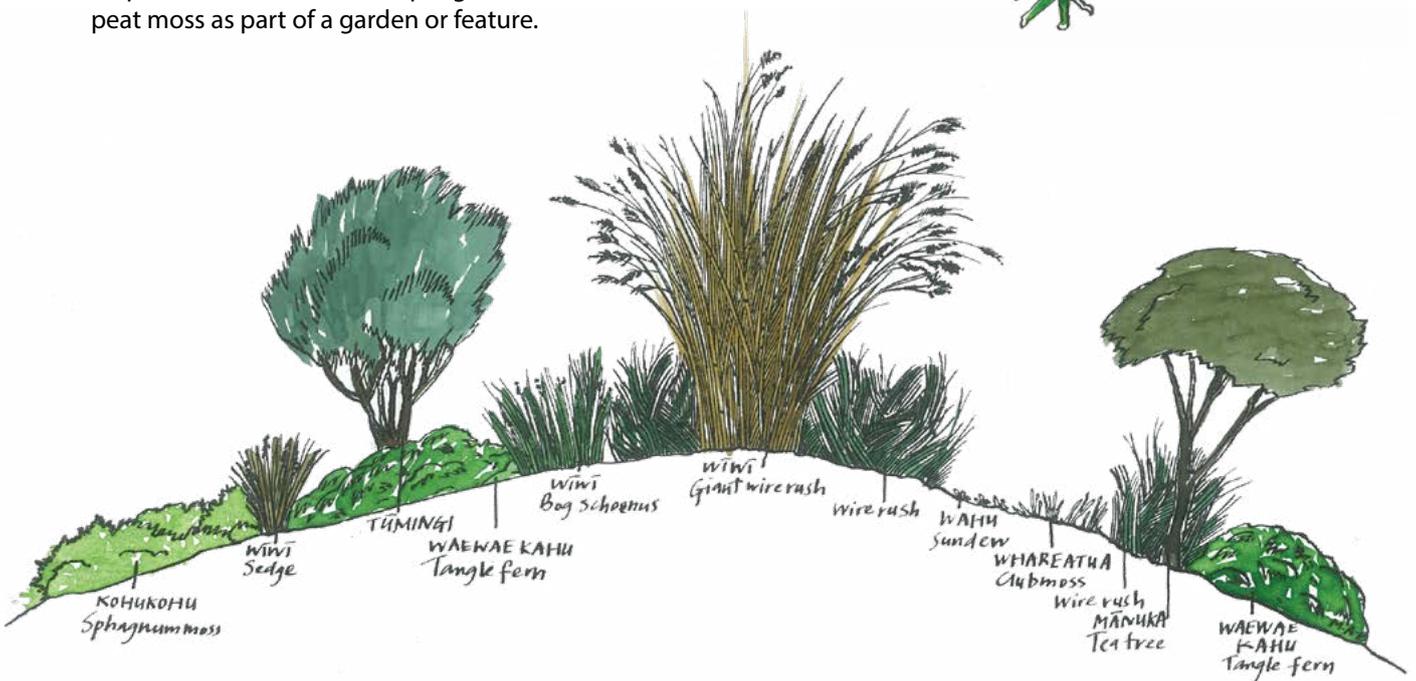
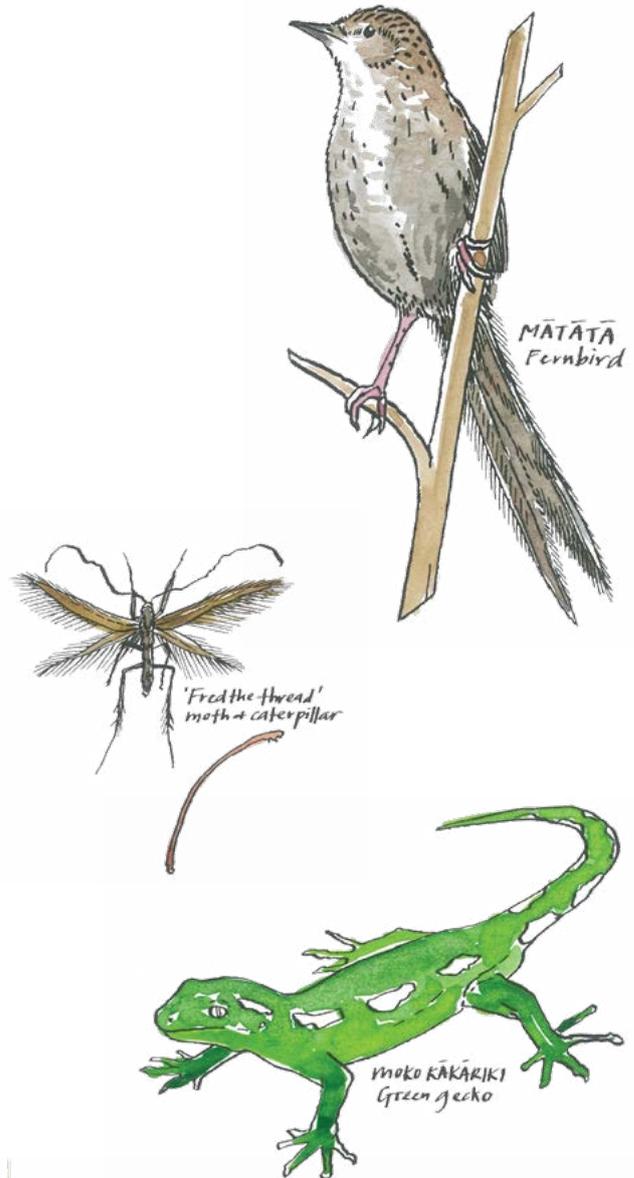
PEAT BOGS

When it comes to recreating wetland habitats, peat bogs are potentially more challenging. These systems are highly infertile and acidic, and are not 'wet-looking' like swamps. From a climate change point-of-view, though, they are one of the most important carbon storage systems as they slowly decompose plant material into peat, which, in turn, acts like a giant underground water sponge.

As peat accumulates over thousands of years, it forms dome-like structures or raised bogs on the landscape, which become home to what are now some of our rarest endemic plants, birds, reptiles, and invertebrates.

Key considerations for landscape designers:

- If there is peat in the soil layers you are working in, you have an opportunity to be brave and include some of our peat plants – especially the rushes and sedges.
- Recreating a peatland is not easy in places highly modified. In most cases, it will require serious soil amelioration. In these circumstances, consider how your design can pay homage to the past; particularly in the hard landscaping, coupled with communication boards, or artistic installations.
- If you can't recreate a peatland-type garden, but you are located near existing remnants, consider how you can support their sustainability with your installation. Supporting repo is as simple as preventing further damage to those sites through the practices required to install your design – i.e. ensure sediment doesn't get into feeder tributaries; or avoid designs that will put exploitative pressure on peatland resources – i.e. sphagnum moss or peat moss as part of a garden or feature.



Profile of peat bog habitats showing characteristic plants and animals. Illustrations: Monica Peters

WE COME BACK FULL CIRCLE TO LAWNS

At the beginning of this chapter, we began with the clipped lawn and the influence of Europe on our obsession with 'controlling the wild'. In an interesting turn of events there is now a growing movement in Europe to move away from the classic strip mowing, to 'wilder lawns' with native grasses and flowers to increase wildlife habitat. In Aotearoa, a similar movement is growing, and some of our wetland plants have been identified as suitable species for 'no mow lawns'. We have outlined them in table2.



Table 2. Wetland groundcovers suitable for 'no mow' lawns

| Māori or common name | Botanical name | Foot traffic tolerance | Growing conditions | Wetland type |
|----------------------|------------------------------|------------------------|--|-----------------------------------|
| Little hard fern | <i>Blechnum penna-marina</i> | Light | Sun or semi-shade | Alpine bogs and fens |
| Pānakenake | <i>Lobelia angulata</i> | Light | Sun or semi-shade, moist | Swamps |
| Piripiri | <i>Acaena inermis</i> | Light to moderate | Sun, semi-shade, moist | Ephemeral wetlands – turf plant |
| Remuremu | <i>Selliera radicans</i> | Moderate to heavy | Sun or light shade, moist | Estuaries – turf plant |
| Shore cotula | <i>Leptinella dioica</i> | Moderate | Damp, well-drained soil in sun or semi-shade | Coastal wetlands and salt marshes |
| Tapuwae karitehe | <i>Mazus radicans</i> | Light, occasional | Sunny, moist | Dune lakes |

St Kilda subdivision, Cambridge, Waikato. Photo: Cheri van Schravendijk-Goodman



FINAL THOUGHTS

Always do your homework – making assumptions based only on what we see, limits creativity when we overlook what was, and what could be. Agencies like Te Papa Atawhai (Department of Conservation) and regional councils can provide information about historic wetland coverage. Information about soils, hydrology, and historic vegetation is also available to inform planting lists to suit the wetland types that once existed there.

Talk to the locals – local marae, hapū, and iwi have centuries of experience and interaction with the landscapes within which you might be looking to design. Tangata whenua can provide insights into specific areas and species, and their experiences can provide a richness to the final design narrative.

Learn the local names for plants and other species – there are a several lists available that can provide 'Māori and common names', but they may not necessarily resonate with tangata whenua from the area you are working in. As local dialect can tell us a lot about specific species, as well as the people and the environment, it becomes more meaningful for implementing the design.

Native swamp plants including mamaku and nikau (which feature on swamp forest edges in the lower Waikato) are incorporated into a themed garden with exotic trees at the Auckland Botanical Garden. Photo: Cheri van Schravendijk-Goodman

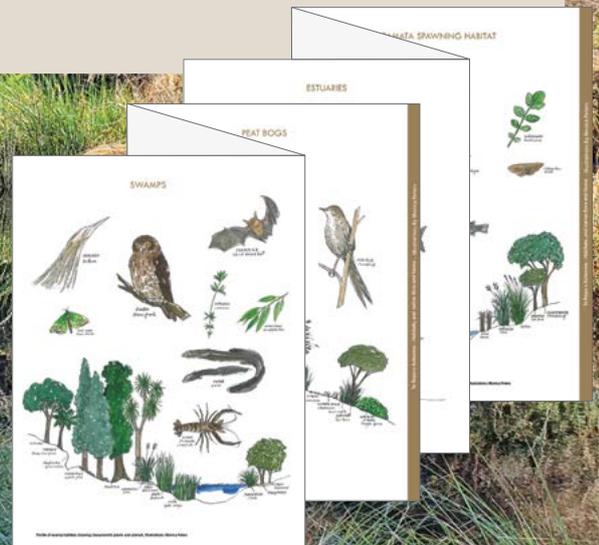
Reintroducing our native plants takes time – research the appropriate people and nurseries who are prepared to propagate the native species in which you might be interested. This is particularly important when dealing with endemic or very rare plants. There are few specialist nurseries left in Aotearoa, but we desperately need them if we are going to be serious about embracing the return of our special plants and landscapes. The only way to encourage their resurgence is to give nurseries a reason to keep operating; and to build the confidence and patience in your clients to allow the time needed to wait for the seedlings to grow.

Be courageous in your use of our natives – if it wasn't for the growing interest to include our native species within landscape design, they might have become extinct. Plants like the kākābeak (*Clianthus* spp.) and mikoikoi (*Libertia* spp.) are becoming rare in the wild. Encouraging their adoption in the private garden gives them an opportunity to grab the attention of plant lovers, and, we hope, to increase their populations. We can also do this for our wetland plants.

Finally, have fun!

Te Repo o Aoteaora – wetland habitats, and native flora and fauna handouts.

Lists of all species illustrated for the wetland landscapes in this chapter.



WANT TO LEARN MORE?

Note: If you are having problems with the hyperlinks below try copying and pasting the web address into your browser search bar.

References

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Useful websites

About our wetlands

<https://www.landcareresearch.co.nz/publications/naturally-uncommon-ecosystems/wetlands>

Creating a lawn alternative with native plants

<https://www.treesforcanterbury.org.nz/planting-trees-and-shrubs/creating-a-lawn-alternative-with-native-plants>

Ngā Tipu o Aotearoa – New Zealand Plants

<https://nzflora.landcareresearch.co.nz>

Te Aranga Principles

http://www.aucklanddesignmanual.co.nz/design-subjects/maori-design/te_aranga_principles#/design-subjects/maori-design/te_aranga_principles/guidance/about/core_m%C4%81ori_values

What does Māori architecture look like today?

<https://thespinoff.co.nz/atea/07-01-2020/what-does-maori-architecture-look-like-today>

Tuia Pito Ora – NZILA

Grimsdale B 2018. *The pathway to lost land – te haerenga ki te whenua i ngaro ki te po*. *Visioning landscape's that speak Māori*

<https://nzila.co.nz/news/2018/11/visioning-landscapes-that-speak-maori>

Menzies D 2017. *Assessing the Māori cultural landscape*.

https://www.buildingbetter.nz/publications/urban_wellbeing/Menzies_2017_cultural_landscape.pdf

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Daylighting of tributaries and wetland spaces in urban centres

Freshwater Blog

<https://freshwaterblog.net/2014/07/08/daylighting-urban-rivers>

Landezine

<https://landezine.com/index.php/2016/10/waitangi2>

Spotlight on Māori designers and advisors

Christine Morehu (Waikato)

<https://nz.linkedin.com/in/chrissy-morehu-0ba544126>

https://issuu.com/christinemorehu/docs/christine_morehu_portfolio_30032021_-_portrait_a4

Nga Aho

<https://ngaaho.maori.nz/index.php?m=2>

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