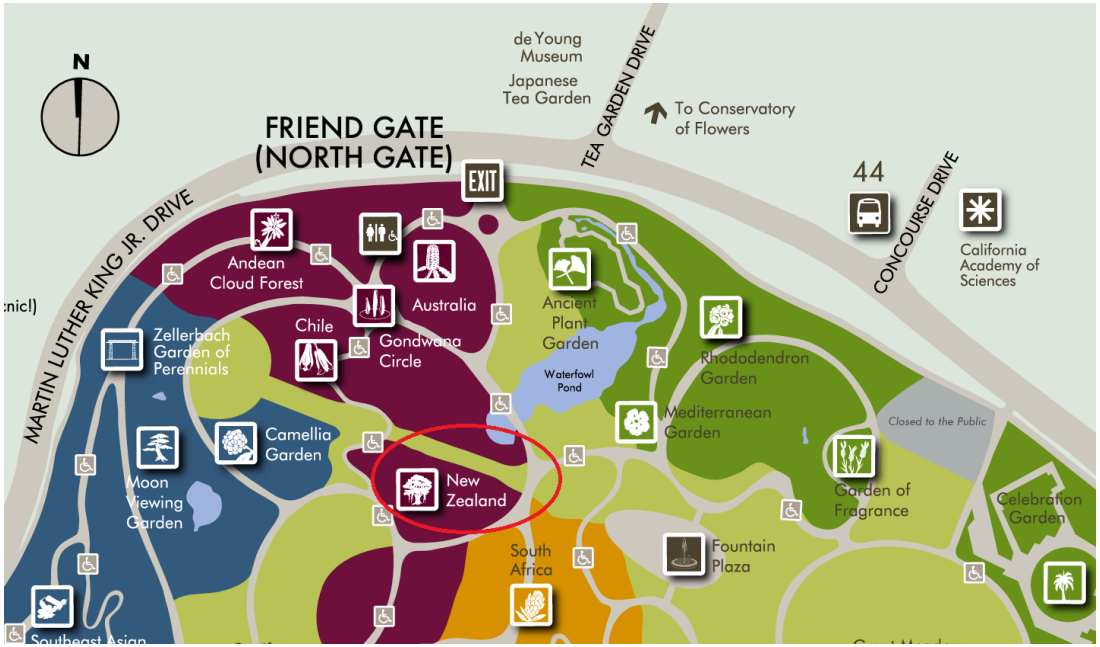
New Zealand Welcome Station Introduction:

The New Zealand Garden is located on a major garden throughfare and may be one of the first stops for visitors who have entered the Botanical Garden through the Friend Gate, or one of the last stops before they depart. At this station visitors may:

- Receive a warm welcome to the garden, orient themselves and plan their visit
- Learn more about the history of the Botanical Garden and Strybing Arboretum, and why we feature geographically focused gardens like the New Zealand Garden
- Meet some of the "canopy trees" of SFBG & Golden Gate Park and learn how the park was transformed from sand dune to the landscape we know today
- Encounter iconic plants near the New Zealand Garden, including hands-on specimens

Station Location:
Set this station up in the vicinity of the New Zealand Garden:



A Warm Hello or Farewell:

Visitors to the New Zealand Station may have just entered the Botanical Garden and may want advice on how to plan their visit or navigate the garden. The closest exit to the New Zealand station is the “Friend Gate” which is across the waterfowl pond, to the right, then straight ahead. The closest restroom is just to the left of that exit. For more detailed navigation, you can show and/or give the visitor a garden map, or show them the address or QR code for accessing digital or translated map online.

For visitors about to depart the garden, this may be an opportunity to learn about other opportunities – the other Gardens of Golden Gate Park, tours and programs offered at the gardens, or other garden resources such as the library or children’s garden.

New Zealand Station Interpretation:

At this station you can introduce visitors to the New Zealand Garden, one of the Botanical Garden’s Geographic Gardens. In addition to highlighting some iconic flora of New Zealand, the historic nature of the New Zealand collection connects to the broader story and history of the SFBG.

Introduction to New Zealand Garden:
With high rainfall and cooling oceanic influence, the islands of New Zealand are famous for their beautiful scenery from lush forests to rugged windswept peaks. Due to its isolation, New Zealand boasts a unique flora with an astonishing 80% found nowhere else on earth.

Gondwanan Origins:
The New Zealand Garden is adjacent to the segment of the garden we call "Gondwana Circle". Here, the Australian, Chilean, and South American Cloud Forest gardens intersect. Though they're geographically separate today, ~500 million years ago these continents were all a single land mass called Gondwana or Gondwanaland, one of the two supercontinents that comprised Pangea. Gondwana included Africa, South America, Australia, New Zealand Antarctica and the Indian subcontinent. We see similarities between plants from these regions as a result, even though continental drift has since separated them.

Exceptional Endemism:
80 million years ago, New Zealand broke away from Gondwana. Many distinct species evolved on the isolated island. One distinct difference was the absence of predatory mammals. Unique species, such as a terrestrial parrot (Kakaopo) and flightless Kiwi arose. An array of distinct plant life also evolved – 80% of plant species of New Zealand are *endemic* meaning they're found nowhere else on earth.

New Zealand had no human residents for much of its history .The first Polynesians settled there approximately 800 years ago, followed by European colonists several hundred years later. Human influences have vastly altered the ecology of New Zealand, particularly due to the introduction of rats, stoats and possums that were easy predators of animals that had not adapted to avoid them. Europeans also cleared much land for agricultural use and logging, altering the forested landscape. Today, conservation efforts are underway to preserve the unique plant and animal life of New Zealand. [1]

New Zealand Plants : An Iconic Part of the San Francisco Landscape:
New Zealand plants were among the first imported to San Francisco, with the earliest arriving in 1859. Similarities in climate between New Zealand and San Francisco made this a suitable climate for planting. Many more were imported for the New Zealand Pavillion at the 1915 Panama-Pacific International Exposition, and many of the specimens from the pavilion were later planted in Golden Gate Park including the area that would become SFBG. While the only individual we can verify has its origins at the 1915 Exposition is the Rimu (*Dacrydium cupressinum*) or Red Pine, it's likely there are others. The massive

[1] https://www.visitzealandia.com/About/History/The-Continent-of-Zealandia

Meterosideros or ‘New Zealand Christmas Tree’ you see here is older than our records, but its planting likely preceeded this area being established as a botanical garden.

San Francisco Botanical Garden:
Did you know that San Francisco Botanical Garden – and Golden Gate Park – used to be a sand dune? This windswept area of San Francisco was an unincorporated area known as the “Outside Lands.”

The transformation of this area began in 1870, with a park plan created by surveyor, designer, and first Superintendent William Hammond Hall. Along with creating the Park’s design, Hall helped establish the Park nursery which would grow the first 60,000 trees to be planted in the park. Many dunes were levelled, planted, and transformed into the landscape we know today. Different soils from other parts of the city and Bay area were transported to supplement the existing sand, and special streetcars were built to transport manure from the horse-drawn carriages downtown.

In 1879, the first building was erected in Golden Gate Park, which was the Conservatory of Flowers. Work continued in transforming the park into the tree-filled landscape we know today under leadership of John McLaren from 1887-1943. The concept of a Botanical Garen and Arboretum in the park existed the early years of McLaren’s career, and some trees were planted in the general vicinity of the gardens. It wasn’t until 1926 that funds were received from Helen Strybing to formally create the Strybing Arboretum, which opened in 1940. Today it is known as the San Francisco Botanical Garden *at* Strybing Arboretum, and is one of the 3 Gardens of Golden Gate Park.

Strybing Arboretum & Canopy Trees:
Arboretum refers specifically to the tree collection found in this area, and indeed you will notice an array of large, established trees throughout the garden. We are fortunate to harbor an array of unique plant species, some of which are rare, endangered, or uncommon in cultivation.

Other trees you’ll encounter here may be much more familiar because they are among the iconic “canopy trees” that were widely planted during the transformation of Golden Gate Park from sand dune to park. There are 3 predominant canopy trees you’ll see widely planted in the garden: the Monterey Pine, Monterey Cypress, and Blue Gum Eucalyptus. All 3 are visible from this location. Most of these are older than the Garden or Arboretum.

San Francisco Botanical Garden Collections:
In its 83 years of history, the San Francisco Botanical Garden's collections have grown and evolved in their focus.

Today, SFBG is organized into three major types of garden areas and groups: Geographic Gardens that focus on a specific geographic region (such as New Zealand, Australia, Chile), Taxonomic Gardens which focus on a certain group of plants (Rhododendrons, Camellias), or Thematic Gardens (Moon Viewing Garden, Ancient Plants Garden.) Additionally, there are certain iconic garden collections that are scattered throughout our 55 acres, such as our renowned Magnolia collection.

As a Botanical Garden, the SFBG is a "museum without walls" with a curated collection of plants. We are the premier place to grow cloud forest (montane tropical and subtropical flora) along with mild temperate and Mediterranean plants. Our [collections] mission is to create, sustain and interpret a distinct, documented collection of Mediterranean, mild temperate and tropical cloud forest displayed in designed gardens, and to provide a place of exceptional beauty and natural sanctuary.

Meterosideros

Pōhutukawaka, New Zealand Christmas Tree

Genus:
Meterosideros, ~50 species including 11 from New Zealand.
The SFBG has ~8 species of *Meterosideros* on display.

Maori Name:
Pōhutukawa

Common Names: New Zealand Christmas Tree, Iron Tree.

Family:
Myrtaceae (Myrtle Family)
Meterosideros excelsa in the New Zealand Garden

The Story of this Tree:

The massive *Meterosideros excelsa* at the gateway of the New Zealand garden is one of the most striking trees at the botanical garden. Though its exact age and origins are unknown, it is possible this tree originated at the 1915 Panama Pacific Exposition in San Francisco's New Zealand plant display. After the exposition, many plants from the exhibition were planted in Golden Gate Park, including in areas that would go on to become part of Strybing Arboretum in 1940.

This individual was badly damaged in a 1995 windstorm. This windstorm damaged many park trees and also caused severe

structural damage to the Conservatory of Flowers. The tree – and Conservatory – have both recovered from that damage.

While this individual is particularly spectacular, *Meterosideros* are iconic street trees in San Francisco, and several other California cities. This has been the case since San Francisco's earliest days – *Meterosideros* was on the inventory list of the Golden Gate Nursery in 1859! Since then species from New Zealand have been planted across Golden Gate Park and San Francisco – similarities in our climates mean New Zealand species thrive in San Franciso.

Māori Significance:
Meterosideros excelsa is a species of great cultural significance to the Māori, the native people of New Zealand. Pōhutukawa is the Māori name for this species. One particular tree in Cape Reinga is over 800 years old and is believed to be where spirits begin their journey to Hawaiki, the traditional homeland of the Māori. According to tradition, spirits will descend the roots of the tree to the underworld where their journey will begin. The tree is also used in various forms in traditional Māori healing practices and cultural uses.[2]

Iconic Flowers:

Meterosideros is in the same family as the Bottlebrush tree, which is native to Australia.

These flowers lack prominent petals, and instead have clusters of red bristles. These are stamens, the male / pollen producing parts of the flower. Each flower may have dozens of stamens, and each red cluster of blooms is an *inflorescence* or group of many flowers.

Aerial Roots:
The rough, red-tipped aerial roots that hang from *Meterosideros* are one of the most distinctive and curious features of trees in this genus.

Aerial roots serve to help absorb moisture from the air, a helpful adaptation for drought-tolerance that may help this species survive on the damp coastlines of New Zealand - and in foggy San Francisco!

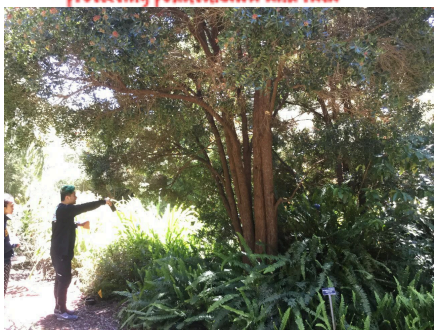
Aerial roots are also sometimes called *adventitious roots*. The function of the red pigment of these roots is unknown. There tends to be more distinct on parts of plants that receive more sun, suggesting the pigments may

aid in sun protection for the plant. [3]

Role in the New Zealand Ecosystem:
M. excelsa provides habitat and resources, particularly for other native species in its natural habitat of New Zealand. Its red brush flowers provide 'copious' nectar for nectivorous animals. The trees provide nesting and roosting sties for birds, and the flaky bark and dense leaf litter provide habitat for many insect species including moths, weevils, beetles, flies and scale.

Conservation:
The range of *M. excelsa* in its native New Zealand has shrunk by an estimated 90% due to human impacts. The most significant has been land clearing by Europeans for pasture, logging for ship-building, in the 19th century. Today, *M. excelsa* faces threats from fungal diseases and nonnative possums that strip the trees of their leaves. Work continues in New Zealand through restoration projects and possum control to protect this important species for generations to come. A NZ based organization called Project Crimson is a leader in conservation of Meterosideros.

PROJECT CRIMSON
protecting pohutukawa and rata



Nothern Rātā:

Another iconic New Zealand species of *Meterosideros* is Meterosideros robusta, or the Northern Rātā. At least 6 individuals of this species are found in the New Zealand garden.

[3] To cite this article: RJ Bylsma, BD Clarkson & JT Efford (2014) Biological flora of New Zealand 14: Metrosideros excelsa, pōhutukawa, New Zealand Christmas tree, New Zealand Journal of Botany, 52:3, 365-385, DOI: 10.1080/0028825X.2014.926278

Nikau Palm

Scientific Name:
Rhopalostylis sapida

Common Names:
Nīkau Palm

Family:
Arecacaeae

Today's southernmost occurring palm is *Rhopalostylis sapida*, better known as the nikau palm or the feather duster palm. The nikau palm is endemic to New Zealand and is the country's only native palm that is alive today. "Nikau" means "leaves only" in Maori and perhaps refers to the fact that unlike the coconut palm that the early Maori would have been familiar with, the nikau palm does not produce fruits that are edible to humans. It gets its other common name from the smooth, swollen crown shaft and the upright palm leaves that give the appearance of a feather duster pointed upwards.

The silhouette of the nikau palm is striking with its erect, feather-shaped fronds and ringed trunk. Many are tempted to guess the age of the palm by counting the leaf scars left on the trunk when a frond falls off. However, this is unreliable because as many as five fronds may be lost over the course of the year, and the palm does not begin to grow upwards for 10-15 years.

The palm is monoecious, meaning that both male and female flowers are produced by the same individual. The inflorescence emerges beneath the crown shaft after a frond falls off. The long inflorescences burst forth with light pink to purple-mauve flowers that mature in groups of three-two male flowers for every female flower. The fruit change from bright green to bright red as they ripen over the course of a few months. Although they are not edible to humans, birds, such as New Zealand's native wood pigeon, are known to love to eat them-and disperse them.

Traditionally, the Maori have used the palm for many different things. Although the fruit are not edible, the inflorescences (groups of flowers) are, a fact which gives the species epithet its name "sapida" meaning savory or pleasant to taste. Additionally, the palm fronds were used for many things, from roof thatching to material for weaving mats, containers, and clothing.

Although this palm is notoriously slow-growing, it is one of the finest palms for coastal, temperate climates. It requires shelter when young but can tolerate sun once well-established. With regular water, fertilizer, and shelter from the wind, this palm will slowly grow to thirty feet tall. Some sources even suggest that this palm may make an excellent indoor plant because it does not grow upward for several years.

IN BLOOM CONTRIBUTORS: Text and profile by Sarah Callan. Photos by Joanne Taylor and Mona Bourell.

Gunnera

Scientific Name: *Gunnera tinctoria*

Common Names: "Dinosaur Food", Chilean Rhubarb

Family: Gunneraceae

Dinosaur Food? 'Dinosaur food' is a common name for *Gunnera*, and its ~6 foot leaves might provide a dinosaur-sized meal. However, *Gunnera*'s rough, sandpapery leaves and spiky stems may be adaptations to deter hungry animals. Some assume the name is attributed to it being consumed as dinosaur food but we have no proof that it was eaten by dinosaurs.

Ancient Plant: Gunnera are ancient plants, which we know from finding fossilized *Gunnera* pollen that is 90+ million years old! The 50+ species in the genus *Gunnera* are found across the southern continents, suggesting that this plant group arose when the continents had not yet drifted apart and made up a supercontinent known as *Gondwana.*[4]

Symbiosis Story: *Gunnera* leaves die back each winter and re-grow in spring. One secret to this plant's rapid regrowth is its symbiotic relationship with cyanobacteria. The algae live in specialized glands in the base of the plant's stem. These particular ('Nostoc') cyanobacteria can produce nitrogen, an essential plant nutrient, and share it with the *Gunnera* host. In exchange, the *Gunnera* shares carbohydrates (sugars) with the cyanobacteria. This relationship is considered *symbiotic* since both the plant and the cyanobacteria benefit.

***Gunnera* in New Zealand and beyond:** While some *Gunnera* species are native to New Zealand, the species you most often see at SFBG (*Gunnera tinctoria*) is native to Chile. It was introduced to New Zealand as an ornamental and is now well-established there. It is sometimes considered an invasive species in New Zealand as it grows rapidly and shade out other plants. At the

[4] Bacon CD, Velásquez-Puentes FJ, Hinojosa LF, Schwartz T, Oxelman B, Pfeil B, Arroyo MTK, Wanntorp L, Antonelli A. Evolutionary persistence in *Gunnera* and the contribution of southern plant groups to the tropical Andes biodiversity hotspot. PeerJ. 2018 Mar 16;6:e4388. doi: 10.7717/peerj.4388. PMID: 29576938; PMCID: PMC5858603. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5858603/.

SFBG, the garden team must regularly curtail this plant to keep it from taking over. It thrives in cool, misty climates, from its native Chile, to New Zealand, and of course here in San Francisco.

Rimu

Scientific Name:
Dacrydium cupressinum

Common Names: New Zealand Red Pine, Rimu

Family: Podocarpaceae

This tree was originally imported for display at the 1915 Panama Pacific Exposition's New Zealand exhibit. After the exposition, this individual planted here in Golden Gate Park, decades before this area went on to become an arboretum or botanical garden, or this area designated the New Zealand garden. While this tree is over 100 years old and has had plenty of time to grow, it is much smaller than individuals in New Zealand which can be 150 feet tall. [5]

[5] McClintock, Elizabeth. The Trees of Golden Gate Park. 2001.