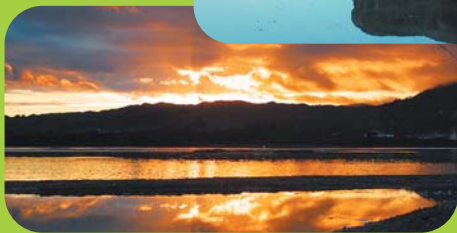


Natural Heritage Trail

Take the trail around the shores of Lake Rotorua and delve into the story of a landscape created by volcanic activity. See plants and birds that have been adapted to this sulphurous environment and learn about our fiery and fascinating past.



1 Lakefront

The peaceful and well-maintained promenade around this portion of the lake belies a fascinating history that reaches back 200,000 years! Lake Rotorua has formed in a caldera, the sunken crater of a vast volcanic eruption that spewed 220 cubic kilometres of material over the surrounding land. The oldest continuous lake in New Zealand, it has risen and fallen over millennia. One hundred years ago, this was a marshy bay lined with raupo (native reed) and a haven for birds.



Canoe moored amongst the raupo, c. 1900 - E W Payton, Rotorua Museum

Maori found the area useful as a place to moor canoes and named the area Kouramawhitiwhiti. Today much of the land you walk on has been reclaimed from the lake. The row of large Plane trees (*Platanus orientalis*) behind the playground marks the original lake edge. These trees are over one hundred years old.

REMEMBER: Please don't feed the birds. Black swans often attack people.

Bird Check List One

Can you see any of these birds?

- Red Billed Gull (tarapunga)**
This bird is found widely in the Southern Hemisphere and is the commonest of the three gulls found in New Zealand. The red billed gull are bold scavengers.
- Black Swan**
These birds were imported from Australia as an ornamental waterfowl. They prefer shallow water for feeding.
- Mallard Ducks**
Mallard ducks are also introduced and widely distributed throughout New Zealand.
- Geese**
Bossy domestic geese have formed a colony along the lakefront.



2 Wetland Walkway to Motutara

Follow the path to Motutara Point and discover features of this wetland habitat. You will pass stands of Kanuka and Manuka. Kanuka (*Kunzea ericoides*) prefers dry land and grows to form a spreading tree up to 20 metres tall. Manuka (*Leptospermum scoparium*) enjoys wet conditions. How do you tell the difference? The easiest way is to look at the flowers and seed capsules. Kanuka has tiny cream flowers and small seed capsules, whilst Manuka has larger white flowers and broad capsules. An unusual and rare prostrate Kanuka grows on thermal soils in some areas. Many of the Manuka and Kanuka trees are encrusted with orange or black fungus called sooty mould. This grows on the sweet honeydew excreted by tiny sap sucking insects.



Manuka

3 Rocky Outcrops



You will see a large number of platform-like sinter formations around the lake shore. Geothermal waters percolating quartz sediments from deep underground solidified to form them some 7000 years ago when

the lake level was 80 metres higher. The large rock on your right is called Te Papa-o Te Arawa. This large sinter formation was once the site of an urupa (burial ground) but was later quarried to provide rock for building projects at Ohinemutu.





4 Ferns, Mosses and Marsh Grasses

Much of the lake shore is either too steep or too sandy for wetland plants. However, they thrive in this damp area and include raupo (*Typha orientalis*) and giant spike rush.

Among the ferns that grow in abundance along the trail are members of the marshy-ground loving Histiopteris and Hypolepis families. Examples of clubmosses may be found along the trail. You will also see bracken fern (rahurahu). The starchy root 'aruhe' was an important food source to Maori when other food supplies were low. The root took much preparation to make it edible.

Bird Check List Two

Can you see any of these birds? Spot the 'new comers' to our land:

- Blackbird Song Thrush Chaffinch
 Goldfinch Yellowhammer Welcome Swallow

5 Motutara Point

Take your time as you walk through this area to locate the lava domes that formed after the initial eruption. Mokoia Island sits jewel-like in the middle of Lake Rotorua while to your left you can see Ngongotaha Mountain and to your right, Hinemoa Point. Look for the shadowy 'terrace' that runs around the hills about half way to the brow denoting the lake-level change around 140,000 years ago. Mokoia Island and Hinemoa Point feature in a great Te Arawa love story, that of Tutanekai and Hinemoa. Forbidden to meet, Hinemoa swam to her lover on Mokoia Island. Today the island is a wildlife refuge where endangered birds, such as the North Island Robin, Saddleback and Weka are flourishing. Tradition tells that the Motutara area was inhabited and cultivated for many generations. Remnants of defensive earthworks could be seen up until 1890s.

The birds of Motutara Island

Take note of the shag nests in the trees on this island. You may identify black shags, pied shags and little black shags. Shags stay underwater for long periods and dive to great depths thanks to their feature structure which allows water to penetrate quickly – allowing them to sink easily. You may see shags sitting with outspread wings, waiting for their wings to dry.



6 Sulphur Bay

As you follow the trail around the lakeshore, note that the lake water becomes increasingly milky. You are now entering a unique ecological zone where plant and bird life have adapted to the harsh sulphur-laden environment. The bay lies on top of an

active geothermal field and the shallow and highly acidic water is very low in oxygen. Because of this there is little food for birds so they leave the area each day to feed. Despite this, many species roost and nest on the shores and islets around the bay. Sometimes the acidic water dissolves the webs between birds' toes! It is not unusual to see dead birds around this area of the lake shore. Some experts believe they may be victims of botulism, but it is possible that they have been asphyxiated by high levels of carbon dioxide and hydrogen sulphide.

7 Trees and Plants

Don't miss our New Zealand Christmas Tree, Pohutukawa (*Metrosideros excelsa*, a member of the Myrtle family). In December it erupts in brilliant red flowers. Legend tells that Hatupatu, an Arawa cultural hero, planted pohutukawa trees around the lakeside and Mokoia Island. You will also see a variety of introduced species such as willow, eucalyptus and wattle. Look for examples of flax (*Phormium tenax*) known to Maori as harakeke. They named 60 varieties and found numerous uses for this valued plant, including cloaks made from its fine fibres (muka).



Bird Check List Three

Can you see any of these birds?

- Pukekos**
 You may have seen our comical blue and black swamp hens strolling around the gardens. Members of the rail family, their diet is mainly vegetarian.



You may choose to leave the trail here (adjacent to the car park at the Lake Plaza Hotel) or explore further by following the trail to the Puarenga Stream and then on to Wkakarewarewa.

Collect a copy of the ROTORUA WALKWAYS brochure to assist you along this route.

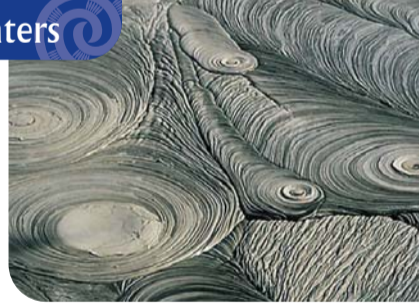
Remember: take only photographs and leave only footprints.

8 Timanga and Motutere Islands

Timanga was once much larger and supported a number of Maori families. Today Motutere is the larger and home to black shags. Many years ago it boasted a big clear alkaline pool "Hinemaru" named for the mother of Hinemoa. The pool was known for its therapeutic properties.

9 Geothermal Waters

This area is noted for its geothermal activity. You may see examples of geysers, hot springs, fumaroles and mud pools. **Be aware that this area is dangerous. You are advised to stay on the path at all times!**



Geysers and Hot Pools develop when hot chloride-laden water from deep underground rises along a zone of weakness in the earth's crust.

Fumaroles occur when trapped boiling underground water is released as steam or gas through a vent.

Mud Pools happen when the water is trapped at a shallow level for some time and reacts chemically with the soil around it, releasing sulphuric acid.

The soft, soapy-feeling water of alkaline chloride pools is clear and very hot, whilst the acidic sulphate waters from hot pools are cloudy or 'muddy'. These sulphurous, acidic waters are the source of Rotorua's well known 'rotten-egg' smell. The bubbles in mud pools come from the escaping gases.

- Dabchicks**
 These are a New Zealand native grebe. Found only in the North Island, they are a small, dark bird with a chestnut-coloured breast and bright eye. Rotorua is a haven for these endangered birds: 500 breeding pairs have been identified but only around 100 live here year-round.

- Scaup**
 The small dark duck with a high domed forehead and rounded bill is the New Zealand scaup (papango). They are our only true diving duck, diving up to two metres.



10 Remnants of a Fiery Past

As you walk along the beach towards the boardwalks you will see examples of pumice, a light soft lava. Geologists tell us this pumice came from a volcanic vent in the area of the Blue and Green lakes. You may also see examples of red, black or grey scoria, further examples of lava. The blackened wood and trunks of fallen manuka and kanuka have been 'burnt' by hydrogen sulphide. Even the tanalised pine walkway is turning black!

11 The Coffee Pot

This murky bubbling brown pool was once a sought-after thermal attraction. People tied ropes to the manuka bushes and lowered themselves into the soupy liquid. Notice that the acid water eats away the surrounding soil and incorporates it into the pool.

12 Cameron's Laughing Gas Pool

Would you like to bathe in this muddy hole? Maori people used it and later so did Europeans who travelled great distances to this spot! The action of bubbles rising to the surface gives the impression that the water is boiling. Evidently, people experienced fits of laughter when bathing here.

13 Craters Formed by Eruptions

The two circular craters either side of Rocky Point were formed by geothermal explosions. A dramatic change in lake levels caused by rapid draining or a volcanic eruption produced pressure changes underground. This caused violent geothermal explosions creating the two deep craters that define this area.



14 Rocky Point

You are now passing Rocky Point, a low finger of land that projects into the southern part of the bay. Ancient silica springs on the bed of the lake cemented the gravel and sand to form these distinctive platforms. The point is a favourite nesting place for red-billed, black-billed and black-backed gulls.

The entire area is a wildlife reserve and you are not permitted to enter it. Take time to observe bird life from the blind provided but be aware that they are sometimes aggressive during the breeding season.

Bird Check List Four

Can you see any of these birds?

Pied Stilts

have an adapted beak which allows them to scavenge widely. They roost and feed here between December and March. Their name 'himantopus himantopus' means leather legs!



Caspian Terns

roost on the small islands and shores of the bay. The open, flat, un-vegetated area is similar to braided rivers and seashores.

Banded Dotterel

raise their young in exposed nests on the barren, inhospitable area to the south of Sulphur Bay named Te Arikioa. The chicks are carefully camouflaged. Dotterels nest here between July and February and over winter in Bay of Plenty estuaries.



Black Backed Gulls

these predatory birds roost further around the bay.

a geothermal experience

a geothermal experience

Natural Heritage Trail

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15 Te Arikioa

If you choose to carry on along the walkway, you will see further examples of sinter deposits, birdlife, geothermal activity and wetlands. In this area you may also see Banded Dotterel and prostrate kanuka.

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