

Rushing water, fishing lines
and high lights.

Insider's Guide to the Te Anau Glowworm Caves.

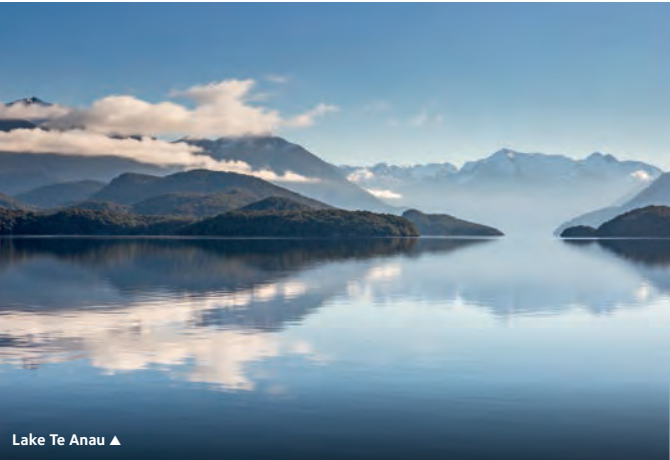
Above ground

World heritage

As part of the 12,500 km² Fiordland National Park the caves and surrounding landscape is one of only three designated UNESCO World Heritage Areas in New Zealand.

Named Te Wāhipounamu, the southwest 2.6 million hectares of the South Island, covers every piece of strict criteria the United Nations agency uses to judge places in need of special recognition and protection.

Ensuring the ongoing protection (and recognition) of this unique environment involves a number of carefully focused measures, including the safeguarding of native birdlife from predators.



Lake Te Anau ▲

Below ground

Cave formation

At approximately 12,000 years old the Glowworm caves are part of the 'youngest' section of the greater Aurora system. Due to its youth the glowworm caves are considered 'high energy', the risk of flooding and low stalactite and stalagmite growth are a sign of this.

The Tunnel Burn stream that flows through the system would have originally run across the surface from Lake Orbell to Lake Te Anau. However gradually this water cut through the mountain and down into the soft limestone within the cave system. The caves are still growing due to the flow of this water – the coursing power and mildly acidic nature of the stream dissolves rock and can turn small cracks into large voids.

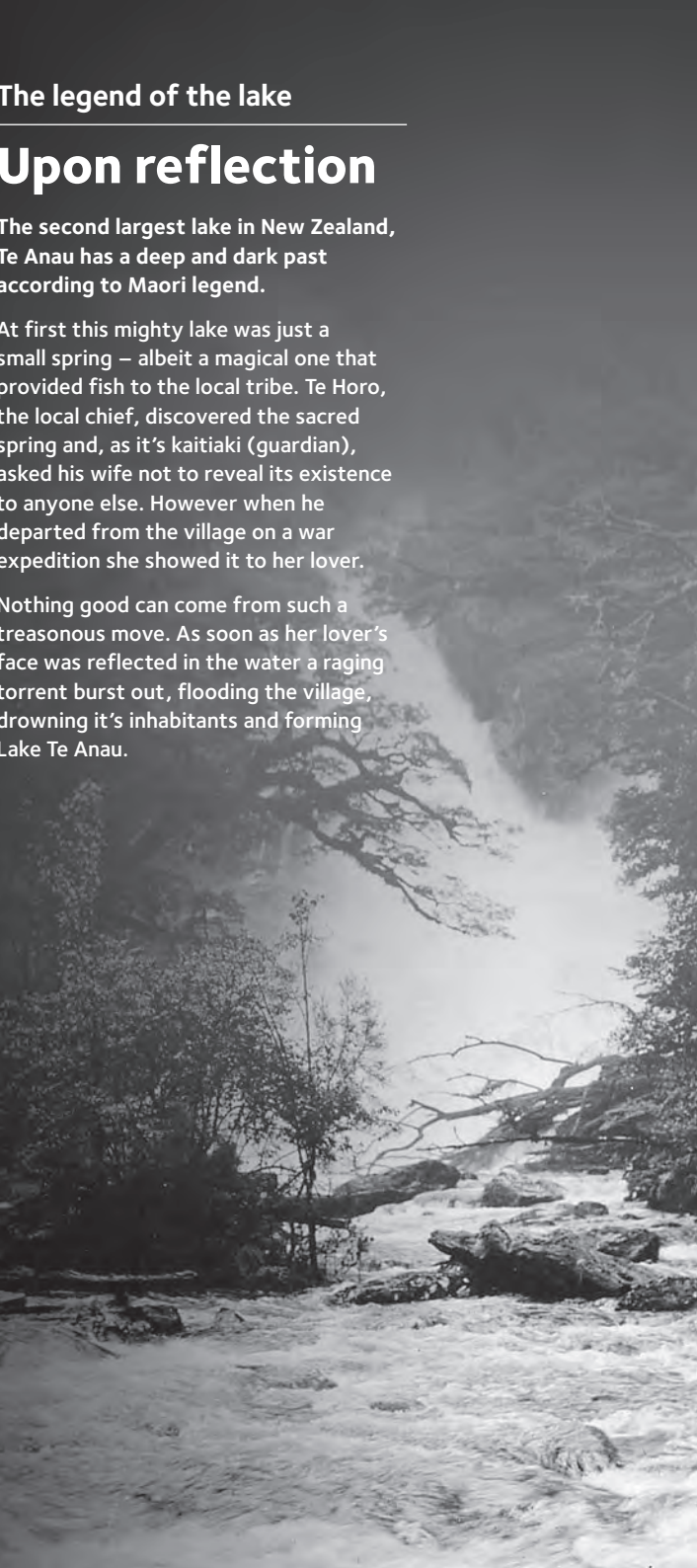
The legend of the lake

Upon reflection

The second largest lake in New Zealand, Te Anau has a deep and dark past according to Maori legend.

At first this mighty lake was just a small spring – albeit a magical one that provided fish to the local tribe. Te Horo, the local chief, discovered the sacred spring and, as it's kaitiaki (guardian), asked his wife not to reveal its existence to anyone else. However when he departed from the village on a war expedition she showed it to her lover.

Nothing good can come from such a treasonous move. As soon as her lover's face was reflected in the water a raging torrent burst out, flooding the village, drowning it's inhabitants and forming Lake Te Anau.



Feathered friends

Bird life

The surrounding hills of Te Anau are home to a number of different bird species. Here, the native tui, takahe, kereru (native pigeon), piwakawaka (fantail), makomako (bellbird), ruru (morepork), riroriro (grey warbler and ngirungiru (tomtit) make the rainforest their home.



Kereru ▲

The Takahe

A survivor

Size: About 50 cms high (like a large hen)

Flight capacity: None

Status then: Thought long-extinct until rediscovery in 1948 by Invercargill doctor, Geoffrey Orbell

Status now: Critically endangered

Looks like: A large pukeko (which is a distant relative)

Diet: Tussock & ferns

Lifespan: Up to 20 yrs

Predators: The dastardly stoat



Takahe ▲

Wildlife

Meet the locals

Cave Weta

One of five distinct groups of over 70 New Zealand species (some of which are the largest and heaviest insects in the world), the cave weta dines on plants and small insects and loves damp environments. The weta has remained unchanged, with little evolution since the 190 million year-old fossils. It can also have a short and dangerous life – after moulting its skin the defenseless weta runs the risk of death by cannibalism.



Cave Weta ▲



Long-finned Eel ▲

Long-finned Eel

There's more to New Zealand's only endemic freshwater eel than meets the eye (and, growing up to 1.7 metres and 25 kilograms, there's a lot to see). They can live over 100 years and make an incredible journey from deep sea spawning grounds in Tonga, along ocean currents and up New Zealand rivers. Here their climbing expertise is renowned – juvenile eels can scale near-vertical heights of 40+ metres. While known to attack livestock and humans this generally only happens if the target's incapacitated first.

Harvestman

There are approximately 160 different species of harvestmen in New Zealand. While these have a variety of colours, the type found in the caves often have a distinctive lack of pigmentation, a trait common for many species that have lived in the dark for so long. These harvestmen aren't too friendly to the local glowworms either – the slow-moving arachnid often seeks out the bright lights for a convenient meal.



Harvestman ▲

Cave Weta

Maori name: Tokoriro

Found in: Limestone regions, rotten logs, under bark

Eating habits: Primarily a scavenger

Hearing: What? Cave Weta have no ears

Awareness: Very sensitive to vibration through padded feet

Long-finned Eel

Maori name: Tuna Kuwharuwharu

Breeding: Just once – between 1 to 20 million eggs

Migration: Up to 130 kms inland

Endurance: Up to 48 hrs out of water

Protection: Classified as a threatened species by Dept of Conservation

Harvestman

Variety: 3,500 + species worldwide

Danger: None

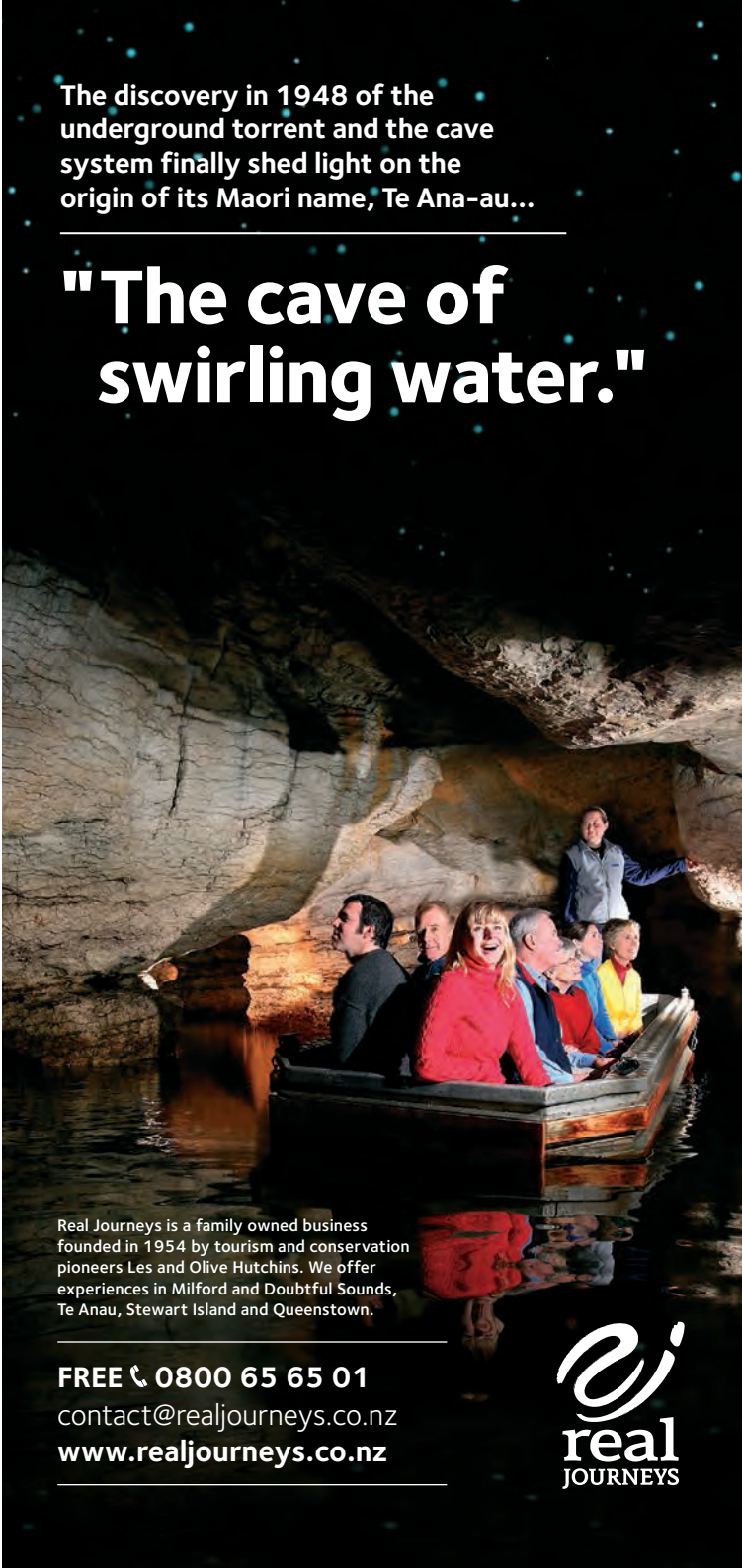
Defense: Omit a powerful stench

Mistaken for: The 'daddy long legs' spider

Size: 5 – 10 mm in body length

The discovery in 1948 of the underground torrent and the cave system finally shed light on the origin of its Maori name, Te Ana-au...

"The cave of swirling water."



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Titiwai, the Maori translation for glowworm, describes ‘lights reflected in water’.

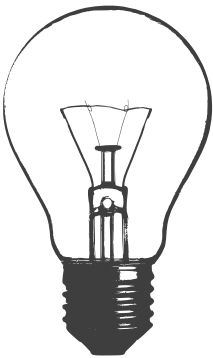
Key facts

- Restricted diet:** The only time a glowworm eats is during the larva stage. There’s a good reason why an adult fly doesn’t eat – it has no mouth.
- Hunger hints:** Your belly will rumble when hungry. The hungrier a glowworm gets the brighter it glows.
- Life in a cave:** There’s another good reason why glowworms live in caves. Outside is simply too windy – their lines would get tangled.
- Turf wars:** Cave real estate is valuable and when one glowworm encroaches on another it can result in heated battles and occasional cannibalism.

Larvae nest ▲

Chemical reactions

The science behind the sparkle



The glow is a result of an interesting chemical reaction involving the luciferase enzyme acting on the luciferin substrate. This then combines with adenosine triphosphate (the energy molecule) and good old oxygen.

The Luciferase enzyme’s name is derived from Lucifer, the root (lusem ferre) meaning ‘light bearer’.

Luciferase can be developed artificially too, with mice, silkworms and potatoes all engineered to produce the protein. There are plans underway to develop street lighting via ‘bioluminescent’ trees using this same chemical reaction.

Dining in the dark

Eating habits

While thoroughly enchanting to look at the glowworm is more interested in function than fashion – their glow is prepared solely to ensure an adequate meal.

1. The table is prepared

Glowworms fish for food by dangling as many as 70 ‘fishing lines’ from the roof. Each line is between 20 – 150mm long and covered with thick drops of sticky mucus.

2. The candles are lit

The insects, attracted to the light, circle closer until they become trapped and paralysed by chemicals in the lines.

3. Dinner is served

When the line vibrates it is quickly hauled in. The trapped prey is killed and the insect’s body covered into what is essentially a tasty milkshake for the glowworm.

A time to shine

The golden years of the glowworm

Egg: (20 – 24 days)

The female fly will lay approximately 130 tiny eggs throughout the year, but with hatching most common in December.

Larva: (9 months)

After hatching the larva builds a nest, begins to glow and starts to feed. Once it has grown to around 30 – 40 millimetres it covers itself in a protective skin and suspends itself on a long thread to become a pupa.

Pupa: (12 – 13 days)

It takes nearly two weeks for the pupa to become a fly. During this time the female glows brighter than the male to ensure that she has mates when it’s time to hatch.

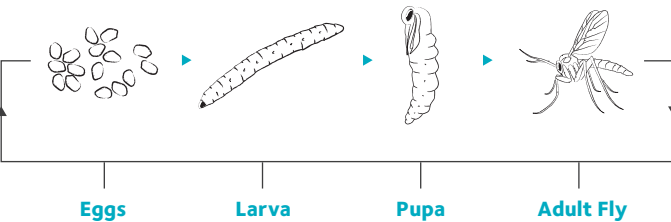
Fly: (1 – 5 days)

While the female dies quickly after laying eggs the male can live on for up to another 5 days.



Glowworm nests

Glowworms base themselves in individual nests which can be reconstructed and repaired and are not unlike a hammock made of silk attached to the roof of the cave. From the hammock they hang their silk fishing lines.



The Aurora Cave System

As far as the eye can’t see

The twists and turns of the Aurora cave system are legendary. While the tour reaches some interesting places it certainly does not cover the distance of the underground system.

6.7 kilometres long, and with four sprawling levels, the cave system is equal parts dark and treacherous, magical and enthralling.

Diving in: While the name Te Ana-au is translated as ‘cave with a current of swirling water’ for years the cave existed merely as part of Maori legend. However in 1948, after three years searching, one determined explorer finally found the hidden entrance. After uncovering evidence of water disappearing in the hills and reappearing at the lake, Lawson Burrows took the plunge – diving in and under the lake’s edge before resurfacing inside the cave. Recognising the incredible potential of the site Mr Burrows began the first tourism operation soon after this initial discovery.

Exploring further: There are many distinct areas within the Aurora system, the colourful names of which leave visitors with no doubt as to the features. The Cathedral is the highest point inside, rising 20 metres from the cave floor up. It may get larger too. The caves will continue to grow and evolve.

Protecting and preserving: Access is restricted to the fragile caves ecosystem, and a set number of visitors are allowed each year. It’s not just because of what’s in the cave either. As the major wild habitat of the endangered takahe, an iconic flightless native bird, the surrounding Murchison Mountains are also highly important as a conversation area.



1. Sump 2. Glowworm grotto 3. Narrows 4. Boat 5. Dam 6. Whirlpool 7. Waterfall 8. Cathedral 9. Walkway 10. Entrance