

# New Zealand longfin eel

*Anguilla dieffenbachii*

## OTHER COMMON NAMES

Tuna

## THREAT RANKING

At Risk: Declining

## Sharing Pastoral Streams with Native Fish

New Zealand's long isolation has created a unique freshwater fish fauna with many species found nowhere else on earth. Our freshwater fish are taonga (treasures), and species such as tuna (eels) play an important role as mahinga kai, holding significant cultural, ecological and environmental value. In our streams, native fish rely on healthy, connected habitats that extend from shaded headwaters through to lowland waterways. This is important not only for species that live within pastoral environments, but also for those that need a clear pathway between freshwater and the sea to complete their life cycles. Farm waterways are a key part of this network, providing habitat for spawning, feeding and growth, as well as the connections between these areas. Understanding which fish live in your waterways is a rewarding first step toward sharing these spaces and supporting healthy, thriving fish communities.

## Juvenile eels (elvers) can climb wetted obstacles with their bodies completely out of the water!

The New Zealand longfin eel is one of three eel species found in New Zealand (alongside the native shortfin eel and the self-introduced Australian longfin eel). It is the largest freshwater eel species, growing to over 2 m in length and weighing more than 20 kg. Eels are easy to recognise, but there are several ways to tell the species apart.

In longfin eels, the dorsal fin (back) starts well forward of the anal fin (underside), which gives them the "longfin" name and helps distinguish them from shortfin eels (Figure 1). In shortfin eels, these fins are nearly the same length.



Figure 1: Comparison of fin location on the New Zealand longfin eel (top) and New Zealand shortfin eel (bottom), noting the larger difference in starting positions of the dorsal fin of the longfin eel.

Another distinguishing feature is that the skin of longfin eels wrinkles when they bend (Figure 2), which is not seen in shortfin eels. These differences can be hard to spot when eels are in the water, especially as both species often live in the same habitats.

Longfin eels also look very similar to Australian longfin eels. However, the Australian species has scattered black blotches along the top of its body, which New Zealand longfin eels do not have.



Figure 2: Longfin eel showing the wrinkles unique to this species when bending.



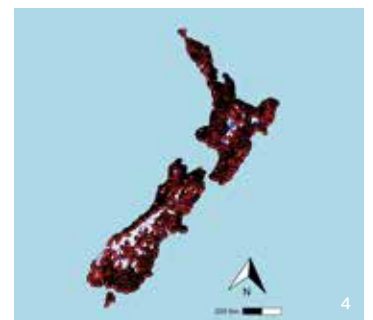
Figure 3: Large longfin eels greater than 700 mm in length will develop into females.

## Where do longfin eels live?

Longfin eels are only found in New Zealand and are widespread throughout the country, occurring in rivers, lakes, and wetlands across both the North and South Islands, as well as Stewart Island and the Chatham Islands (Figure 4).

They are exceptional climbers, allowing them to penetrate far inland. Longfin eels have been recorded more than 300 km upstream and at elevations above 1000 m above sea level, including in headwater streams above waterfalls.

Figure 4: National distribution of the New Zealand longfin eel. Data represent capture records held in the New Zealand Freshwater Fish Database (NZFFDB) April 2026.



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## Lifecycle of the longfin eel

Longfin eels are catadromous, meaning they live most of their lives in freshwater but migrate to the ocean to spawn (Figure 5). Like other New Zealand eel species, they begin life in the subtropical Pacific Ocean, although their exact spawning location is still unknown.

Their larvae (called leptocephali) drift on ocean currents back to New Zealand. They then transform into transparent “glass eels,” named for their see-through bodies. After entering freshwater, they develop into darker juvenile eels (elvers), which move into suitable habitats to feed and grow.

This growth phase can last for several decades before the eels mature and begin their migration back to the ocean to spawn. Before migrating, eels stop feeding and undergo physical changes to prepare for the sea: their head becomes more streamlined, their belly turns silvery, their eyes enlarge, and their pectoral fins become larger and darker.



Figure 5: Lifecycle of the New Zealand longfin eel.

## What longfin eels need in streams

Longfin eels use a wide range of freshwater habitats across New Zealand, including rivers, lakes, wetlands, ponds, and estuaries. They are highly adaptable and can also thrive in modified environments such as farm and urban waterways.

They prefer habitats that provide plenty of cover, such as undercut banks, overhanging vegetation, tree roots, logs, debris dams, rocks and boulders. Streams with a mix of these features offer better shelter, feeding opportunities, and overall habitat quality.

Longfin eels are mostly active at night and hide during the day, making instream cover essential for refuge, and for smaller individuals, protection from predators.

Juvenile eels (elvers) are strong climbers and can move far upstream, even climbing steep waterfalls. However, they can be blocked by instream structures such as dams or perched culverts that sit above the water surface, preventing access to suitable habitats for feeding and growth.

Longfin eels are top predators. Smaller eels feed mainly on aquatic insects and small fish, while larger eels eat a wider range of prey, including larger fish and occasionally small birds or mammals. Flood events can also provide important feeding opportunities by washing land-based insects into streams.



Photo credits: Cindy Baker, Peter Williams, Michele Melchior, DairyNZ

## » Actions you can take to make your local stream a better place for eels

- Fence streams to exclude stock and reduce bank erosion and damage to streambeds.
- Plant and maintain native riparian vegetation to provide shade and keep stream temperatures cool. Riparian planting also stabilises banks, adds habitat complexity (such as roots and woody debris), and supplies organic matter. Shading can also reduce nuisance weed growth and the need for mechanical channel maintenance, which can disturb benthic habitats used by eels and other species.
- Retain logs, boulders and undercut banks as these provide important refuges for eels.
- Improve fish passage at instream structures such as culverts, weirs and floodgates. Ensure structures are correctly sized and installed so they do not create drops, barriers, excessive water velocities or scouring that restrict eel movements.

*Refer to regional DairyNZ guidance & NZ Fish Passage Guidelines for more information*