

Eels: Slippery characters

Three eel species are present in New Zealand; **shortfin**, **longfin** and the **Australian longfin**, or spotted eel, thought to have arrived of its own accord as recently as 25 years ago.

The longfin inhabits all types of water from tiny streams to the largest rivers, coastal and inland lakes, brackish (semi-salty) estuaries and lagoons. Shortfins however prefer warmer brackish waters, coastal lakes and lowland lakes.

Considered a threatened species, longfin catch limits have recently been reduced and a maximum size limit applied to protect the large mature females.

Like some galaxiids, eels also make the arduous journey downstream and out to sea to complete their life-cycle.

NATIONAL TREASURES

EELS (TUNA) ARE SUCH AN IMPORTANT RESOURCE FOR MAORI THAT IN THE PAST BATTLES WERE FOUGHT OVER THEM. TUNA WERE CAUGHT USING WOVEN POTS (HINAKI), STREAM FENCES (PA TUNA), SPEARS (MATARAU), NETS (KORAPA), BAITED LINES (TOI), DITCHES (KOUMU) OR BARE HANDS.

MAORI IDENTIFY MANY MORE VARIETIES THAN THE THREE SPECIES RECOGNISED BY SCIENTISTS, WITH OVER 100 LOCAL NAMES FOR EELS.



The longfin can grow to 2 m long and live for over 100 years! The record is a 24 kg whopper caught at Lake Waihola near Dunedin. Photo: Stephen Moore, Landcare Research

NZ LANDCARE TRUST

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Bullies: tough stuff!

There are 7 species of native **bully**. Unlike the galaxiids they have coped well with humans, remaining fairly widespread and abundant, with only one species regarded as threatened. They are "generalists", occupying all types of aquatic habitat and feeding on a wide range of food.



Redfin bully. Photo: Peter Hamill, Marlborough District Council

You can help our native fish survive and thrive!

- Plant riverbanks with natives
- Install "fish-friendly" culverts
- Fence stock out of waterways
- Never tip pollutants down drains
- Leave stable wood debris in streams for habitat
- Take only enough eels and whitebait you need for a feed
- Never release or transfer live exotic fish into native fish habitat



Introducing the exotics

In the late 19th century early settlers introduced **trout** and **salmon** for sport and food. So treasured are these two game fish that their habitats get special protection under the Resource Management Act. **Char**, **tench**, **rudd** and **perch** are also fished for. Rudd, though a sportsfish in the Auckland/Waikato region, is regarded as a pest elsewhere. A **Fish and Game licence** is required to fish for these species.

Pets or pests?

Many aquaria and pond fish have been released into waterways, becoming major pests. They've rapidly colonised areas, in some places building up huge populations. Exotic fish threaten the survival of native fish:

- **koi carp** uproot native aquatic plants, stir up sediment
- **catfish** stir up sediment, eat native plants, snails and fish
- **gambusia**, ("mosquitofish"), **tench**, **rudd**, **perch** and **goldfish** eat native insects, plants and fish, denying our native fish their food supply

Stop the spread

- **Never, ever** release unwanted aquarium plants or fish to waterways, or tip down the drain
- Wash your boat, trailer and fishing gear carefully after each trip to make sure they are free of weeds, fish and fish eggs before launching
- It is illegal to release any fish into a natural watercourse without a permit, or to breed or sell pest fish

If you weighed all of the fish in the Waikato Basin, a staggering 80% would be koi carp. Photo: Nelson Mail

Fishy factsheets in this series:

#1 Our freshwater fish

- #1 Ngā ika wai māori
- #2 Stream works for fish
- #3 Fixing your stream edges
- #4 Native fish in the city
- #5 Native fish on the farm
- #6 Caring for our catchments

All factsheets can be downloaded from: www.landcare.org.nz

hooked on fish #1



Our freshwater fish

LEARN ABOUT OUR UNIQUE NATIVE FISH, WHERE THEY LIVE AND WHAT YOU CAN DO TO HELP PROTECT THEM AND THEIR HABITAT.

Giant kokopu. Photo: Stephen Moore, Landcare Research

Something in the water...

Picture a freshwater fish - is the first one that comes to mind an eel or trout? New Zealand's streams, lakes, rivers and wetlands support around 50 species of native fish - galaxiids, bullies, eels, lamprey, black flounder, torrentfish, smelt and mullet to name a few. Add to this around 22 species of exotic fish. With this many species, our freshwaters should be packed with all sorts of fish, right? Read on to find out what the story is.

Meet the locals!

Many of our native fish are seldom seen because they are secretive, small, camouflaged, live in remote areas, or are nocturnal, hiding under rocks and overhanging vegetation during the day. Our native fish are also rare - half are threatened with extinction, with one already extinct - the grayling, last seen in the 1920's.



If they don't end up in a frying pan, some of these tiny fish can migrate over 100 km from the sea upstream. Photo: Peter Hamill, Marlborough District Council

The Galaxiids: Aquatic all-stars

Galaxiids are New Zealand's largest group of freshwater fish with 29 species including inanga, kokopu, koaro and mudfish. The name galaxiid refers to the clusters of golden or silvery star-like patterns on their scale-less bodies - perfect camouflage in the dappled light of the small forest streams they tend to favour. They are also found in swamps, drains and larger waterways. Many galaxiids, particularly koaro, are great climbers, able to scale waterfalls helped by ridges on their fins. Invertebrates, both aquatic species like midge, mayfly and mosquito larvae, and those that fall into the water, are an important part of their diet.

Mudfish: summer sleepers

Mudfish have a bizarre ability to live out of water in tree root hollows and damp leaf litter for weeks at a time during dry periods. They are able to do this by wriggling their cigar-shaped bodies into tiny crevices, where they semi-hibernate (aestivate) by 'breathing' through their moist skin. This means that they can survive in seasonally dry waterways, drains, pools and swamps. All 5 species of mudfish are considered highly threatened due to habitat loss.

Despite their name, mudfish actually require clean water, and are a good indicator of a healthy environment. Photo: Stephen Moore, Landcare Research



There's more to whitebait than fritters!

Whitebait are actually 5 species of galaxiid. As "diadromous" fish, they spend part of their life in the ocean and part in freshwater. Adults gather from autumn to winter to breed. Some species like banded kokopu lay their eggs in amongst leaf litter in forested streams during high flows. Other species migrate downstream to lay their eggs and one species, the inanga gathers in estuaries to spawn on king tides. Their eggs stick to damp grasses, rushes, sedges and flax on the river banks, and hatch around two weeks later on the next set of high tides. Floods and ebbing tides induce the larvae to hatch before being carried by the current out to sea where they spend four to six months feeding on microscopic plankton. They return to freshwater between early spring and early summer, swimming upstream together as whitebait.

The traditional kiwi pastime of whitebaiting is under threat! The long-term survival of our native fish is uncertain because their habitat is still being destroyed by wetland drainage, pollution, vegetation clearance, stock damage, over-fishing and continued commercialisation. Barriers in waterways such as culverts hinder their migration, and introduced fish such as trout prey on them.

NATIVE FISH IN THE LANDSCAPE

In a healthy landscape, our native freshwater fish can be found in all sorts of places...



Longfin eel



Dwarf galaxias



Shortjawed kokopu



Koaro



Common bully



Redfin bully



Banded kokopu



Torrent fish

Longfin eel

Dwarf galaxias

Upland stream

Shortjawed kokopu

Streams in forest, solid canopy, small rubble streams

Longfin eel

Koaro

Hydro lake

Common bully

Forested wetland, areas of native forest and small pools

Redfin bully

Banded kokopu

Longfin eel

Streams in forest, solid canopy, small rubble streams

Giant kokopu

Torrentfish

Mid-reach stream – fast flowing but below waterfall/dam

Lowland swamp

Mudfish

Lake with a river inflow and drain outlet

Mudfish

Grey mullet

Smelt

Common bully

Estuary

Inanga

Giant bully

Lamprey

Drain

Shortfin eel

Common bully

Banded kokopu

Giant kokopu

Common bully

Black flounder

Giant bully

Lowland stream – wide, sluggish

Giant bully

Sea

Giant kokopu



Brown mudfish



Shortfin eel



Grey mullet



Smelt



Inanga



Black flounder



Lamprey



Giant bully

