Adult lamprey. *Photo: DOC*

Lamprey – an ancient and secretive native fish

Information for landowners

DOC is searching for lamprey in this area and would like to access waterways on your land. This factsheet provides information about lamprey, how we're searching for them and what's involved if you agree to provide access. We will share all the information we collect with you.

Lamprey are also known as kanakana in the South Island and piharau in the North Island.

Methods we use to look for lamprey

We may use some or all of these methods in your area.

Environmental DNA (eDNA)

All the organisms in an environment excrete or shed tiny amounts of their DNA. This environmental DNA is washed into streams and rivers and we can collect it by filtering a water sample. Lab analysis of the filter by Wilderlab shows up the thousands of species of insects, birds, animals, plants, fungi, fish and other organisms present – including lamprey.

We either syringe water through a filter or install samplers in a stream to collect DNA for 24 hours.

- Visits and time required: 1 or 2 visits, 1–2 hours each.

Pheromone sampling

Lamprey larvae release a tiny amount of a unique pheromone that we can use to find the streams where larvae are present – these same streams are used by adult fish to spawn (lay and fertilise eggs).

Department of Conservation
Te Papa Atawhai

Te Kāwanatanga o Aotearoa
New Zealand Government

Left: DOC freshwater scientist and manawhenua electric fishing in Otago.
Above: Lamprey juvenile. *Photos: DOC*

Samplers placed in a stream absorb the pheromone and are then analysed by NIWA. The samplers are about 50 mm square and are attached to a waratah with cable ties.

Because the pheromone is only present in very small quantities, we need to leave the samplers fully submerged in the stream for 2–3 weeks to collect enough pheromone to be detectable.

- Visits and time required: 2 visits of 30–60 minutes, about 3 weeks apart – one to set up the sampler and one to collect it.

Electric fishing

We use electric fishing to find lamprey larvae and check if fish are present before putting out pheromone samplers. This method involves passing an electric current through sandy habitat or water to temporarily immobilise the larvae or fish. They are caught in hand-held nets, counted, weighed, measured, and then released unharmed.

- Visits and time required: 1 visit, about 3–4 hours.

Data storage and privacy

We will share the results of this work with you. The information will also be added to the New Zealand Freshwater Fish Database, which is open to the public, and shared on Wilderlab's website unless you, iwi or hapū request otherwise. We are happy to discuss how location information is presented.

Why DOC is searching for lamprey

Lamprey numbers are declining across the country, and the species has a conservation status of Threatened – Nationally Vulnerable.

Surprisingly little is known about lamprey – until 2013 nobody had found a 'nest' where the fish spawn. They are elusive and hard to find. Adult fish are mainly active at night. Juvenile fish spend most of their time buried in sediment where it's almost impossible to spot them.

Our work to protect and restore this species includes keeping track of the populations we know about and searching for new ones. This information will help us focus conservation efforts on areas where they live to secure these populations and stabilise their numbers.

New methods like eDNA and pheromone sampling are enabling us to find and study lamprey much more easily.

About lamprey

Lamprey are an ancient fish that have existed for more than 360 million years. Lamprey is a māhinga kai species for Māori and an important traditional fishery.

Lamprey and eels

Adult lamprey may look like eels but have some distinct differences:

- Lamprey have no fins on their sides. Eels have small pectoral fins on the side of their bodies.
- Lamprey have a circular fleshy sucker mouth, filled with hundreds of small teeth and a rasping tongue. Eels have jaws with teeth.
- Lamprey have seven pairs of small holes just behind their eyes that are the openings of their external gills. Eels don't.
- Lamprey have vertebrae made of cartilage. Eels have bones.

The lamprey lifecycle takes about 9 years to complete

Adults enter rivers and streams during winter and spring and travel upstream to spawn. They spend 12–16 months in freshwater and do not feed during this time. They change colour from blue to a dull brownish grey. Males develop a large baggy pouch behind their mouths as they mature.

Lamprey lay their eggs under boulders in streams in spring and early summer and guard their 'nests' while the eggs develop. Adult lamprey die a few months after spawning.

Larvae hatch in about 6 weeks and stay in the nest for another 2–3 weeks. Larvae burrow into soft sand in slow-flowing parts of the waterway and emerge to feed at night. They live in rivers for 3–5 years and grow into juvenile fish.

Juvenile lamprey have large silver eyes and silver-blue coloured bodies. They move out to sea and spend 3–4 years, growing to 450–750 mm long. In the ocean, lamprey attach themselves to large animals like fish and whales using their sucker mouth. They feed as parasites, rasping into the host's flesh with their sharp teeth.

How you can help lamprey and other native fish

These are some simple ways for landowners to help lamprey and other native fish:

- Fence off waterways to stop stock trampling banks and damaging habitat for fish in and beside the river. This also helps reduce sediment pollution in the waterway.
- Check that new or existing structures in waterways (like culverts) allow fish to travel up and downstream. Check regularly to make sure access is maintained.
- Limit work in streams and if essential, consider using methods that minimise the impacts on lamprey. Call DOC for advice and make sure you have the right resource consents from your local council.
- Report sightings of sick or dying lamprey to the Ministry of Primary Industries on their hotline: 0800 80 99 66. The sickness could be lamprey reddening syndrome, which has been seen in a small number of Southland catchments.

More information and contact us

Contact us on: info@doc.govt.nz.
Read more about lamprey on DOC webpage: www.doc.govt.nz/nature/native-animals/freshwater-fish/lamprey/.
See information about providing fish access up and downstream: www.doc.govt.nz/fishpassage.