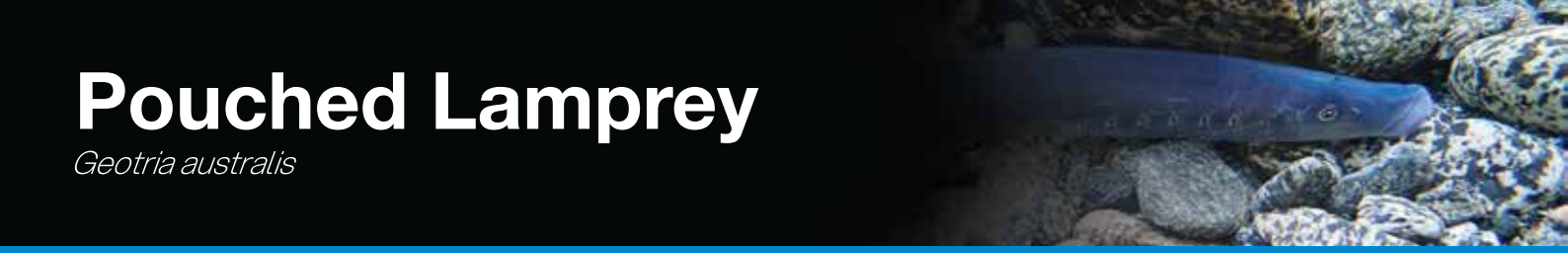
Pouched Lamprey

Geotria australis



OTHER COMMON NAMES

Piharau (North Island), kanakana (South Island)

THREAT RANKING

Threatened - Nationally Vulnerable

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 lamprey 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.

Lamprey are "living fossils" having been around for 360 million years – longer than dinosaurs!

Lamprey may look a bit like eels, but there are some clear differences: they have no lower jaw but possess a circular sucker mouth with an array of teeth, and there are seven gill openings behind each eye (Figure 1). Unlike eels, they also lack pectoral fins on the side of their body, close to the head. When the adults first arrive from sea, they are bright silver-blue before turning brown in freshwater. The adult lamprey return to streams to breed (and then die) and during this time they do not feed for over 15 months. Adult males grow a soft pouch under their mouth during breeding (called a gular pouch). Larvae (called ammocoetes) are a muddy brown colour and look like small eels (Figure 1). They have no eyes and spend years buried in the soft stream sediments.

Figure 1: Colour differences in pouched lamprey at different life stages. (1) Freshwater adult male, showing brown colouring and the gular pouch under the mouth. (2) Young stages: brown ammocoete larvae (top) and blue-silver macrophthalmia juvenile (bottom). (3) Adult with bright silver-blue colouring upon moving into freshwater. (4) The mouth of a lamprey showing the circular disc of teeth and mouthparts.

Lifecycle of the pouched lamprey

Lamprey have one of the most unusual life cycles of any freshwater fish, which takes over 10 years to complete (Figure 2). They are termed anadromous (like salmon) as adults return to freshwater to breed after growing in the ocean.

Larvae begin life in freshwater, where they bury into sediments and filter feed for 3-4 years. They then metamorphose into juveniles (termed macrophthalmia), developing eyes and becoming bright blue with a silver belly.

The juveniles migrate to the ocean and attach to whales and fish to feed parasitically for 3-4 years. When ready to breed, adults re-enter freshwater, migrating upstream at night and often climbing the rough faces of waterfalls and weirs with their sucker mouth to reach suitable spawning areas. They form monogamous pairs and mature for 12-15 months before spawning beneath large rocks, bedrock slabs and other solid structures. After spawning, adults will die a few months later.

Figure 2: Lifecycle of the pouched lamprey

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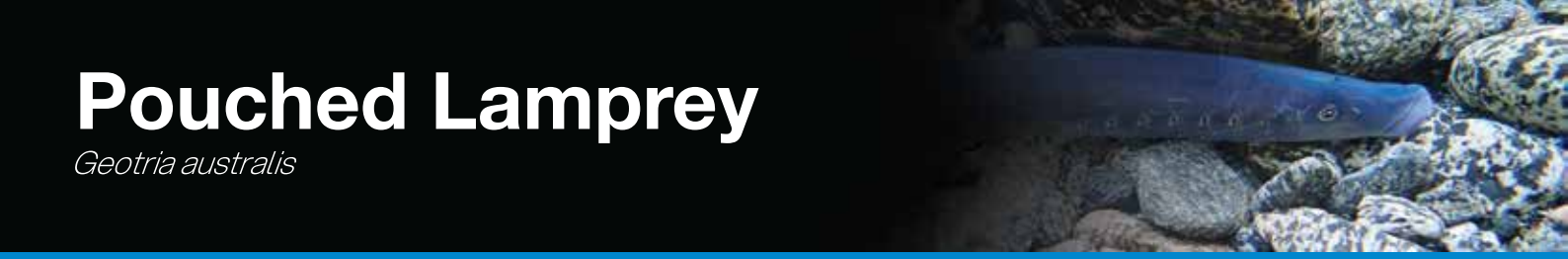

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Where do lamprey live?

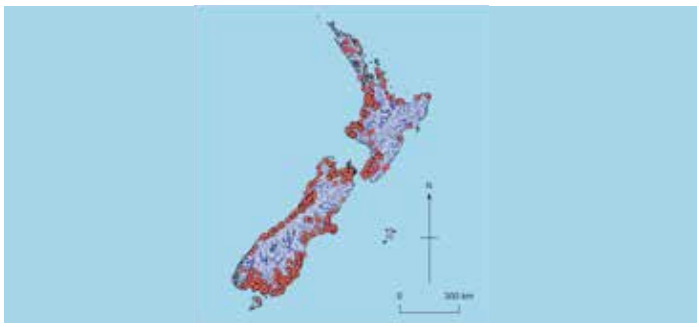

Figure 3. National distribution of the pouched lamprey. Data represent records held in the New Zealand Freshwater Fish Database (NZFFDB) April 2026.

In freshwater, lamprey prefer cooler waters and are in the highest densities in the South Island, particularly the Southland and Otago regions (Figure 3). Lamprey are commonly found in both pastoral and forest covered streams especially in cooler waterways below about 300m elevation.

In pastoral catchments, lamprey often use small streams and drains for spawning and as nursery areas for their young.

What lamprey need in streams

Figure 4: Example of fishing for lamprey juveniles (ammocoetes) in soft-sediment margins

Larvae need soft-sediment margins and stable banks to burrow into. Adults hide during the day under logs, boulders and within stream bank cavities.

While lamprey can climb instream obstacles, perched culverts that overhang the stream can block passage for adults trying to get upstream to suitable spawning sites.

Accordingly, unstable/eroding banks and migration barriers can severely reduce habitat for all life stages.

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

Actions you can take to make your local stream a better place for lamprey

- Fence streams to exclude stock and reduce bank erosion and damage to streambeds. This is essential for larval lamprey survival.
- 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 is detrimental to larval lamprey habitats.
- Retain logs, boulders and undercut banks, as these provide important refuges for adult lamprey.
- 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 lamprey movement.

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

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