

Common smelt

Retropinna retropinna

OTHER COMMON NAMES

Pōrohe, poorohe, cucumber fish

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 some species 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.

Common smelt are currently the only known host for one of New Zealand's freshwater mussels, whose parasitic larvae attach to smelt gills

Common smelt are one of two smelt species found in New Zealand, alongside Stokell's smelt, which is only found in Canterbury. Adult common smelt are small, slender fish with a forked tail and a small adipose fin (a fleshy lobe behind the dorsal fin; Figure 1).

They can easily be confused with īnanga, as the two species look and

behave similarly. However, īnanga lack scales and do not have an adipose fin near the tail. The scales on smelt give them a distinctive rainbow shimmer in the light.

When out of the water, common smelt have a strong cucumber-like smell, making them easy to recognise once caught.



Figure 1: (Left) Common smelt with scales and adipose fin visible. Adipose fin is highlighted by the yellow arrow. (Right) Common smelt with *Echyridella aucklandica*, the only known host of this freshwater mussel species.



Where do common smelt live?

Common smelt are native to New Zealand and are widespread throughout the country, occurring in rivers, streams, and lakes across both the North and South Islands, as well as Stewart Island and the Chatham Islands (Figure 2).

They are a lowland coastal species, most commonly found in the lower reaches of rivers, wetlands, estuaries and lakes. They typically occupy open water habitats. Although strong swimmers, smelt cannot climb obstacles and are therefore restricted to low-gradient, well-connected waterways where barriers do not prevent upstream movement.

Landlocked populations of smelt are common in inland lakes (e.g. Lakes Taupō, Rotorua and Rotoiti) where they have been introduced to support trout fisheries.

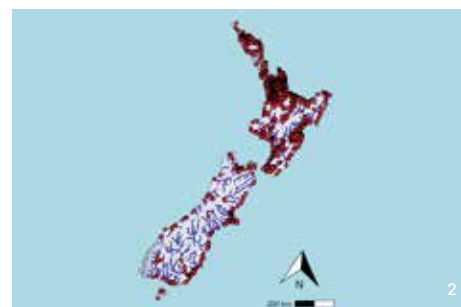
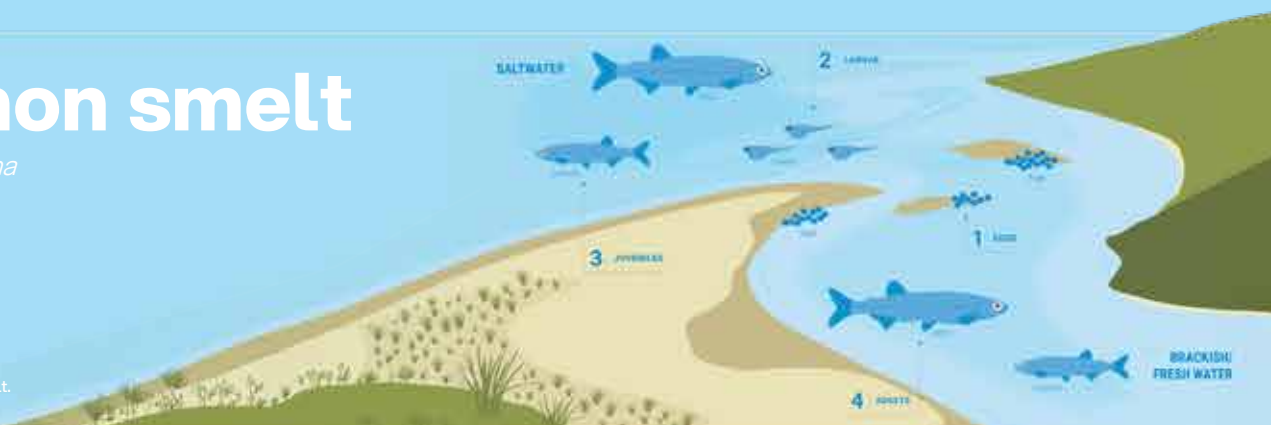


Figure 2: National distribution of common smelt. Data represent records held in the New Zealand Freshwater Fish Database (NZFFDB) April 2026.

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Figure 3: Lifecycle of common smelt.



Lifecycle of the common smelt

Common smelt have a flexible lifecycle and can occur as both migratory and landlocked populations within and between waterways. They are facultatively diadromous, meaning they usually migrate between the sea and freshwater, but can also complete their entire lifecycle in freshwater.

Migratory populations may feed and grow either at sea or in freshwater (Figure 3). Spawning typically occurs on sand or fine substrates. Marine-reared adults return to freshwater to spawn, while freshwater-reared fish move to the lower reaches of rivers to spawn.

After hatching, larvae from migratory populations move out to sea, where they grow in coastal waters before returning to freshwater as juveniles or adults (Figure 3). Landlocked populations complete their entire lifecycle within lakes and rivers.

Common smelt often form shoals near the water's surface, where they feed on small invertebrates. Like īnanga, they are effectively annual, with most individuals dying after spawning in their first year.

What common smelt need in streams

Common smelt occur in both still and flowing water, where they are active during the day and often swim in shoals near the water's surface (Figure 4). They show a preference for low-velocity habitats such as stream margins, backwaters, and pools adjacent to runs, where flow is gentle and food is readily available.

They rely on edge habitats that provide cover, such as overhanging riparian vegetation, tree roots, woody debris, and other complex structures along stream margins. These habitats offer shelter from predators and support higher densities of aquatic invertebrates, which are an important food source. Overhanging vegetation also supplies terrestrial insects that fall into the stream.

Common smelt are generalist, opportunistic drift feeders. Juveniles consume small drifting zooplankton and invertebrates, while larger individuals shift to bigger prey such as aquatic insects, amphipods and midges.

Common smelt are a fragile species that are sensitive to handling, water quality, and environmental stress. They are particularly sensitive to high water temperatures (generally above ~25°C), low dissolved oxygen, and pollutants such as ammonia. Their presence in streams can therefore indicate good habitat and water quality.

Figure 4: Shoal of common smelt swimming during the day.



Photo credit: Michele Melchior, Mary de Winton, Cindy Baker, DairyNZ

» Actions you can take to make your local stream a better place for common smelt

- 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.
- Retain logs, boulders and undercut banks as these provide important refuge for smelt.
- 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 common smelt movements.

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