

Bluegill bully

Gobiomorphus hubbsi

THREAT RANKING

At Risk: Naturally Uncommon

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.

Male bluegill bullies grow larger than females, which is the opposite to most other freshwater fish species.

Bluegill bullies are one of New Zealand's migratory bully species. They are the smallest of New Zealand's bully species, with most adults only growing to around 60-70 mm in length.

Despite their small size, bluegill bullies are easy to recognise by the bright blue colouring on their gill covers, which gives them their name. They can also be identified by the small dark spots on their cheeks (Figure 1).



Figure 1: Bluegill bully showing the distinctive blue gill cover and dark spots on the cheeks.

Where do bluegill bullies live?

Bluegill bullies are endemic to New Zealand and are widespread throughout the country, occurring in rivers and streams across both the North and South Islands. However, they are absent from Fiordland, as well as Stewart and the Chatham Islands (Figure 2).

As a migratory species, bluegill bullies are most commonly found close to the coast, where they have access to the sea. Their distribution within catchments depends on connectivity, and they are typically restricted to lower river reaches. Barriers such as tidegates, dams or perched culverts can easily block movement and limit access to suitable upstream habitat.

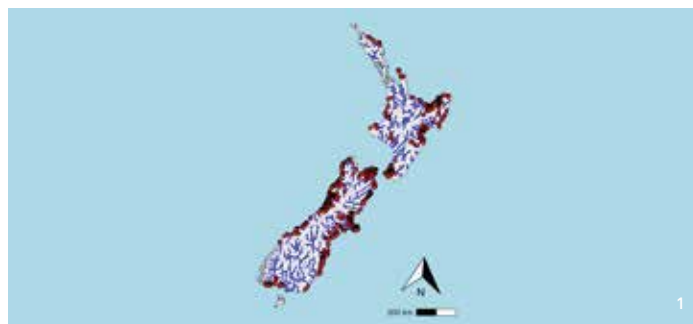


Figure 2: National distribution of the bluegill bully. Data represent records held in the New Zealand Freshwater Fish Database (NZFFDB) April 2026.

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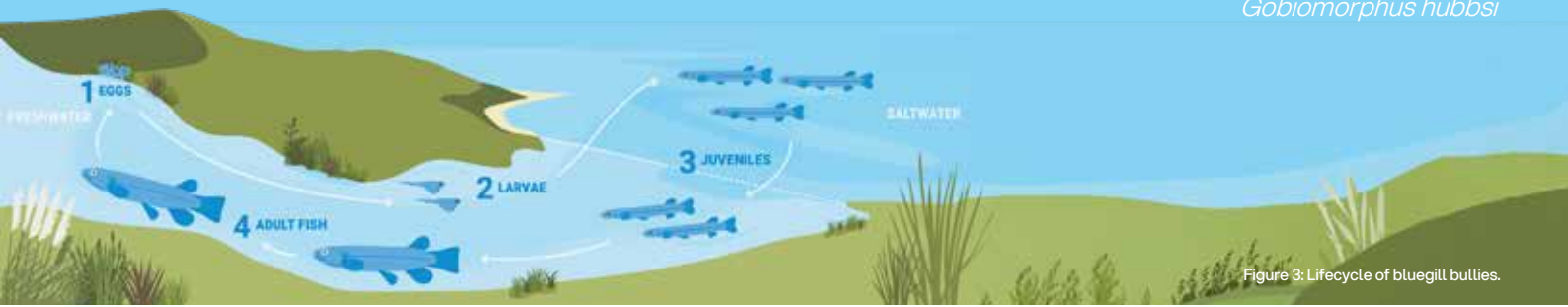


Figure 3: Lifecycle of bluegill bullies.

Lifecycle of the bluegill bully

Bluegill bullies are amphidromous, meaning their larvae are washed out to sea soon after hatching and spend several months growing in the marine environment before returning to freshwater as juveniles (Figure 3). As obligatory migrants, movement between freshwater and the sea is essential for completing their lifecycle.

They are most commonly found in rivers close to the coast, with the majority of adults occurring within 50 km of river mouths. Larger individuals tend to be found further inland, with males generally growing larger than females and occurring further upstream.

Once back in freshwater, juveniles migrate upstream into suitable habitats, where they grow to adulthood. Like other bully species, males establish and defend a nesting site under a rock, where females lay their eggs. The male then guards the eggs until they hatch, after which larvae are carried out to sea to begin the cycle again.

What bluegill bullies need in streams

Bluegill bullies are habitat specialists, preferring shallow, fast flowing riffle sections in gravel bed rivers and streams. These habitats are typically clean and well oxygenated, and their specific requirements mean bluegill bullies are often patchily distributed and uncommon in pastoral streams. Bluegill bullies live close to the streambed, where they spend much of their time foraging and sheltering, so maintaining stable substrates is essential for their survival.

They rely on substrates such as stones, cobbles, and boulders for shelter and breeding. Fine sediment can fill the spaces between these substrates, reducing shelter and breeding habitat, while habitat disturbance or substrate removal can reduce the availability of suitable habitat.

Bluegill bullies feed mainly on aquatic insects, particularly mayfly larvae. Their upward facing mouth allows them to pick food from beneath rocks in fast flowing water.



Photo credits: Cindy Baker, Michele Melchior, Robert McDowall, DairyNZ

» Actions you can take to make your local stream a better place for bluegill bullies

- 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 habitat for aquatic insects and refuge for fish species.
- 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 bluegill bully movements.

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