

Non-migratory bullies

Gobiomorphus sp.

THREAT RANKING

At Risk: Naturally Uncommon.

New Zealand is home to several species of bully in the genus *Gobiomorphus*, including both migratory and non-migratory forms. This fact sheet covers four non-migratory bully species:

Cran's bully
(*Gobiomorphus basalis*)

Dinah's bully
(*Gobiomorphus dinae*)

Upland bully
(*Gobiomorphus breviceps*)

Kaharore bully
(*Gobiomorphus matairaerore*)

These fish were previously treated as only two species, but recent research has shown that Dinah's bully is distinct from Cran's bully, and Kaharore bully is distinct from upland bully. Despite now being recognised as four separate species, they remain very similar in appearance, habitat use, and behaviour, and are therefore discussed here collectively.

Bullies are stocky fish with large heads and blunt noses. They are usually brown to olive in colour, with mottled or blotchy patterns that help them blend in

Typically seen resting on the streambed, these bullies are stocky fish with large heads and blunt noses. They are usually brown to olive in colour, with mottled or blotchy patterns that help them blend in with stones on the streambed.

There are some subtle differences between the two closely related pairs, which are difficult to see from a distance. Cran's bully and Dinah's bully have a plainer mottled appearance, while upland and Kaharore bully usually have more pronounced blotches and spotting, with the head covered in small, orange spots of varying density (Figure 1).

Where their distributions overlap, all four species can be difficult to distinguish. They also closely resemble common bullies, which overlap with all four species.

During the breeding season, mature males of all four species become darker and more colourful, often developing orange or yellow colouring along the edge of the dorsal fin, while females and smaller fish remain relatively plain (Figure 2).

Lifecycle of non-diadromous bullies

These four bully species are non diadromous, meaning they spend their entire lives in freshwater and do not migrate to the sea. Because they do not require access to the ocean, they can be found well inland. However, this lack of migration limits their ability to disperse, meaning populations are unlikely to naturally re establish once lost.

After hatching, juveniles remain within the same streams as adults and grow within the same catchment. These fish mature relatively quickly, typically reaching breeding age within one to three years and living up to around four years.

Like other bully species, males establish and defend a nesting site under a rock, where females lay their eggs. Males guard the eggs until they hatch, usually after several weeks, with newly hatched fish remaining on the streambed.



Figure 1: Kaharore bully (top) and upland bully (bottom) showing similarities in appearance.

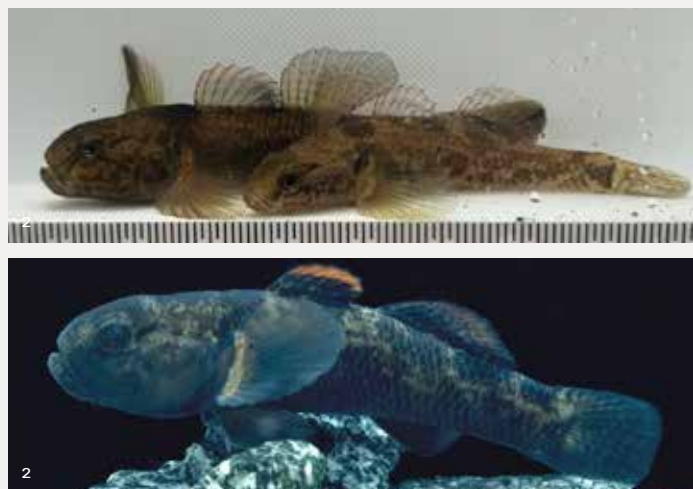


Figure 2: Cran's bullies. Top: Male (left) and female (right) outside of the spawning season. Bottom: Mature male exhibiting orange colouration on dorsal fin.

Photo credit: Peter Williams, Robert McDowall

Non-migratory bullies

Gobiomorphus sp.



Where do non-diadromous bullies live?

All four species are endemic to New Zealand, but there are clear differences in their distribution following the recent recognition of Dinah's bully and Kaharore bully as separate species. Cran's bully and Dinah's bully are restricted to the North Island. However, their distributions are largely distinct, with Cran's bully occurring mainly in the

northern North Island and Dinah's bully found in the lower North Island, south of the central volcanic plateau (Figure 3). The upland bully and Kaharore bully have more southern distributions. Upland bullies are widespread across much of the South Island, while Kaharore bullies occur in the lower North Island and in parts of the South Island north of the Southern Alps (Figure 4).

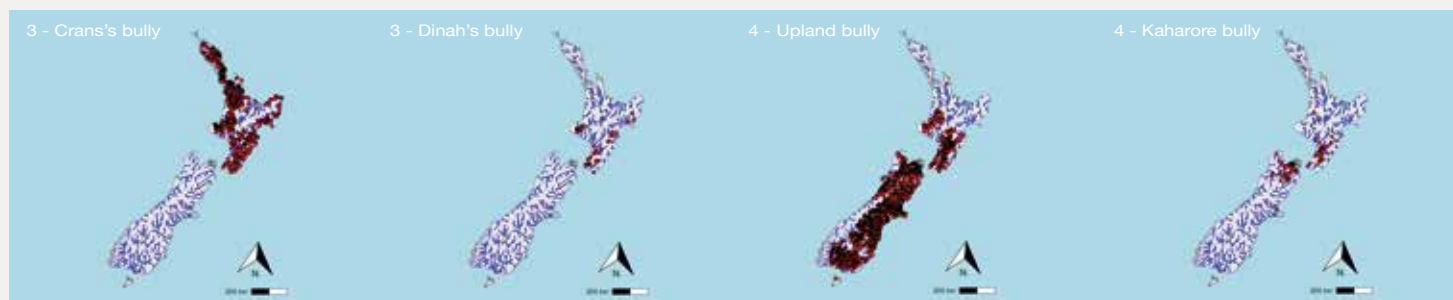


Figure 3: National distribution of the Cran's bully (left) and Dinah's bully (right). Data represent records held in the New Zealand Freshwater Fish Database (NZFFDB) April 2026. Note: Thacker et al. (2021) described two new bully species originating from Cran's bully. Records in the NZFFDB predate the change in species so are listed as Cran's bully. However, Dinah's bully forms the southern part of Cran's bully's distribution from Bay of Plenty and south Waikato. See Thacker et al. (2021) for detailed description.

Figure 4: National distribution of the Upland bully (left) and Kaharore bully (right). Data represent records held in the New Zealand Freshwater Fish Database (NZFFDB) April 2026. Note: Thacker et al. (2021) described two new bully species originating from upland bully. Records in the NZFFDB predate the change in species so are listed as upland bully. However, Kaharore bully is distributed in the North Island and top of the South Island, north of the Southern Alps. See Thacker et al. (2021) for detailed description. The records for upland bully in the Coromandel peninsula are outside of their known range and will likely represent misidentified bullies.

What non-diadromous bullies need in streams

Non-diadromous bullies are bottom-dwelling fish that live among stones, cobbles, and boulders on the streambed. Cran's bully and Dinah's bully are often associated with slow to moderate flowing streams, while upland and Kaharore bullies occupy a wider range of habitats, including wetlands, lakes, ponds, and both small and large streams.

They rely on substrates such as stones, cobbles and boulders for shelter and breeding, using the spaces between them for protection.

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. Because these species are non migratory and have limited ability to colonise new areas, protecting habitat at a local scale is especially important.

Non-diadromous bullies feed mainly on small invertebrates on the streambed, including midges, mayflies, caddisflies, small crustaceans, and snails. While most feeding occurs among stones and gravel, upland and Kaharore bullies have also been observed feeding in the water column.

» Actions you can take to make your local stream a better place for 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 used by bullies.
- Retain logs, boulders and undercut banks as these provide important refuge for bullies.
- 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 bully movements.

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