

# Native galaxiids are suppressed by both trout and reduced flow

Although low-flow conditions **reduce** predation on **native galaxiids** by **non-native trout**, native fish populations were **also reduced** by low flow. So, to conserve native fish and maintain suitable habitat, we should aim to restore and protect natural flows, as well as manage any harmful effects of non-natives.

## What we know and what we found

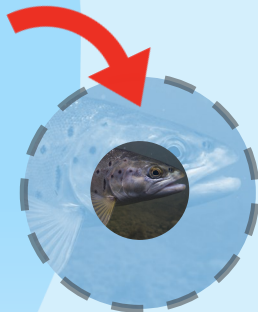
1.

Trout sometimes eat galaxiids, so trout presence can reduce non-migratory galaxiid populations.

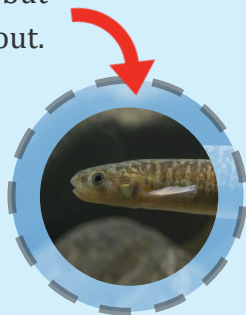


## Drying stream reaches (low flow)

2. Low flows almost eliminate trout, which are particularly sensitive to changes in river flow.

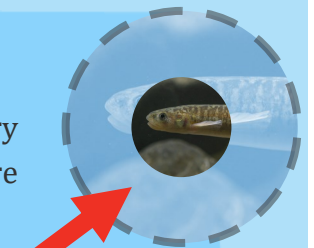


3. Low flows also affect non-migratory galaxiids, but to a lesser extent than trout.



## Perennial stream reaches (consistent flow)

4. In perennial streams with trout, non-migratory galaxiid populations were almost eliminated.



5. In perennial streams with no trout, non-migratory galaxiid populations were healthy.



Non-migratory galaxiids can survive some low flow, but they only thrive with consistent flow and no trout. Removing water has harmful effects on both types of fish.

## Background

Populations of non-migratory galaxiids (NMGs) are occasionally found in streams with lower flow, leading some to believe low-flow conditions may benefit them, and subsequently justify increased water abstraction in some cases.

We wanted to investigate if this was really the case.



## What is a non-migratory galaxiid?

Non-migratory galaxiids are a group of native fish in the same family as whitebait—but unlike whitebait, they do not migrate to the sea, instead spending their whole lives in freshwater.

All non-migratory galaxiid species in New Zealand are threatened or at risk.



## What we did

We used electrofishing surveys to determine abundance, body sizes, and growth of Canterbury and alpine galaxias (*Galaxias vulgaris* and *G. paucispondylus*).

We surveyed multiple high country streams in Canterbury, comparing streams with high and low densities of brown trout and no brown trout, and reaches with high vs. low flow in each (7 streams total).



Research conducted by MSc student Olivia Hore, with Jono Tonkin and Angus McIntosh at the University of Canterbury, and Nixie Boddy from the Department of Conservation.

Huge thanks to all landowners and field assistants. We also appreciate support from North Canterbury Fish & Game.

Photos by Angus McIntosh. Handout arranged by Brittany Earl.

A scientific paper is being prepared from the work, but contact Angus (angus.mcintosh@canterbury.ac.nz) in the interim.

