

Native galaxiids are suppressed by both trout and reduced flow

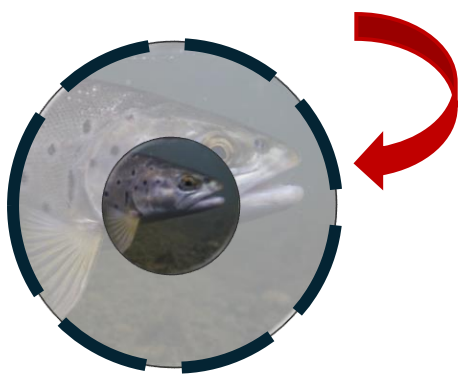
Although low-flow conditions reduce predation on native galaxiids by non-native trout, native fish populations were also reduced by low flow. To conserve native fish and maintain suitable habitat, we should aim to restore and protect natural flows, as well as manage any harmful effects of non-native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

What we found

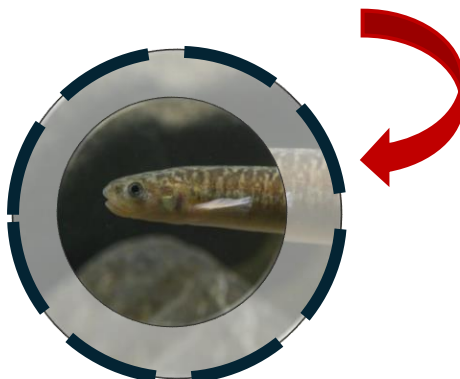
Trout sometimes eat galaxiids, so trout presence can reduce river-resident galaxiid populations.

Drying stream reaches (low flow)

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

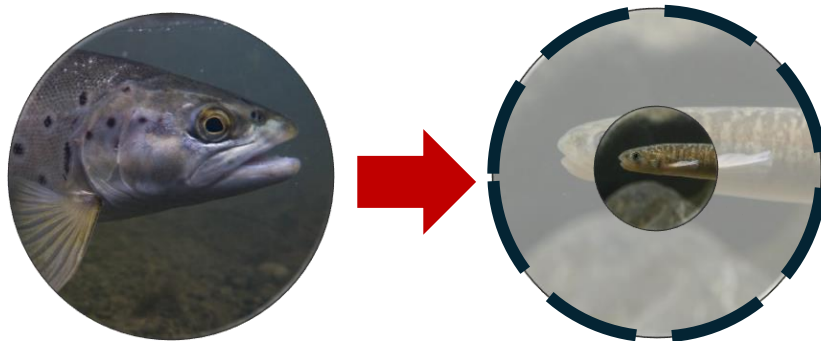


2. Low flows also affect river-resident galaxiids, but to a lesser extent than trout.

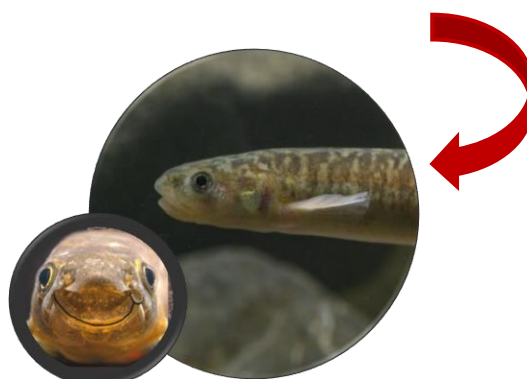


Perennial stream reaches (consistent flow)

3. In perennial streams with trout, river-resident galaxiid populations were almost eliminated.



4. In perennial streams with no trout, river-resident galaxiid populations were healthy!



River-resident galaxiids

Non-diadromous 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-diadromous galaxiid species in New Zealand are Threatened or At Risk.

A sub-set of non-diadromous galaxiids are river-resident galaxiids that spend their whole life cycle in streams and rivers. Populations of river-resident galaxiids 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 we did

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

We surveyed seven high country streams in Canterbury, New Zealand, that had perennial and low-flow reaches.

We compared streams with high densities of brown trout, low densities of brown trout and no brown trout, and reaches with high vs. low flow in each stream.



Conclusions

River-resident galaxiids can survive some low flows, but they only thrive with consistent flows and no trout present. Removing water from rivers has harmful effects on both native galaxiids and non-native trout.

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

Thank you to all the landowners and field assistants. We also appreciate support from North Canterbury Fish & Game. Photos by Angus McIntosh.

For the scientific paper prepared from this research, please see Hore et al. (2025) on the CRESP webpage [Critical Ecosystem Pressures on Freshwater Environments \(CRESP\) programme](#)



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