

Introduced trout hinder the recovery of native galaxiids

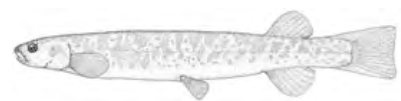
In high numbers, introduced trout reduced the growth of native galaxiids after an extreme flood, which may impair the natural recovery dynamics of native populations and increase their vulnerability to future floods. To protect native galaxiid populations, we should therefore aim to maintain strategically placed trout-free source populations of galaxiids, and manage the negative effects of trout.

What we know

Introduced trout outcompete our native galaxiids for food and habitat. Individual growth is important for fish population recovery after floods, because larger fish can be more successful breeders and more resistant to future floods. Therefore, faster growing fish can re-establish populations more effectively after flood events.

What we found

Galaxiid population recovering from extreme flood



Trout present

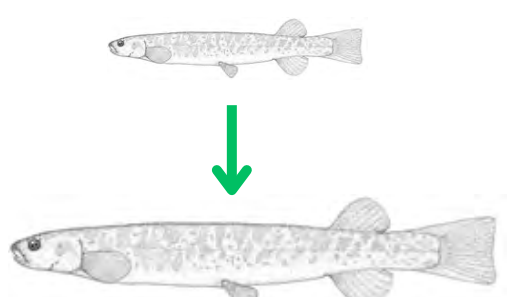
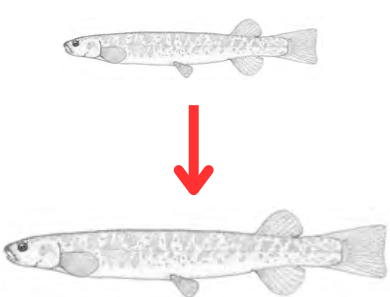
Trout free

Vulnerable galaxiid population

Resilient galaxiid population

Slower growing galaxiids interacting with a high number of trout. These individuals may take longer to reach sexual maturity and face an increased risk of flood related mortality.

Faster growing galaxiids in the absence of trout. These individuals may reach sexual maturity quicker and compensate for the negative affects of floods by re-establishing the population.



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 sea and instead spend their whole lives in freshwater. As a result, they are particularly vulnerable to population fragmentation from introduced species. All of New Zealand's native non-migratory galaxiid species are threatened or at risk.



Background

Extreme floods are predicted to intensify by an order of magnitude over the next century, so it is important to understand the recovery dynamics of native galaxiid populations that face existing pressure from introduced trout.



What we did

Following a major flood event in 2021, we used electrofishing surveys and mark-recapture methods to measure individual growth of Canterbury and alpine galaxiids (*Galaxias vulgaris* and *Galaxias paucispondylus*). We surveyed 12 high country streams in Canterbury over 4 sampling occasions, comparing streams with various abundances of brown trout and different magnitudes of flood.



Research conducted by MSc student Rory Lennox, 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. Photos by Angus McIntosh and Rory Lennox.

A scientific paper is being prepared from this research. Please contact Rory (rory.lennox@canterbury.ac.nz) in the interim for any questions

