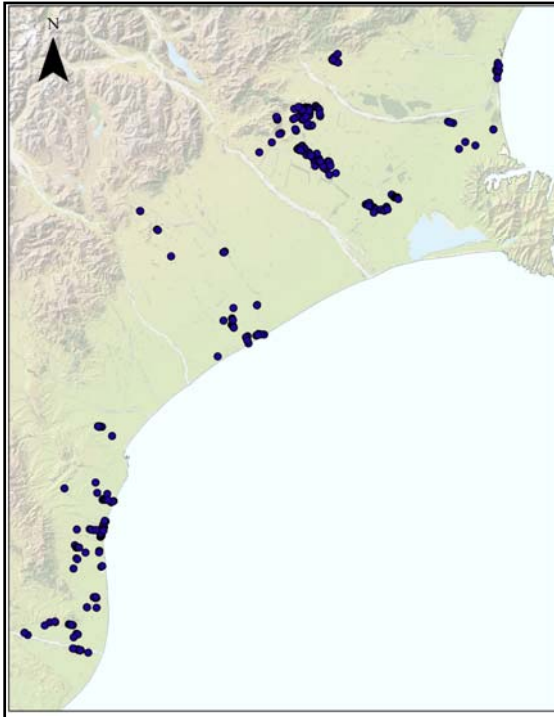


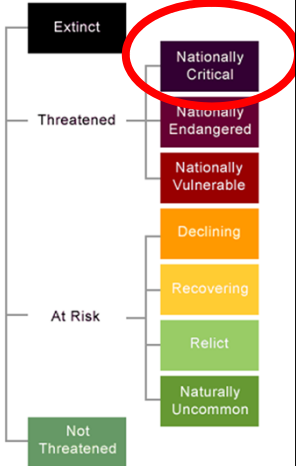
Re-establishing mudfish: creating resilient Kōwaro populations

Angus McIntosh with Christopher Meijer, Simon Coates, Helen Warburton, Matt Wilson & Tammy Steeves



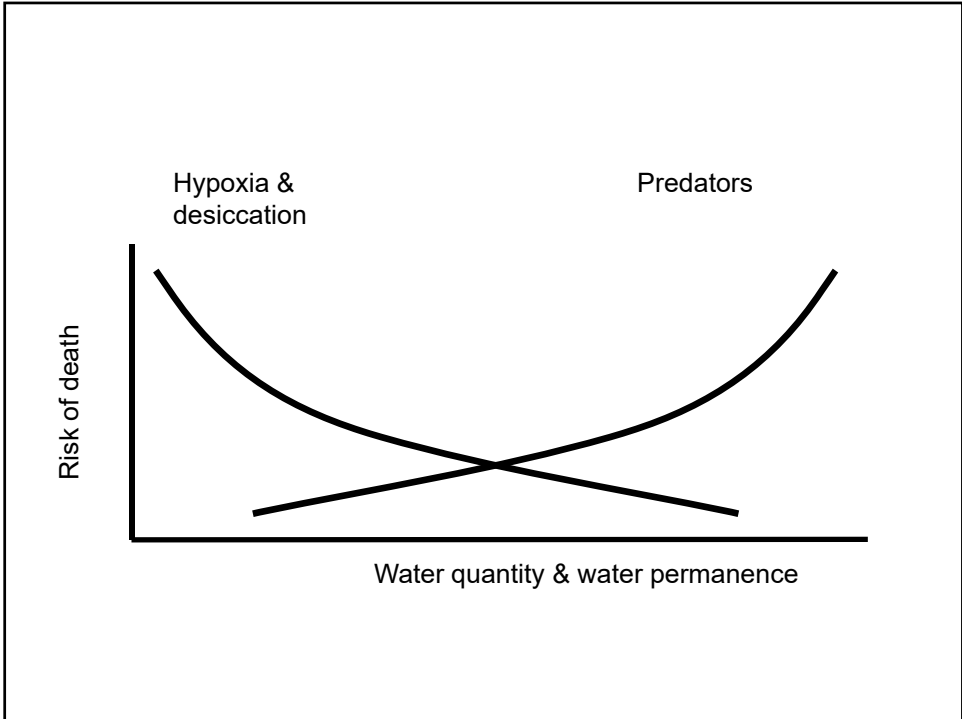
Kōwaro –
Current
distribution

Kōwaro – critically endangered... a rare weed!



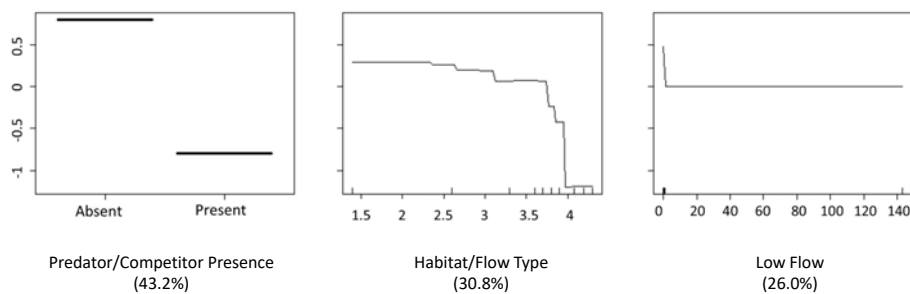
Habitat drying



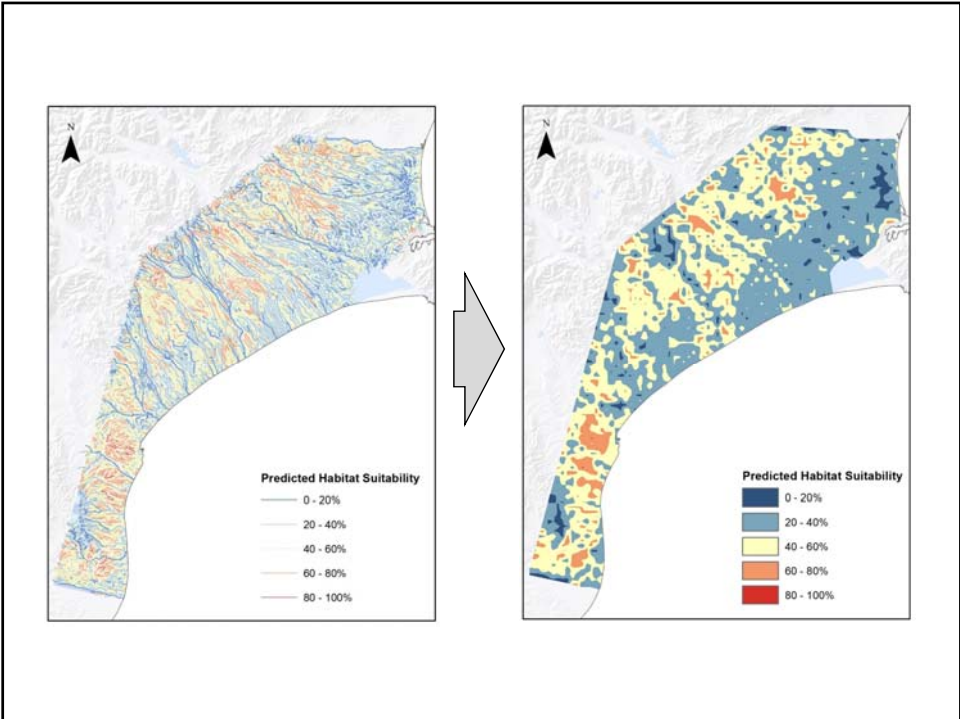
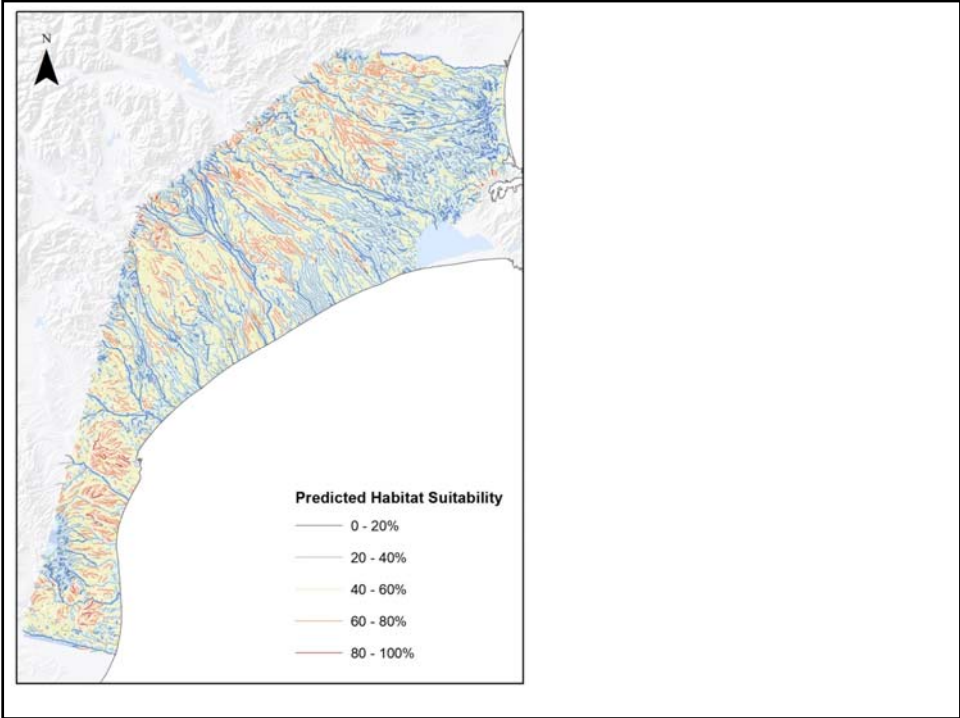


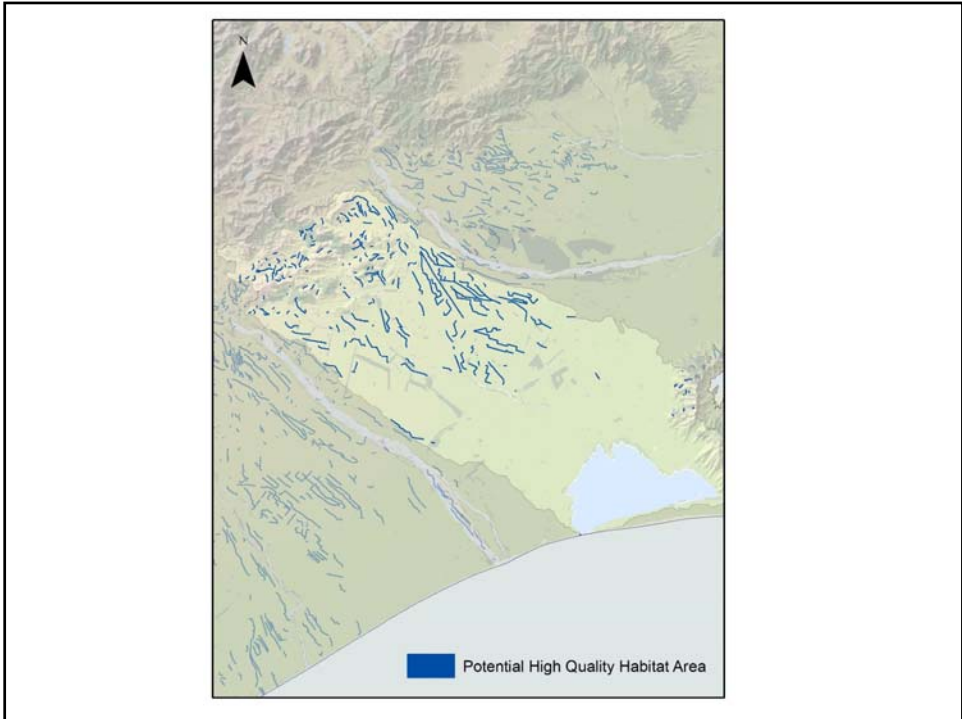
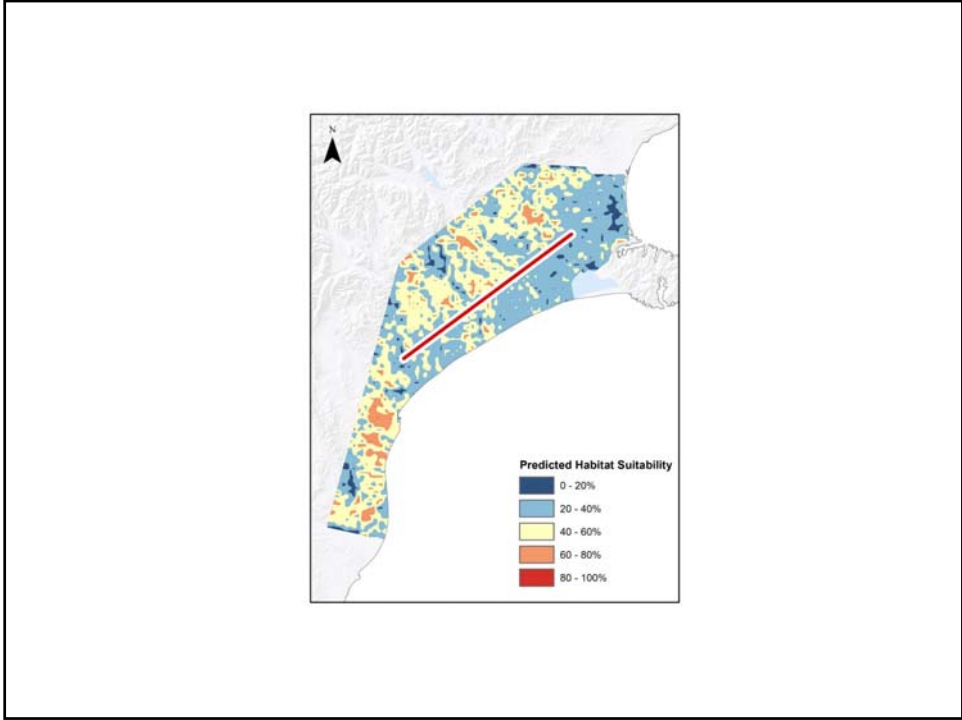


Habitat suitability model: Environmental Relationships



Ongoing MSc work by Simon Coats





Conclusion 1: Habitat criteria are narrow & important!

Altered flow regimes of natural systems could enhance or hinder mudfish habitat

Augmented flows have the potential to deleteriously influence mudfish habitat

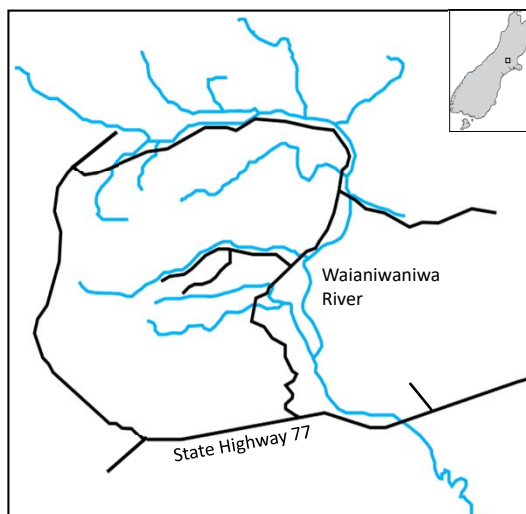
Removing predators will make mudfish less susceptible to flow changes

The Waianiwaniwa: 'predator-free stronghold'

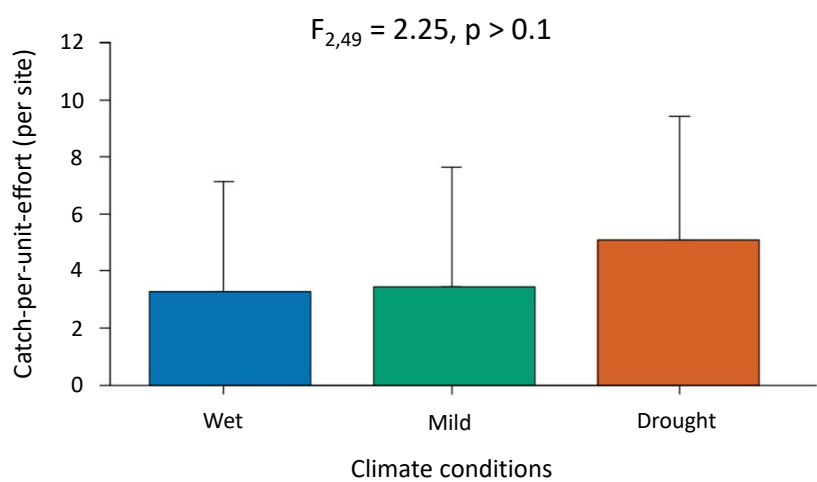
13 sites in 2007
520 mL → Wet

26 sites in 2010
415 mL → Mild

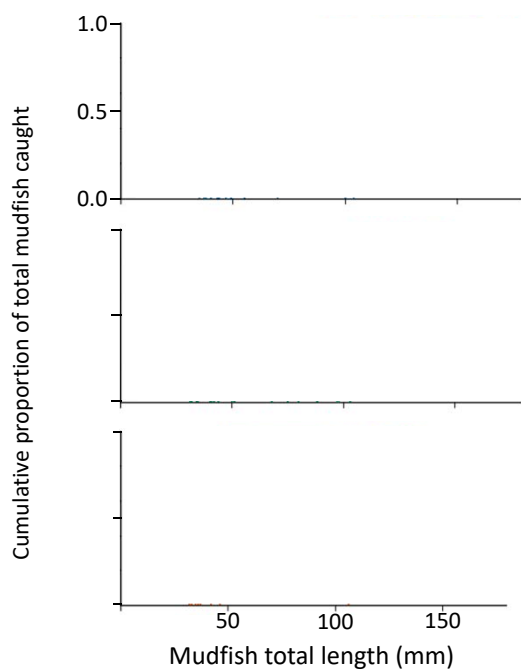
13 sites in 2015
290 mL → Drought

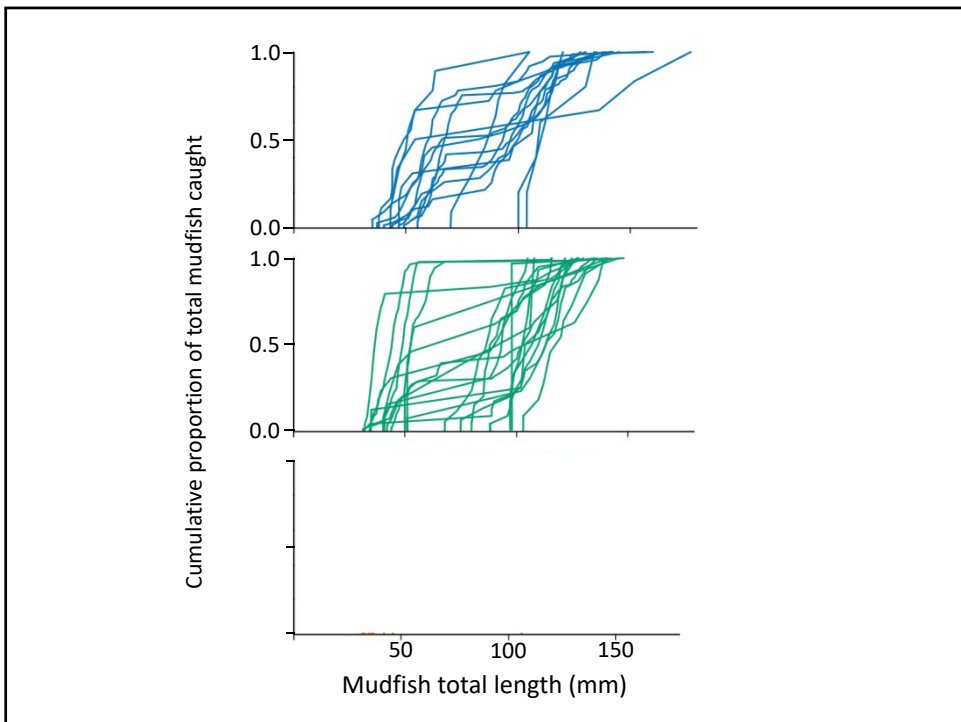
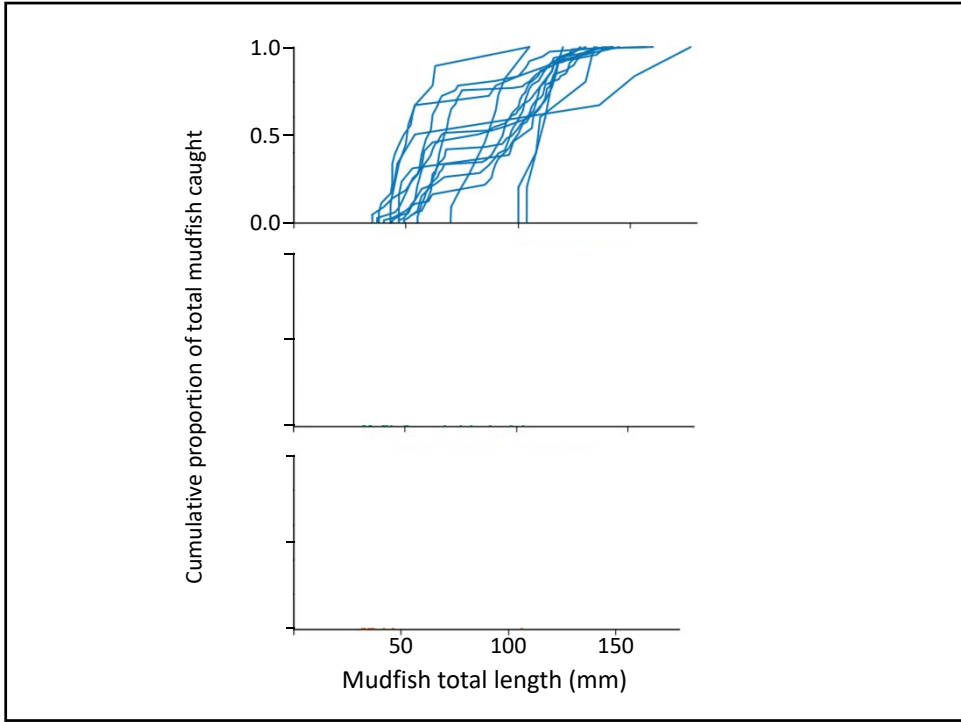


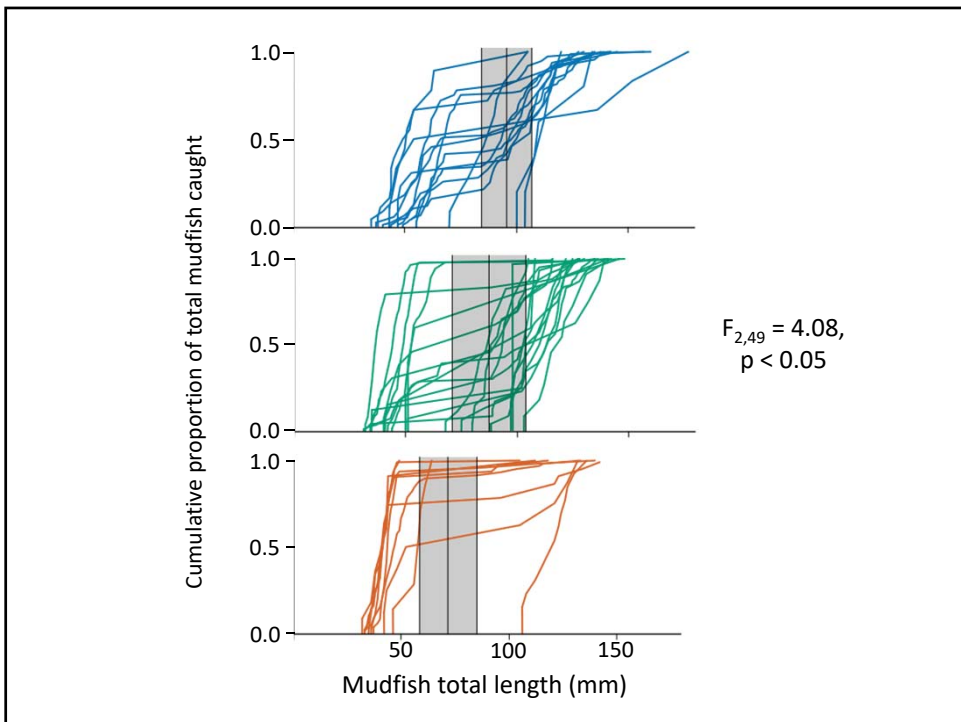
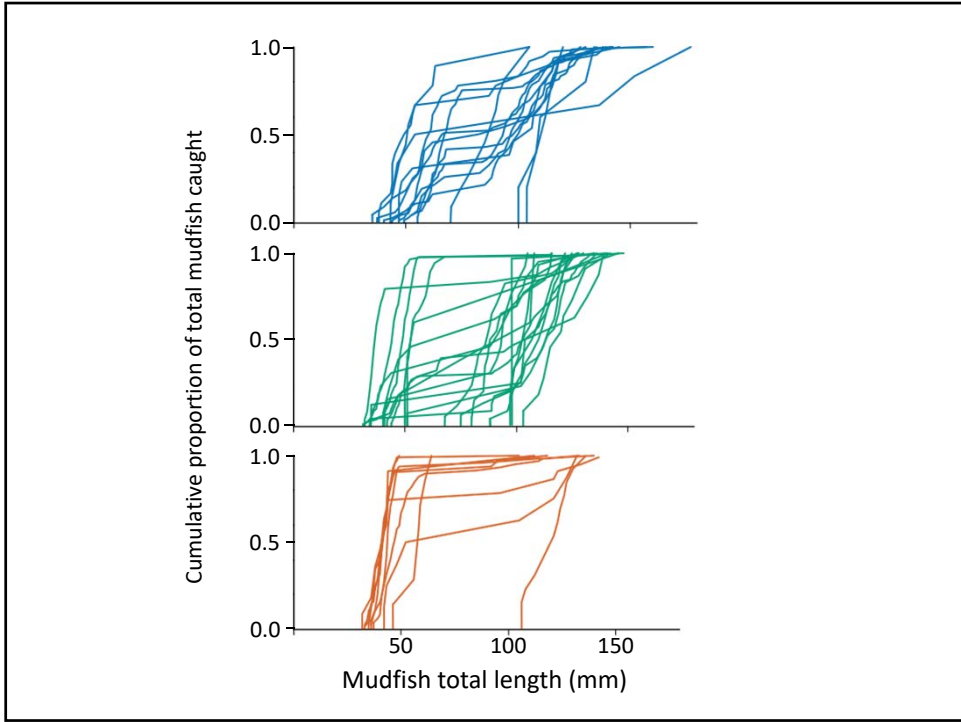
Change in relative abundance



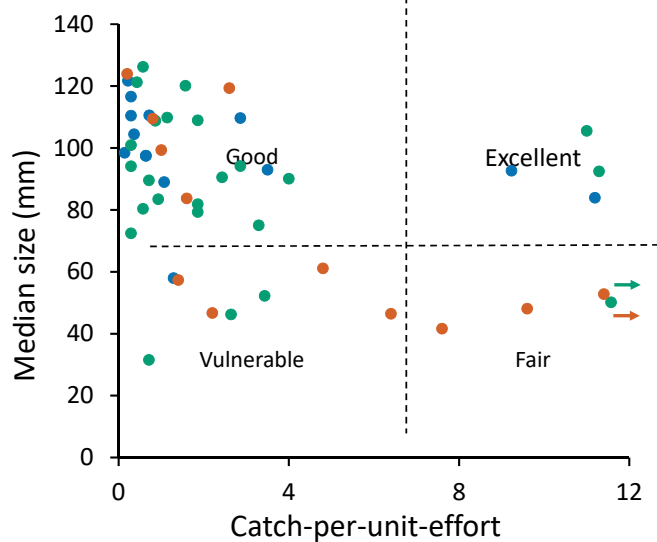
Ongoing MSc work by Chris Meijer







Classifying resilience



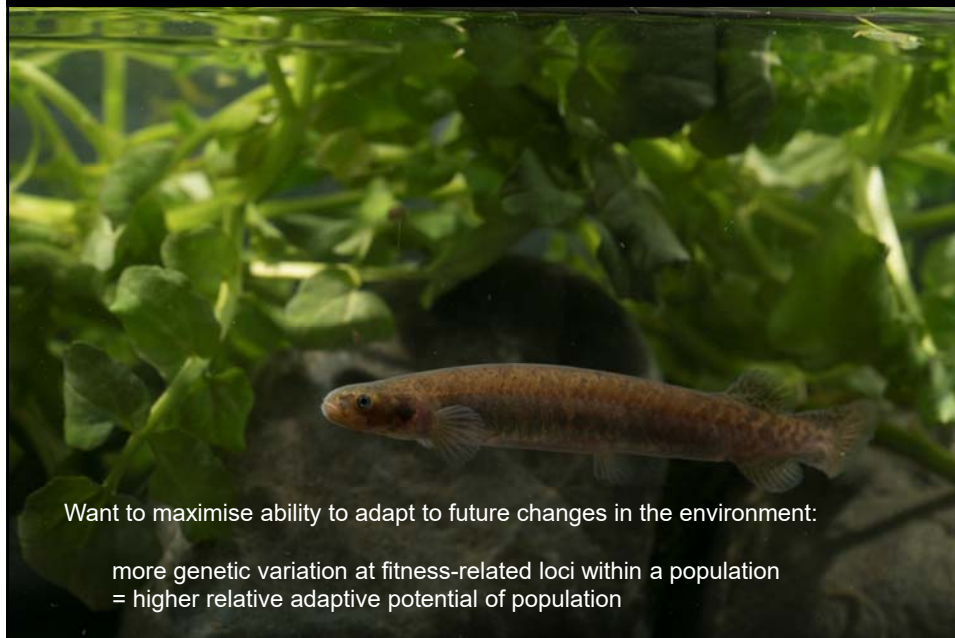
Conclusion 2: population resilience revolves around adult survival!

More perennial flow regimes are associated with higher proportions of adult mudfish = higher resilience

BUT

Only if there are not predators present (eg Waianiwaniwa)

Adaptive potential



Want to maximise ability to adapt to future changes in the environment:

more genetic variation at fitness-related loci within a population
= higher relative adaptive potential of population

Conclusion 3: consider adaptive potential in translocations

Genetic variation at fitness-related loci in Kōwaro is being studied by Tammy Steeves and Levi Collier-Robinson
- project in NZ's Biological Heritage Science Challenge

Results will be useful in guiding future translocations
- please tell us about current translocations

Acknowledgements

Research funding provided by the Brian Mason Trust

Scholarships from Waterways Centre for Freshwater Management

Landowners for access onto their farms

Ngāi Tahu Consultation and Engagement Group

Freshwater Ecology Research Group

University of Canterbury Animal Ethics Committee

Field helpers:

Kevin Fraley, Richard White, Nixie Boddy, Brandon Goeller, Levi Collier-Robinson, Simon Coats, Catherine Febria, Katie Collins, Tim Green, Nicole Meijer, Will Keay, and Alice West

