Good fences make good neighbours:

experimental rehabilitation of the spawning habitat of *Galaxias maculatus*

Mike Hickford and David Schiel

Galaxias maculatus
Indo-Pacific (+Atlantic!) distribution

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Image: Ryan photographic

Galaxias maculatus
Indo-Pacific (+Atlantic!) distribution

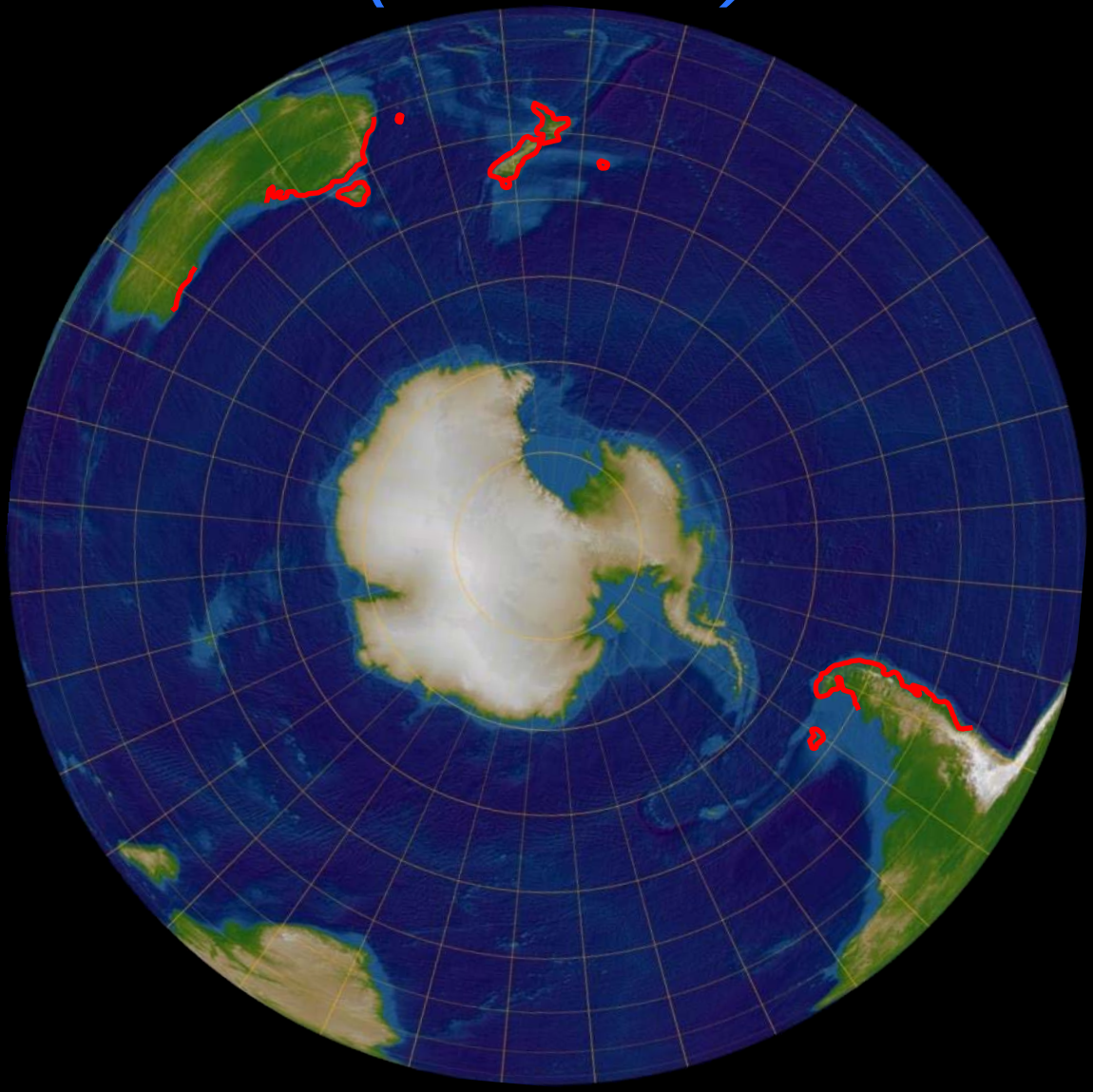

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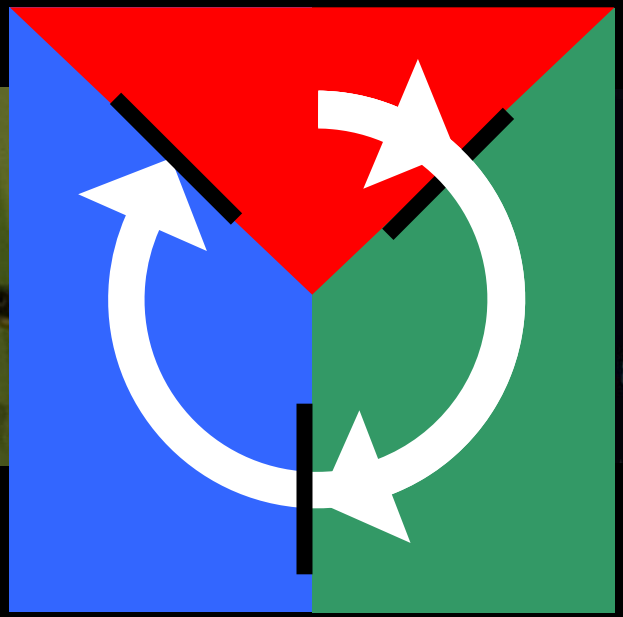
Image: Ryan photographic

Diadromous fish: crossing major ecosystems

‘Terrestrial’
Egg phase
~ 28 days

Freshwater
Adult phase
~180 days



Marine
Larval phase
~180 days

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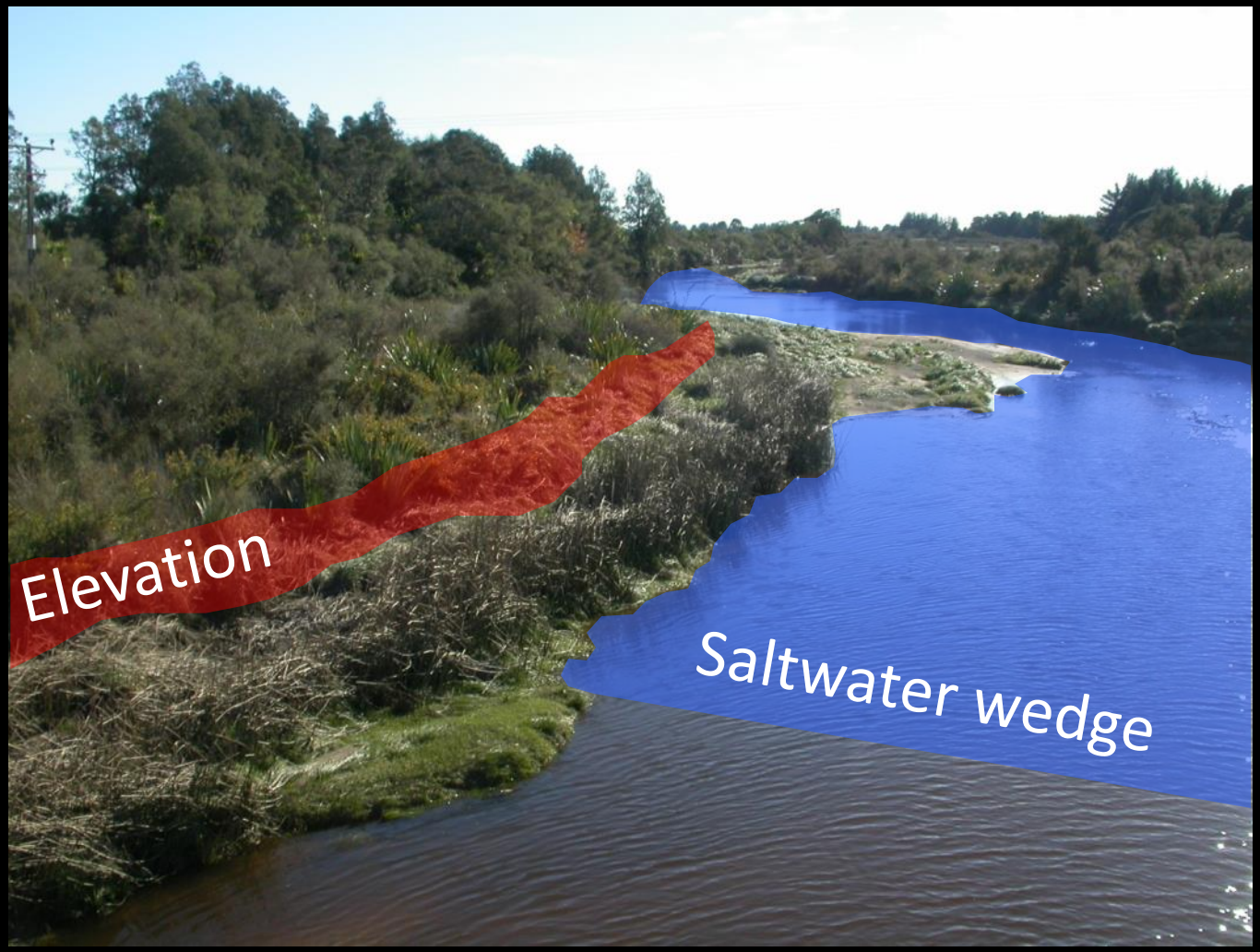
Restricted spawning habitat

Restricted spawning habitat



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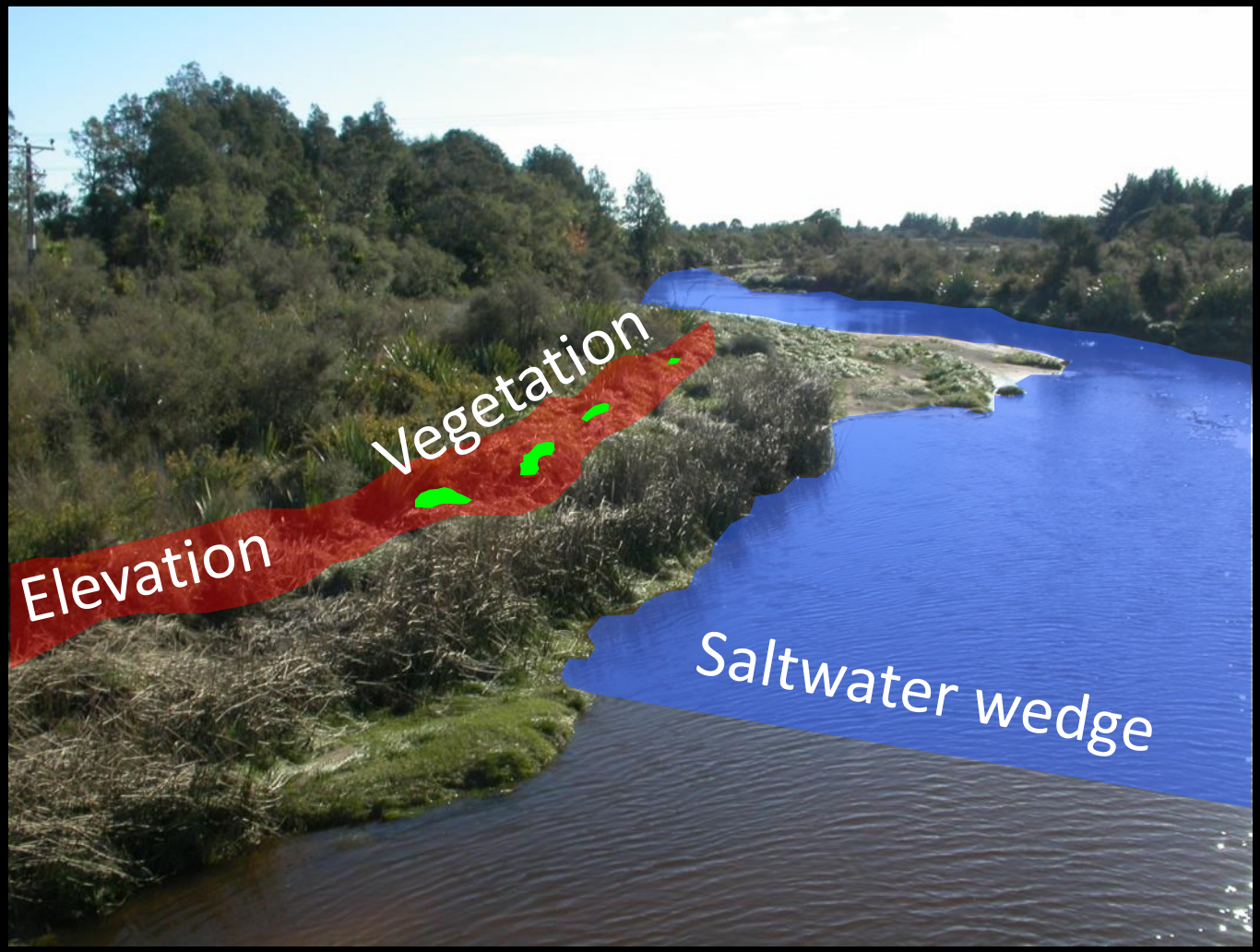
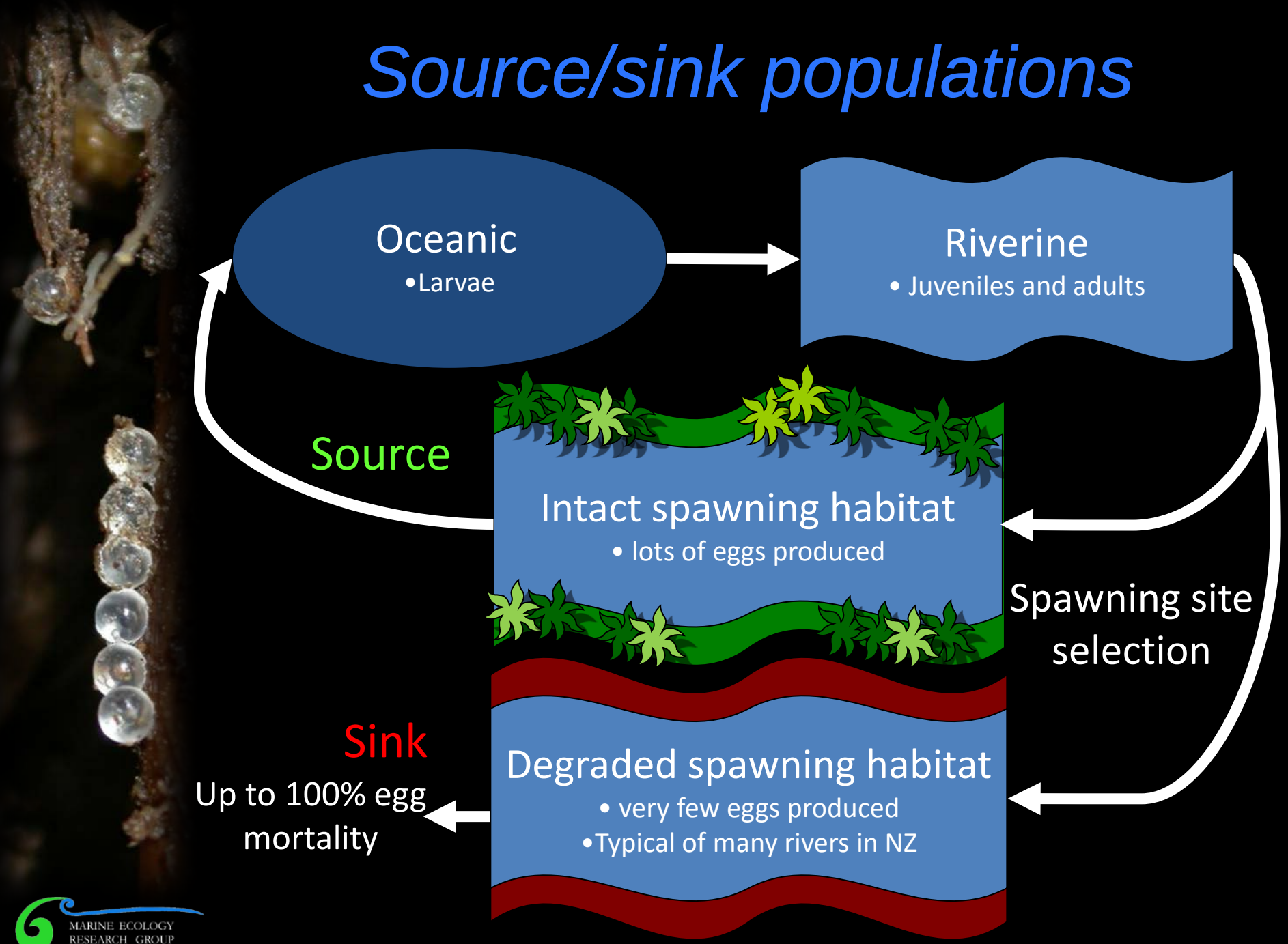
Restricted spawning habitat



Source/sink populations



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Hickford MJH & DR Schiel (2011). *Population sinks resulting from degraded habitats of an obligate life-history pathway.* Oecologia 166(1): 131-140

Whitebait fishery

- Culturally and commercially important
- Catching juveniles

Whitebait fishery

- Culturally and commercially important
- Catching juveniles

Riparian spawning habitat

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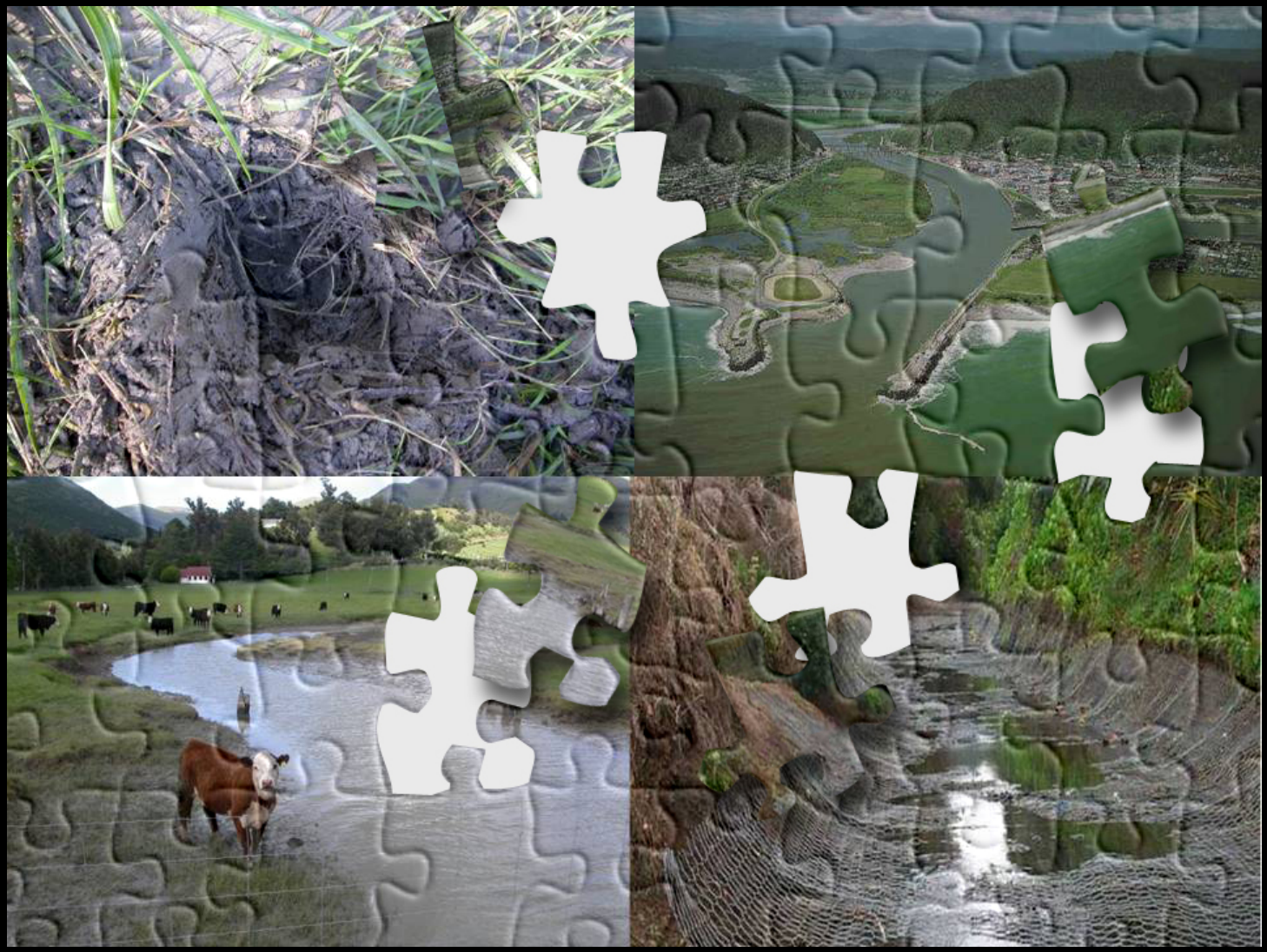
Multiple stressors



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Livestock grazing

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Livestock grazing

Goughs Bay

Goughs Bay

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Goughs Bay

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Spawning site

Ungrazed exclosures

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Design

- 8 exclosures installed in Jan 2007
- grazed and ungrazed areas surveyed for vegetation and eggs during spawning seasons in 2007, 2008, 2009 and 2011

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Ongoing livestock grazing

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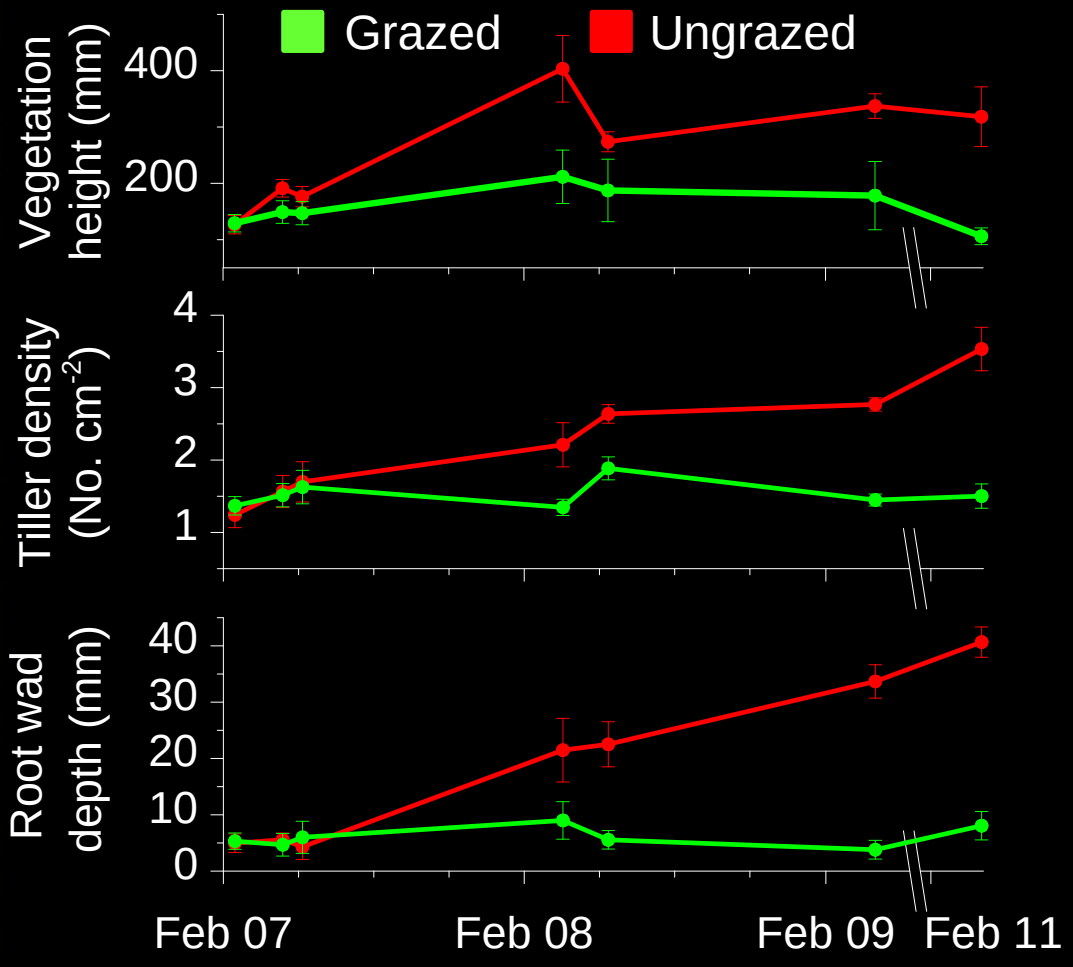
Vegetation characteristics



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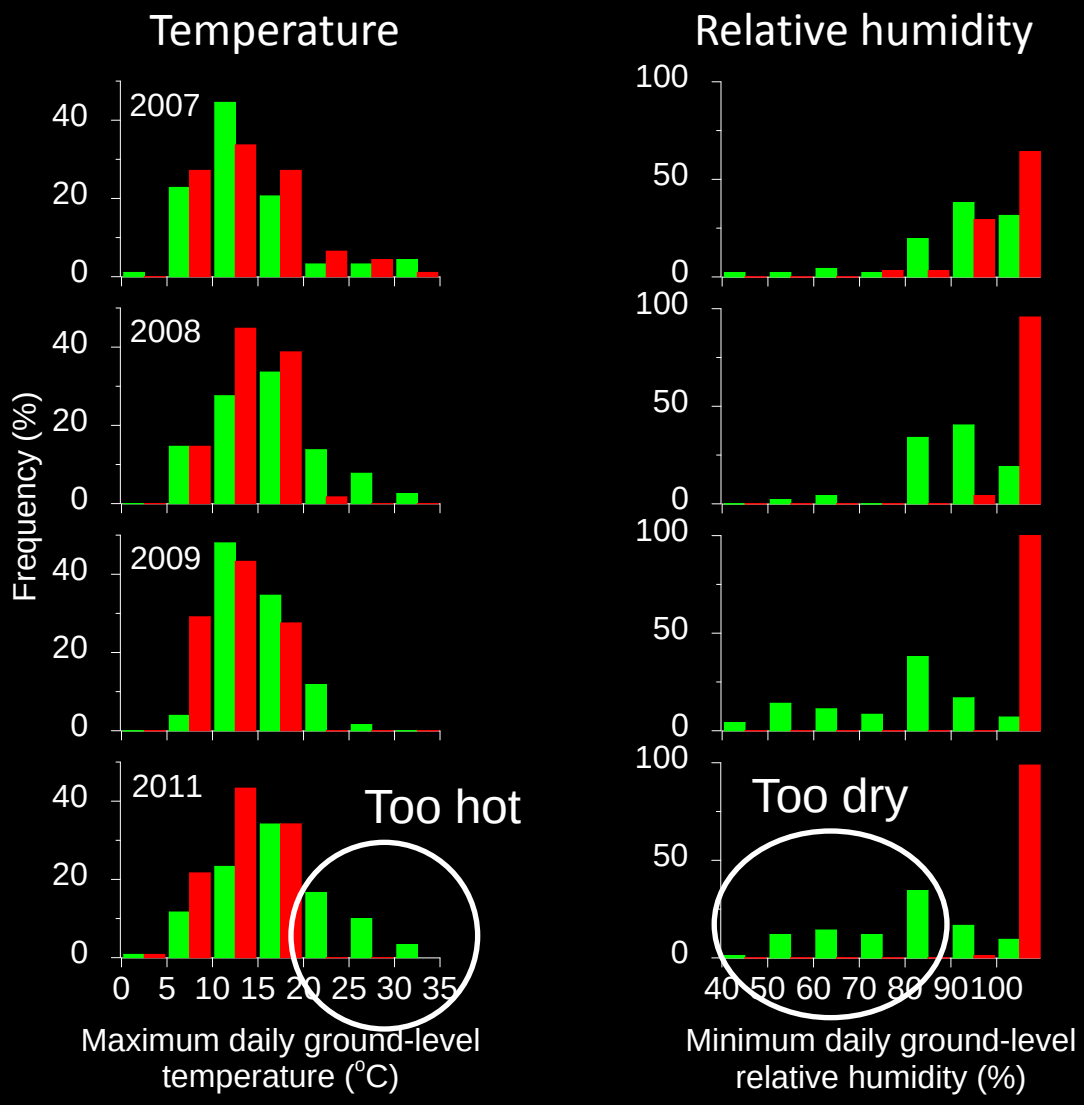
Physical environment



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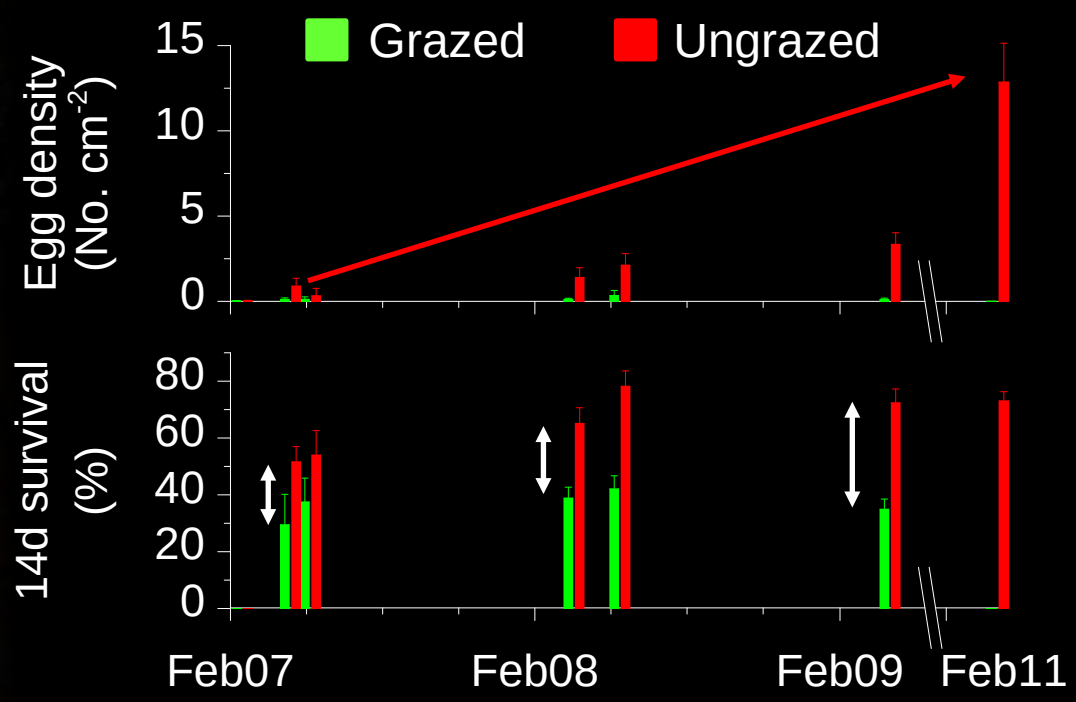
Egg production



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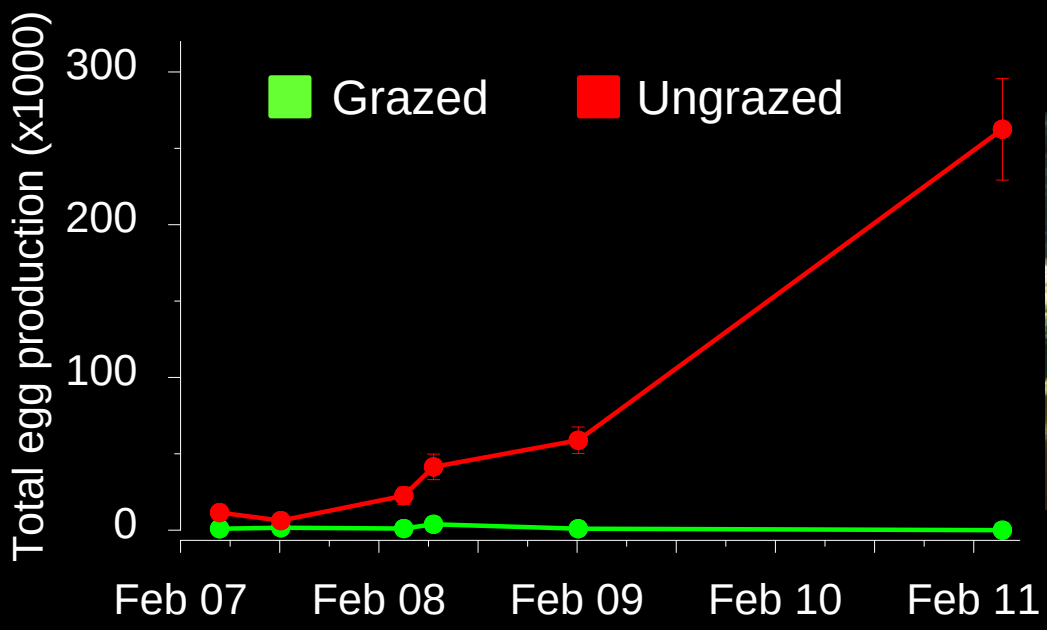
Total egg production

Area x density x survival



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Summary

Removal of major stressor (livestock grazing) produces:

- Tall, dense vegetation
- Thick, aerial root wad
- Buffered ground-level physical conditions
- More *Galaxias maculatus* eggs
- Better egg survival

Even a wide-ranging species with many robust adult populations can be compromised if a relatively small, stage-dependent habitat is required to complete its life history

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