Freshwater invertebrate & fish diversity in Banks Peninsula streams

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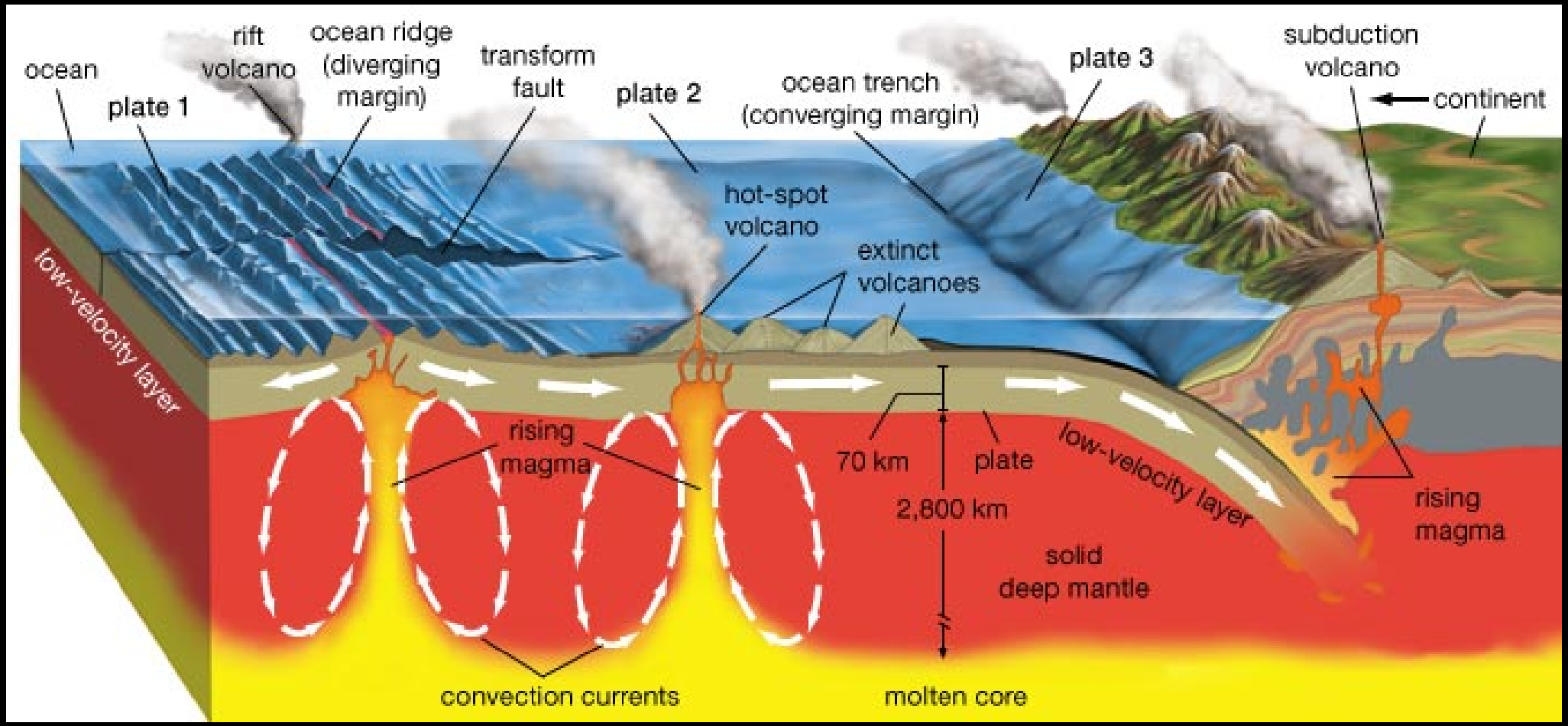
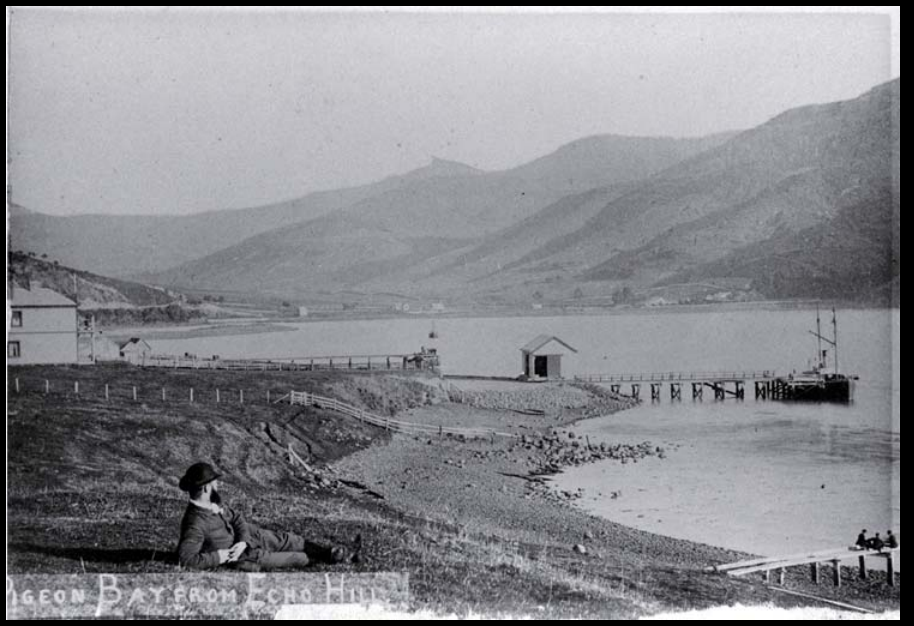
Formation of Banks Peninsula

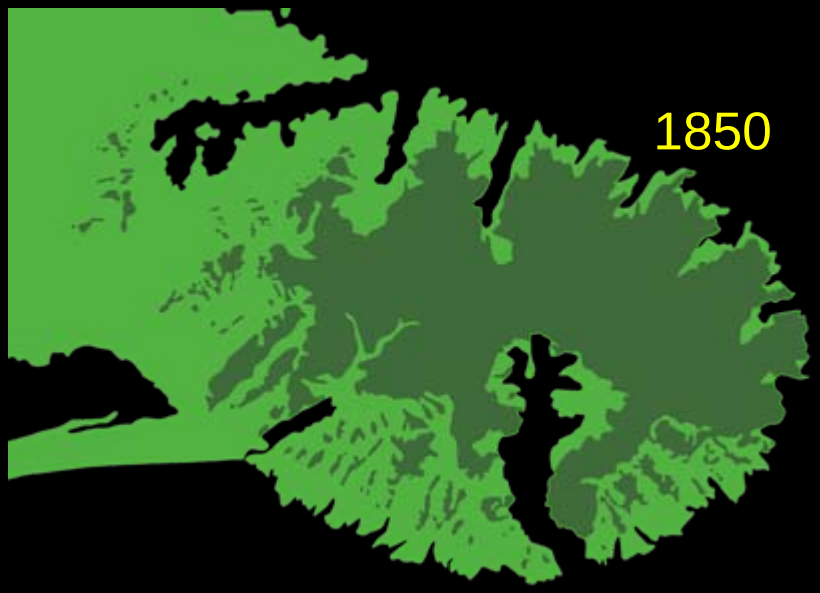


- Volcanic eruption 6 -11 million yrs ago

Peninsula was an offshore island for millions years

Massive deforestation 1860-1900s










Banks Peninsula had high Biodiversity & endemism

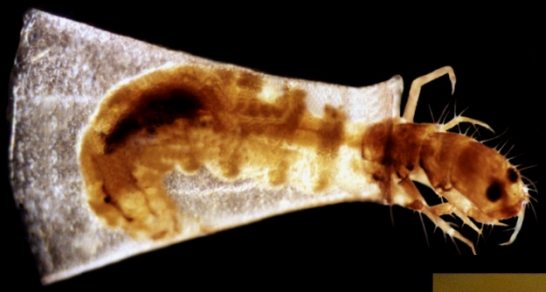
Freshwater today 9+ invertebrate species

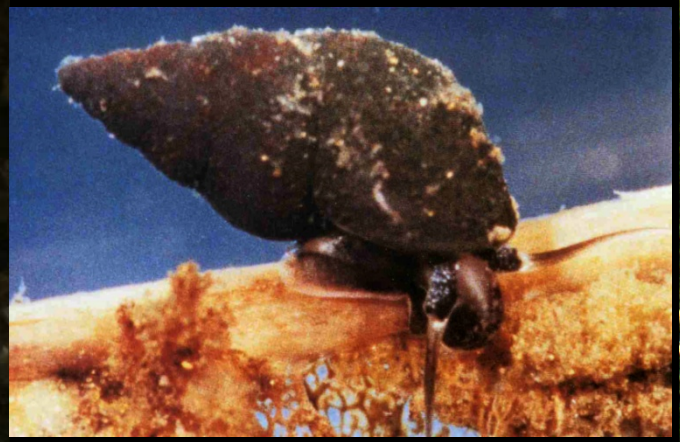
- 1 Mayfly (Nationally vulnerable)
- 1 Stonefly
- 1 Beetle
- 1 Diptera
- 5 Caddisflies (2 Nationally critical)

No idea how many are extinct

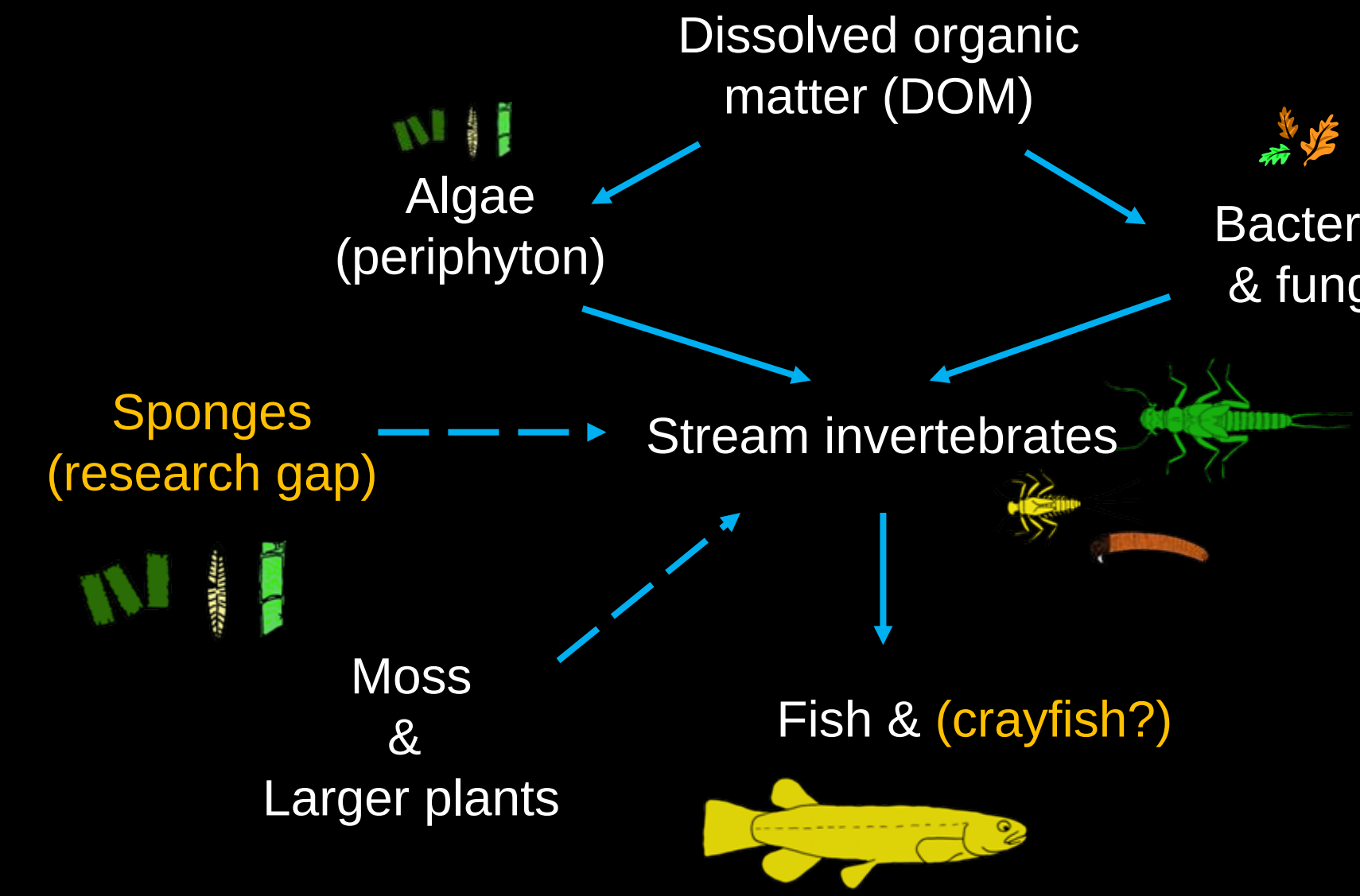
Research needed on distribution & habitat of these endemics

What are freshwater invertebrates?

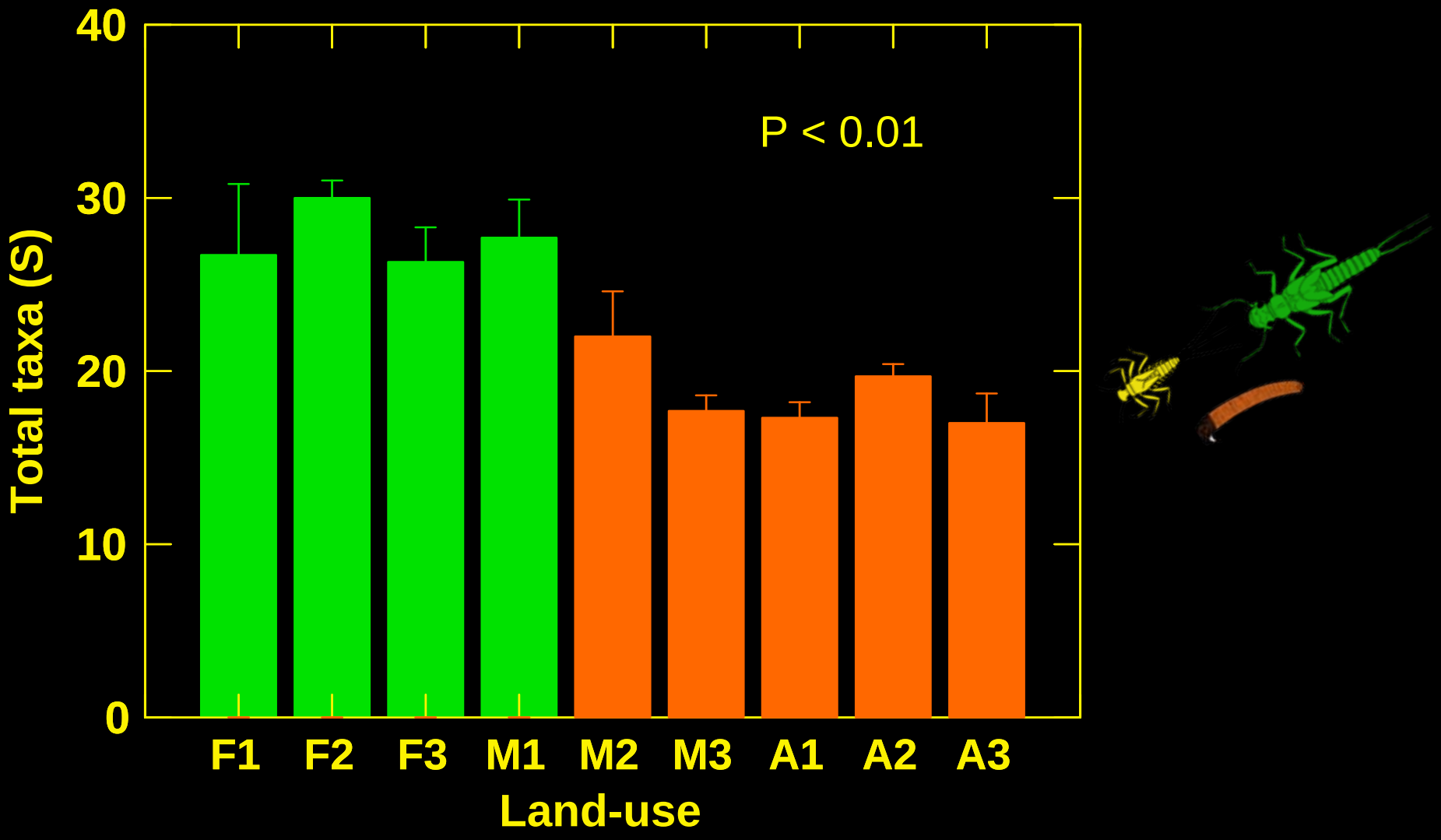




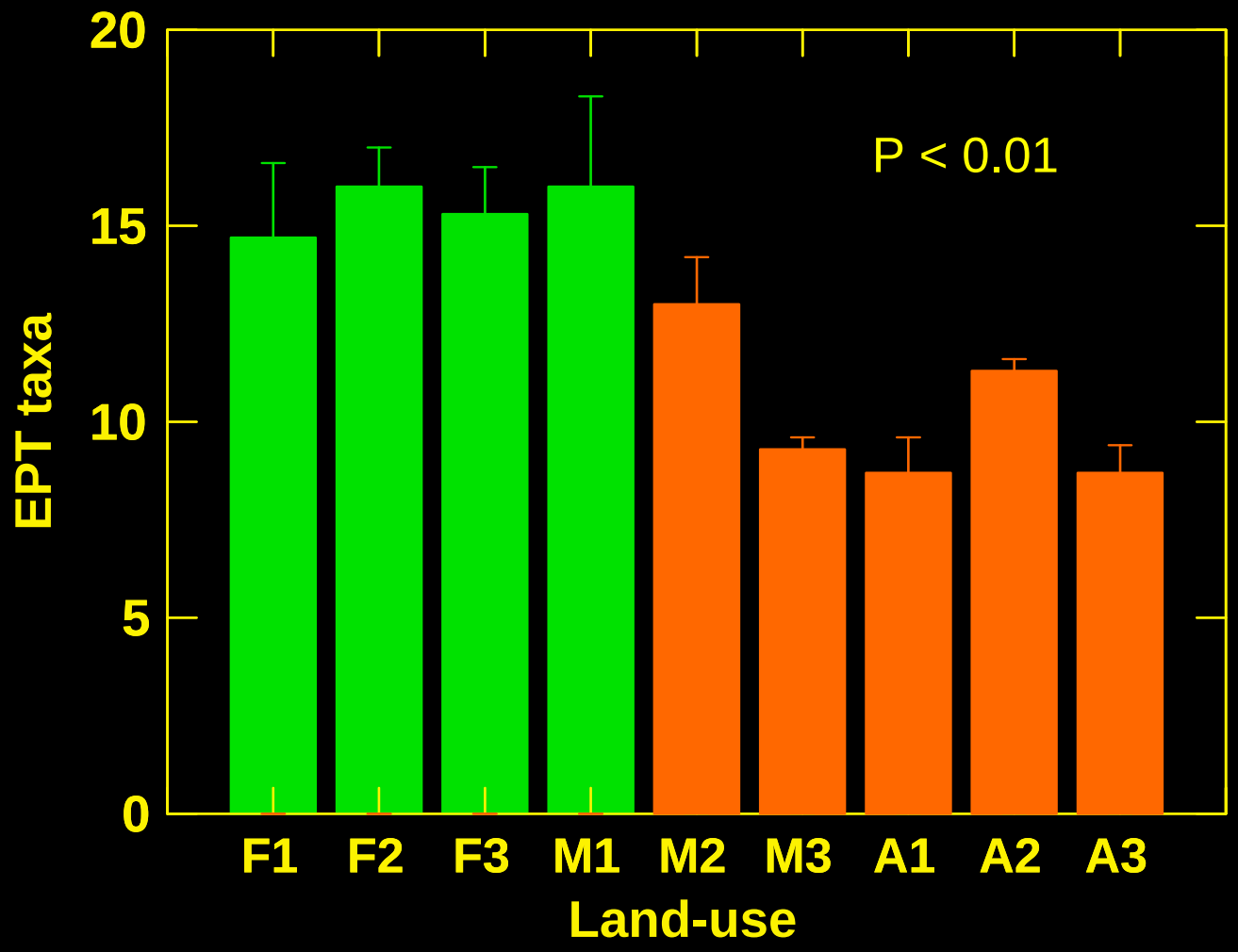
Banks Peninsula stream food web



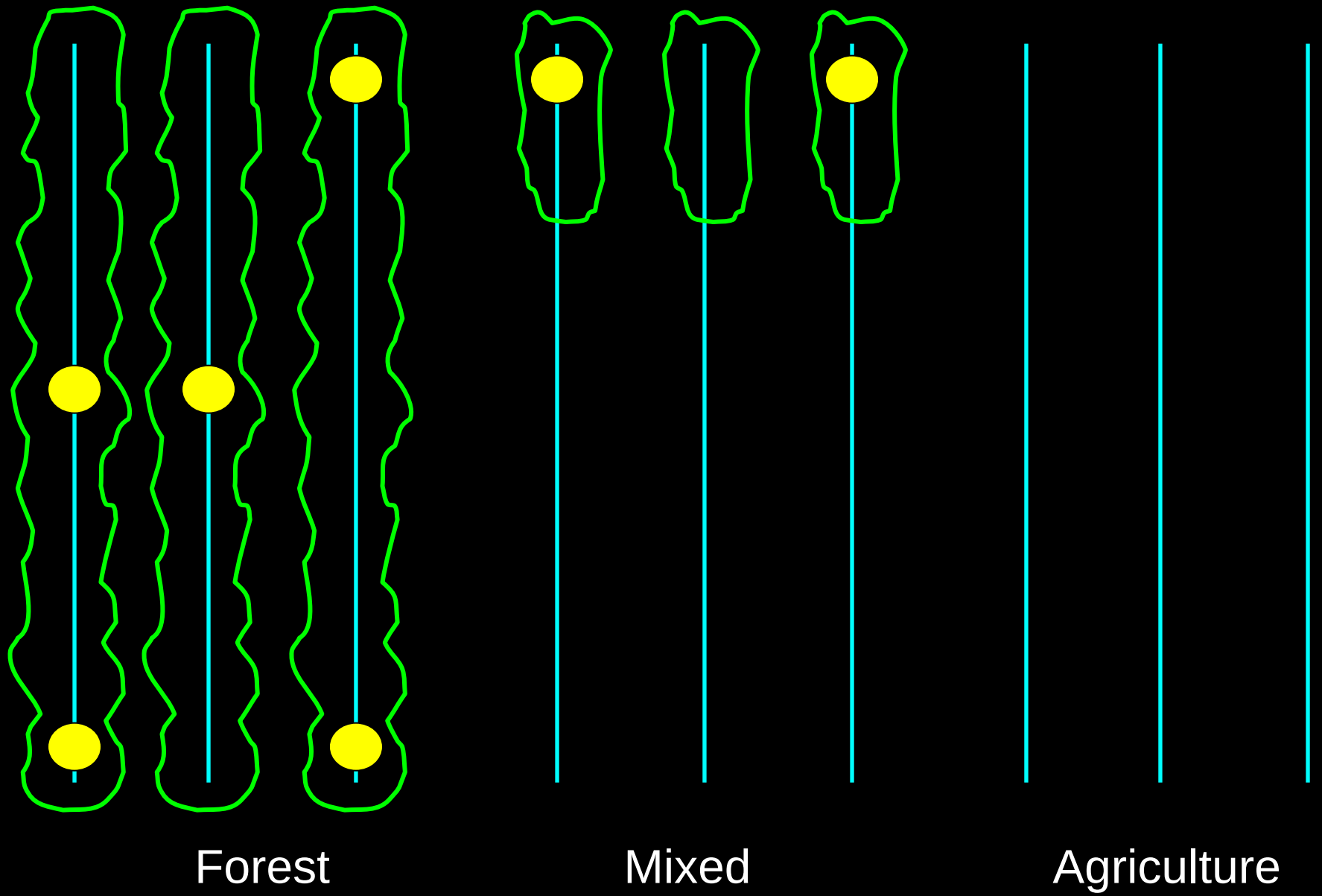
More forest = more species

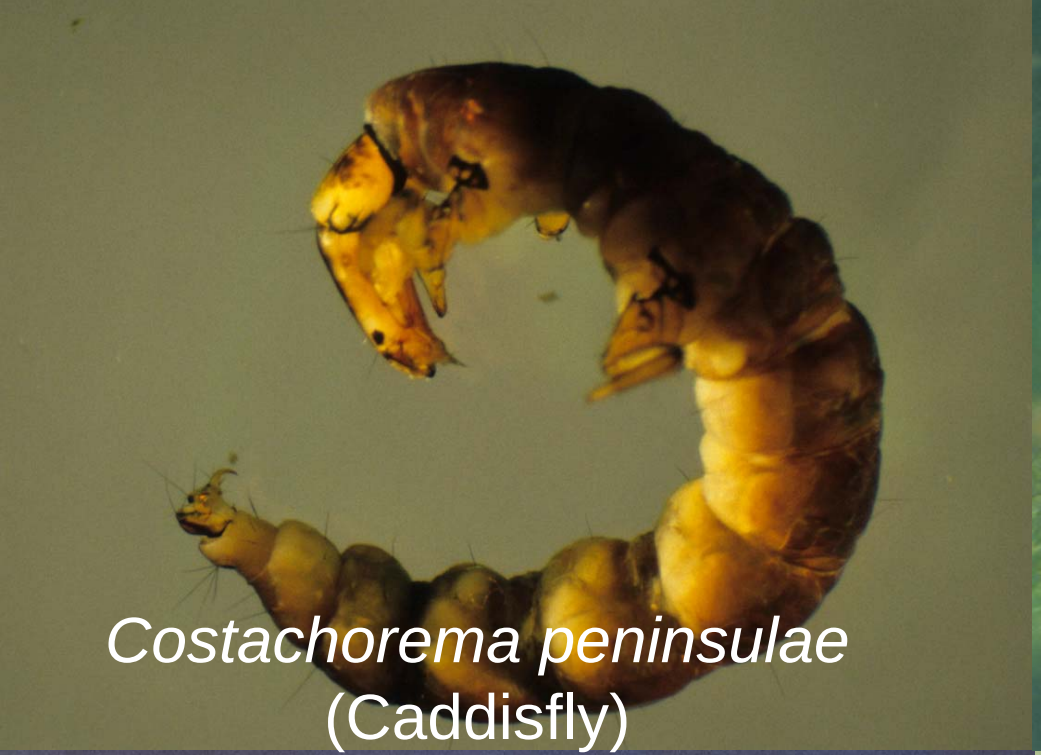


Forest in headwaters (& down valley) is very important



Rare endemic caddisfly *(Costachorema peninsulae)* only found in forest

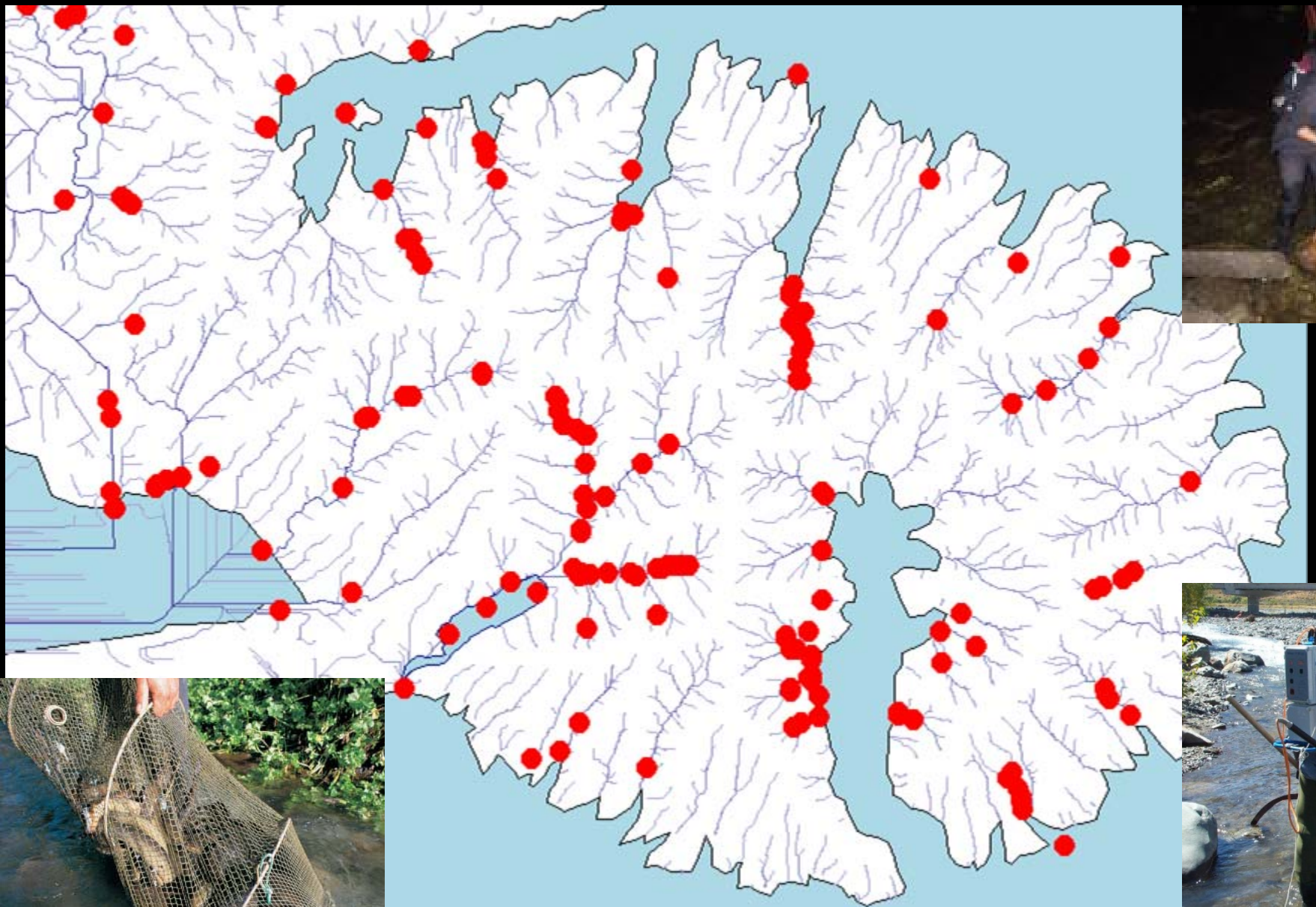




Costachorema peninsulae
(Caddisfly)

Neocurupira chiltoni
(Diptera)

Know a lot about native fish distribution in Banks Peninsula streams



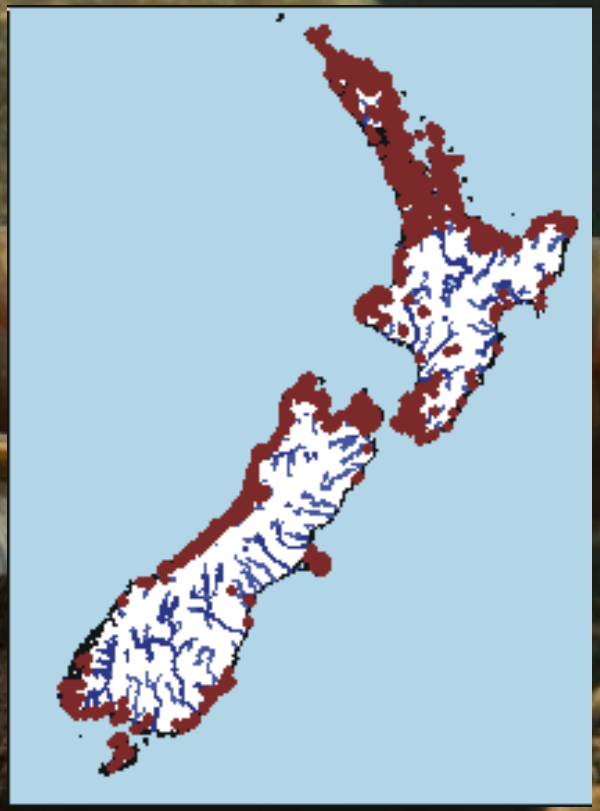
3 of 5 migratory whitebait species (Galaxiids)

Inanga (G. *maculatus* **)**

Koaro (*G. brevipinnis)*

Banded kokopu (*G. faciatus* **)**

Banded kokopu rare in Canterbury but found in limited BP streams (regional refuge)



Native fish (No fish species endemic to Peninsula streams)

longfin eel

lamprey

shortfin eel + 5 bully species

Habitat destruction
(e.g. loss of forest,
livestock in streams,
bank destruction)

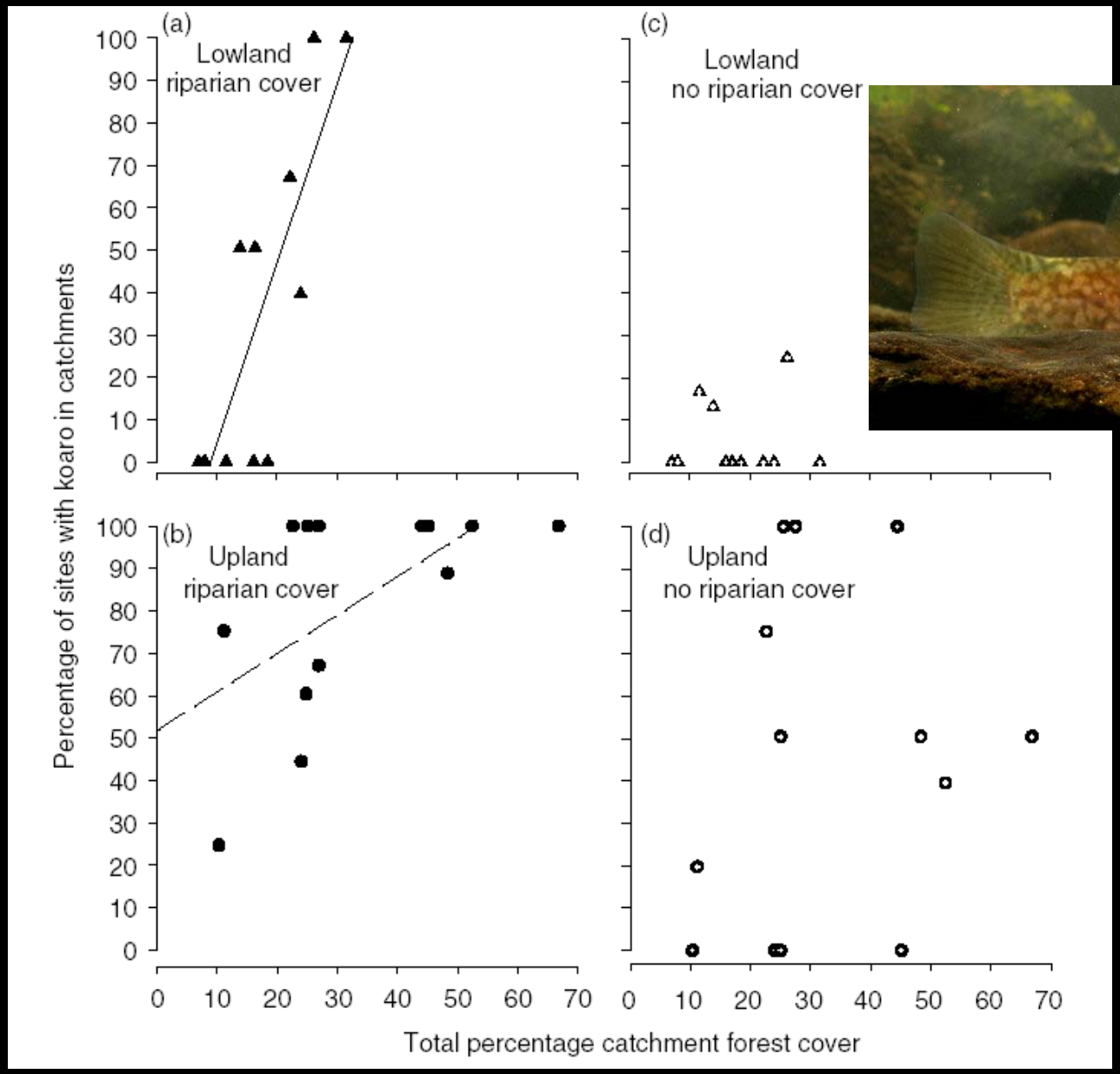
Barriers to fish migration
(i.e. culverts)

Threats to fish species in Banks Peninsula streams

Poor agricultural practices
(e.g. eutrophication, lack
shading sediment)

Introduced fish preying on
Native species or
damaging habitat
e.g. trout, carp, tench

Fish need riparian forest & forest in the headwaters is important



Dr Hans Eikaas

Importance of riparian protection in lower reaches for fish spawning

Dr Mike Hickford
Prof Dave Schiel

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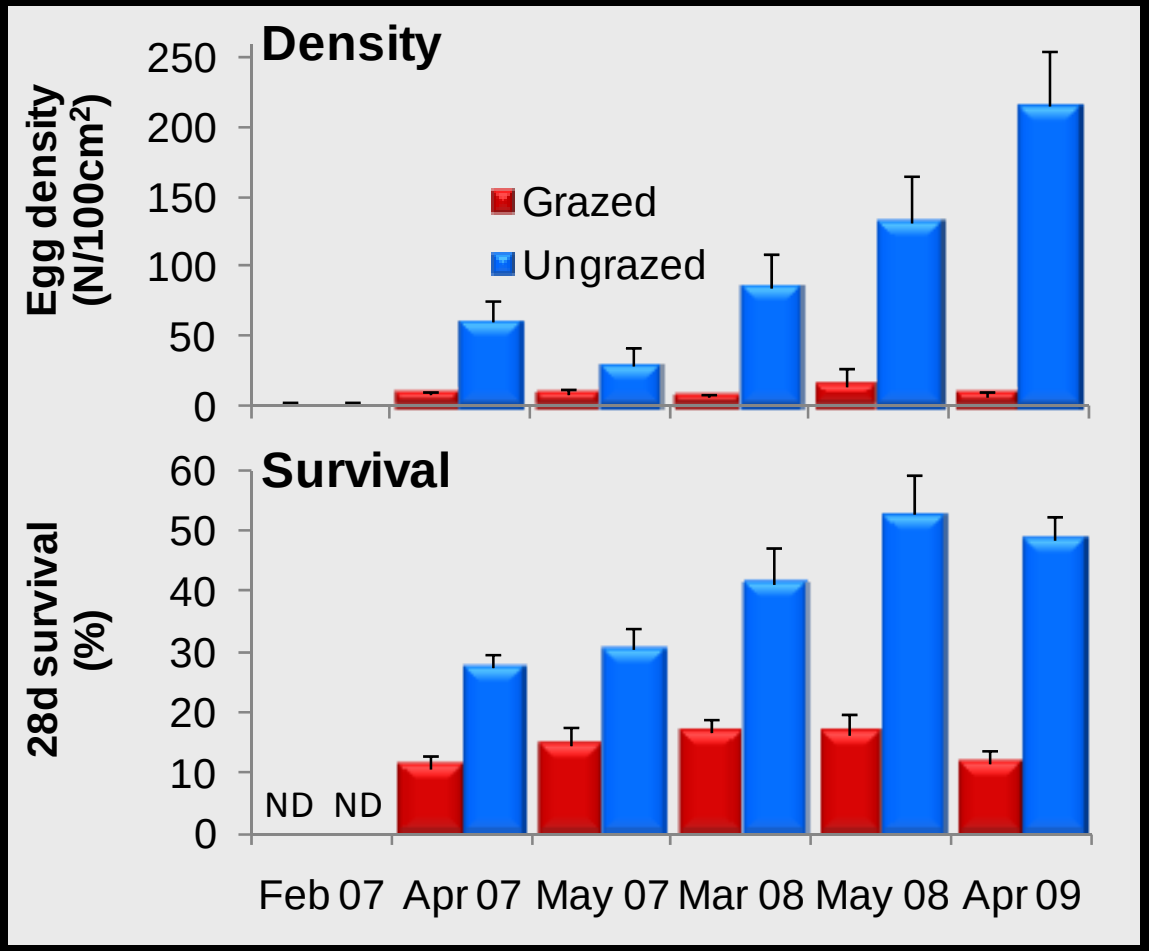
Possible “immediate steps” project

Protecting bank vegetation for stock increases inanga survival



Ministry of Science and Innovation (CO1X1002)

National Institute of Water and Atmospheric Research

Migration barriers (e.g. culverts) stop fish getting upstream

Bad

Good

TAKE HOME MESSAGES

1. Banks Peninsula has some unique freshwater species found nowhere else on the planet

2. Some species now only found in forested streams, some are critically endangered

3. Forested streams support higher species diversity (both invertebrates & fish)

4. Keep livestock out of streams

5. Riparian management needs to be along the whole stream

6. Possible “Immediate steps” projects –
   What is the distribution of critically endangered endemic invertebrates?
   How rare are freshwater sponges and where are they?
   Fencing for inanga spawning