

# Braided rivers: physical complexity and ecology



**Duncan Gray**



**Environment  
Canterbury**  
Regional Council  
*Kaunihera Taiao ki Waitaha*





# What is a braided river?

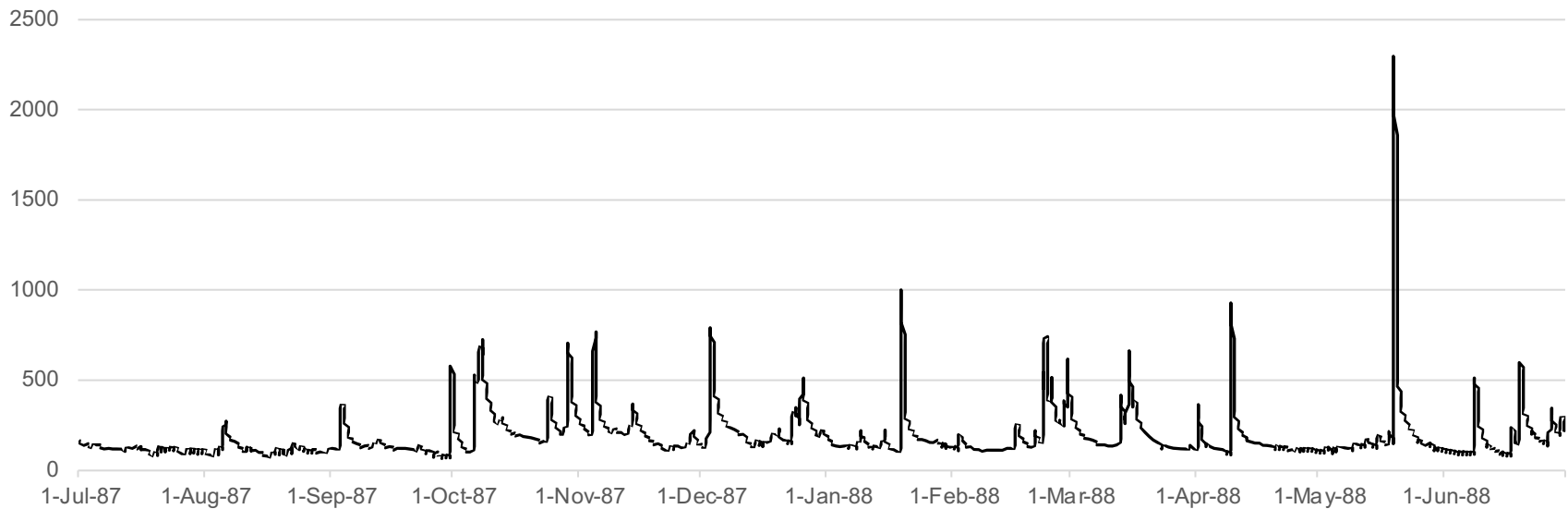




# What causes braiding?



- Flooding
- Sediment supply
- Room to move







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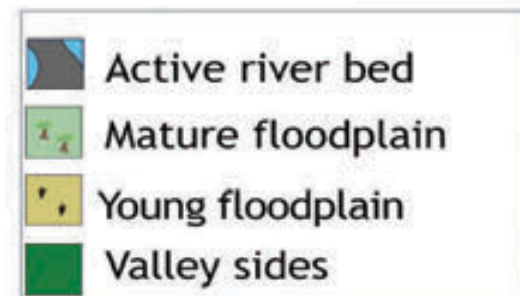
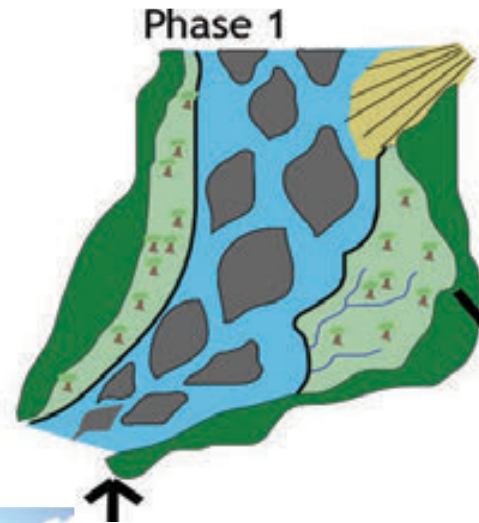




# Habitats



- Ecological deserts?
- Highly disturbed
- Mobile channels





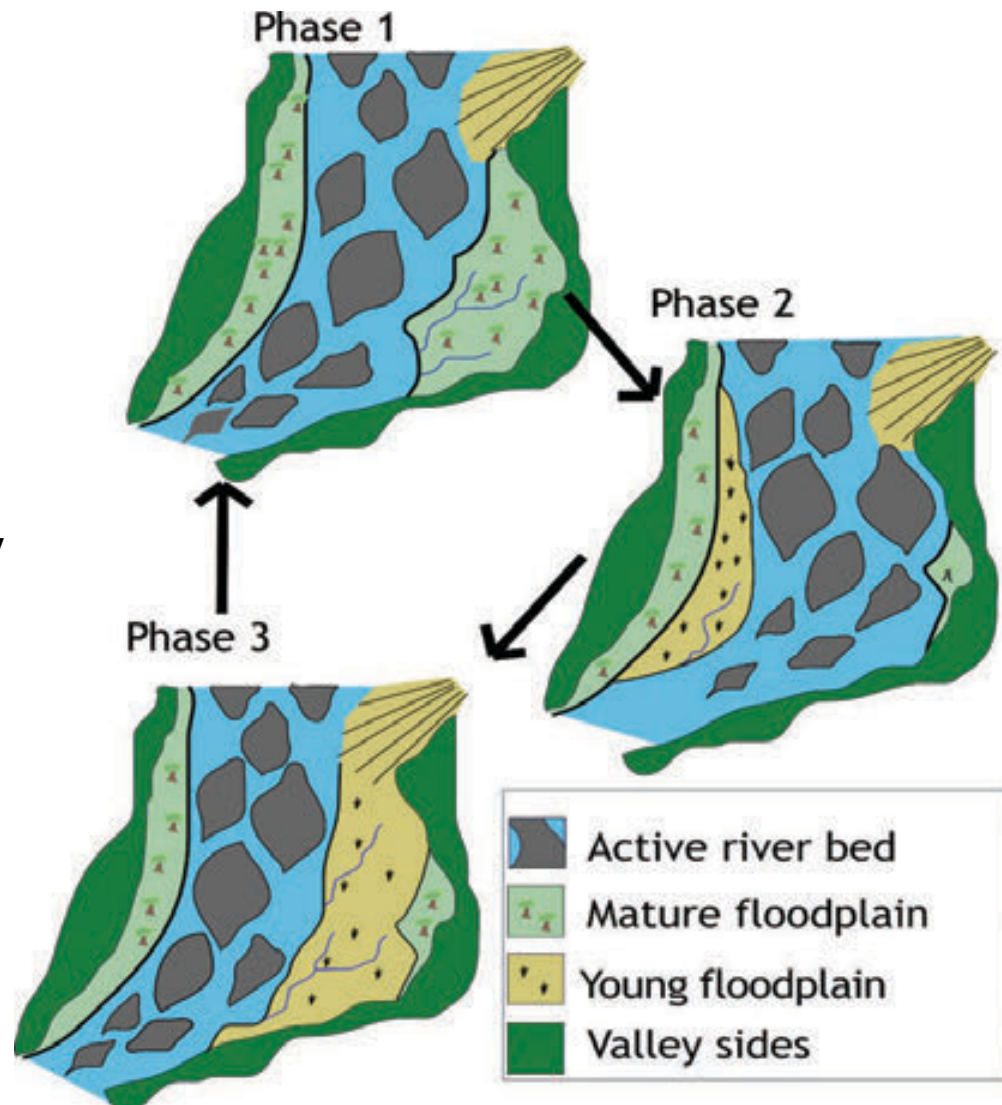
# Habitats



- Ecological deserts?
- Highly disturbed
- Mobile channels

BUT

- Wider braidplain
- Lateral habitats
- High successional diversity





# Aquatic habitats



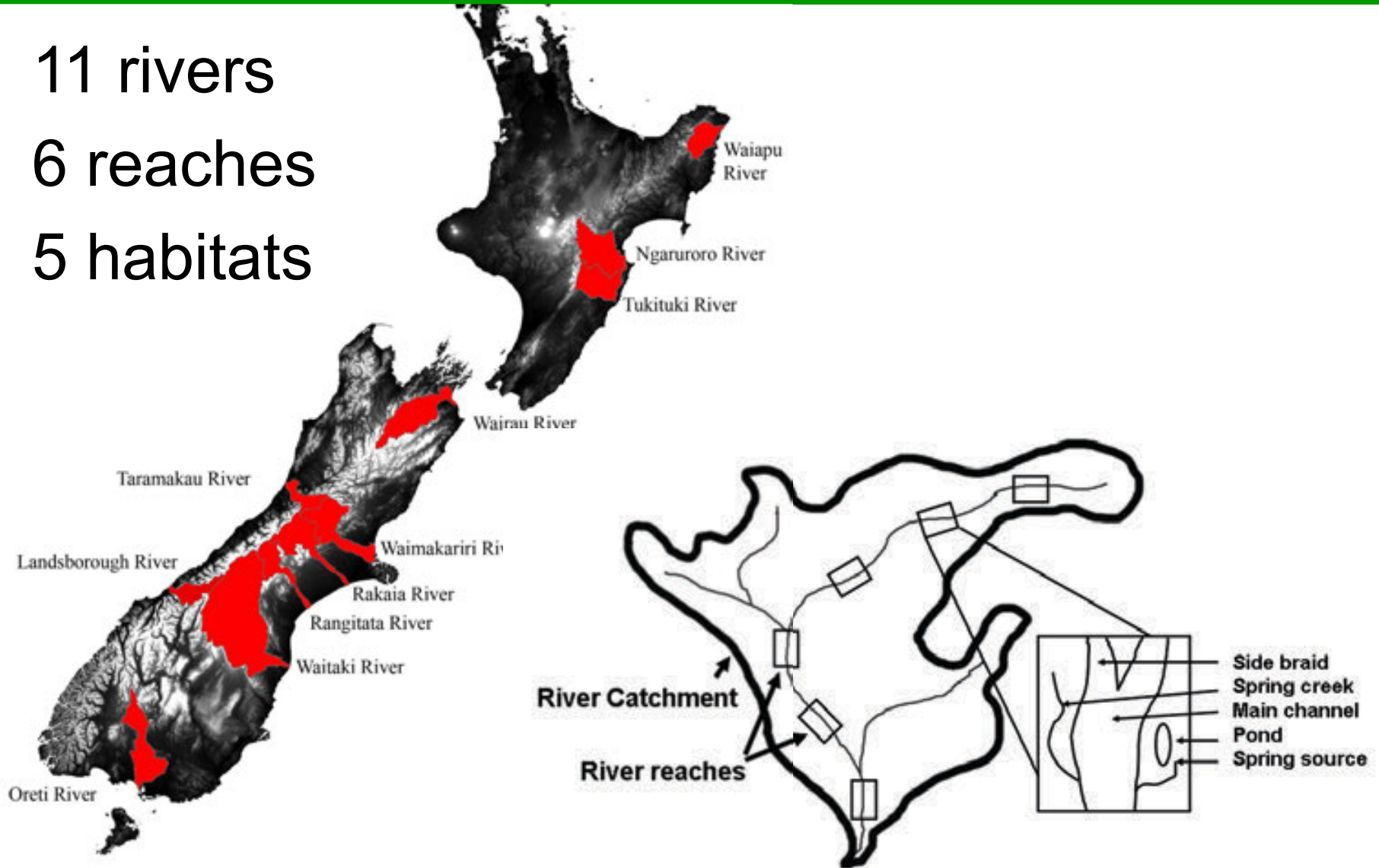




# Inventory

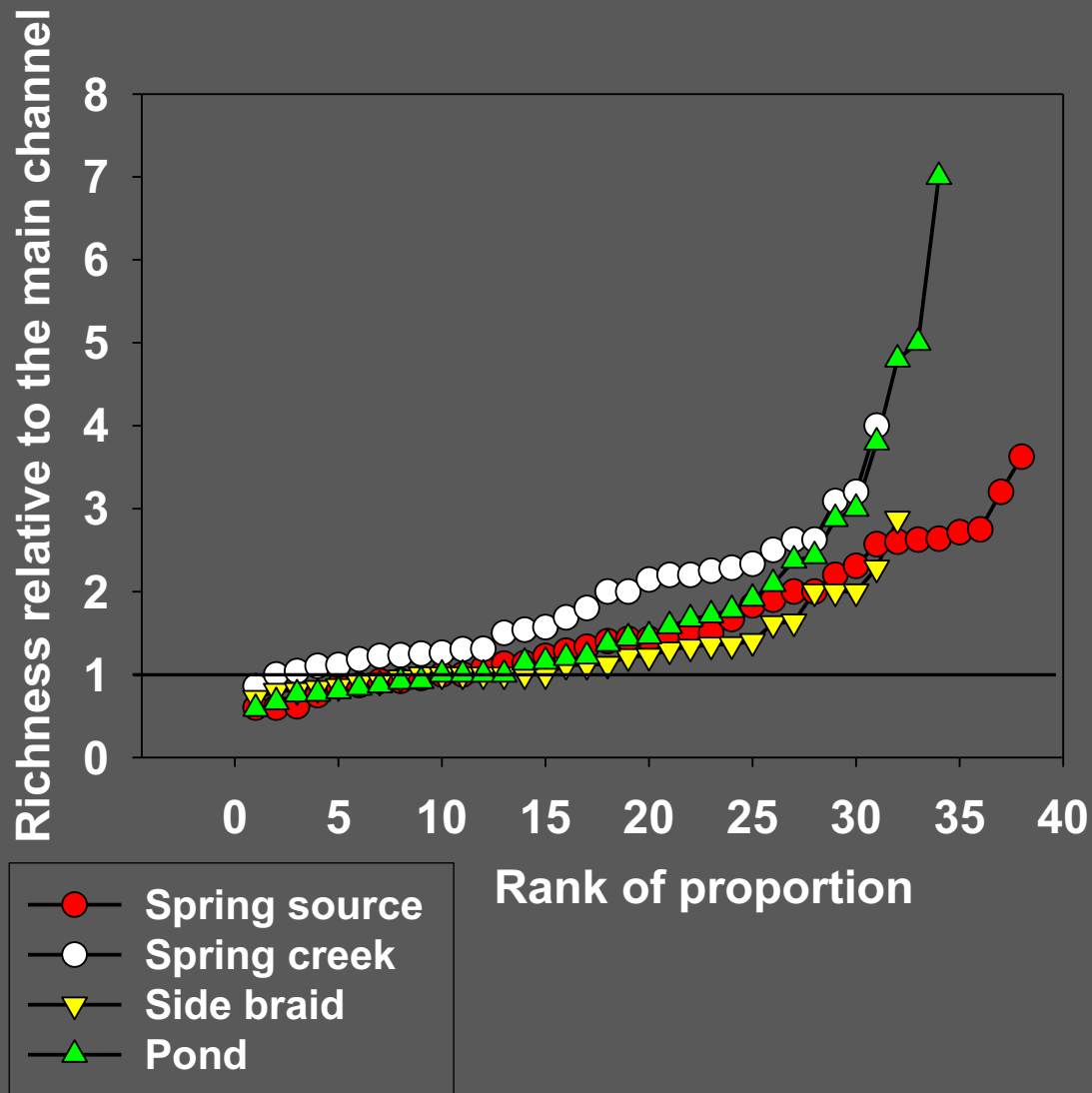


- 11 rivers
- 6 reaches
- 5 habitats





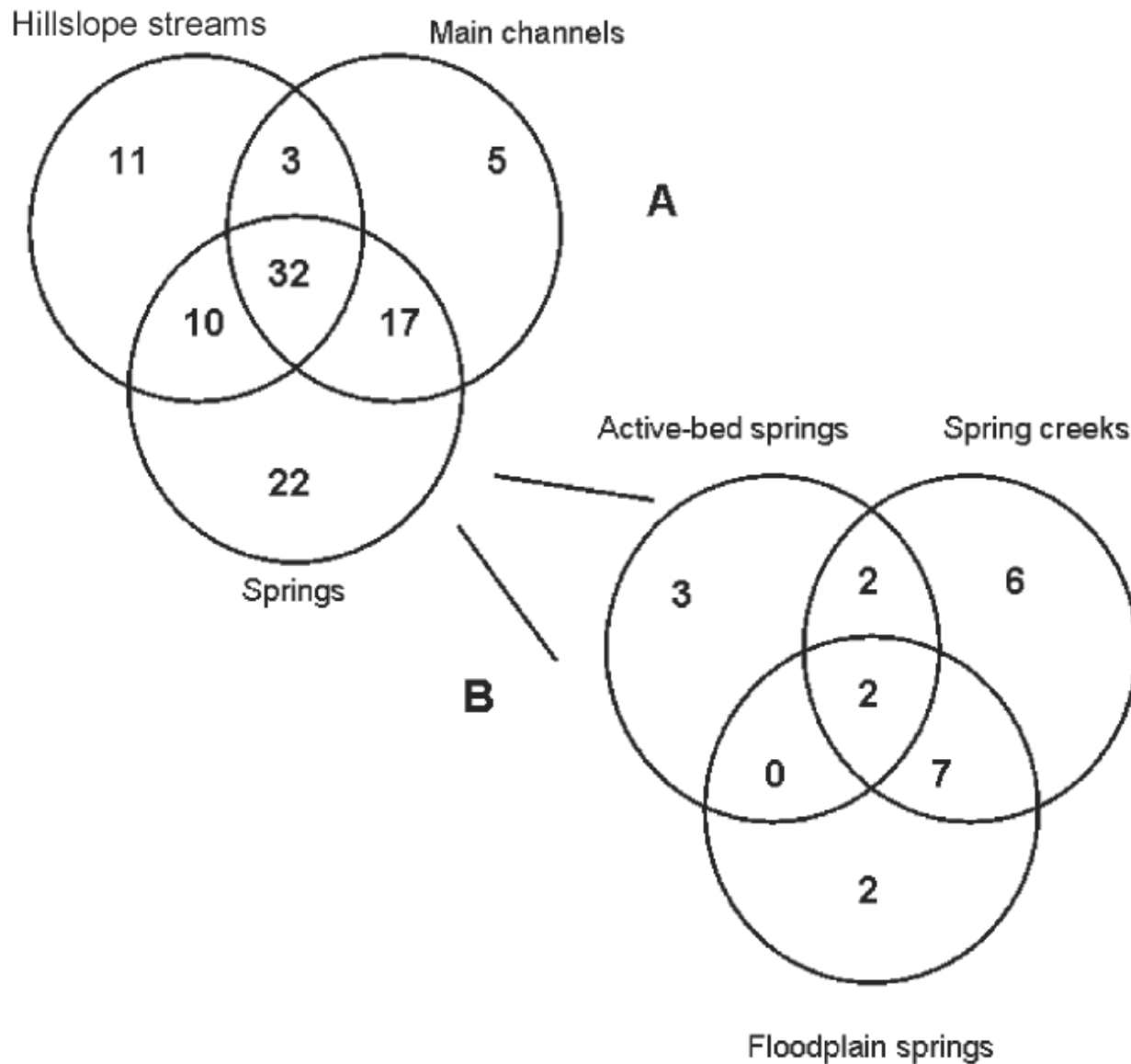
# Macroinvertebrates







# Macroinvertebrates





# High biodiversity



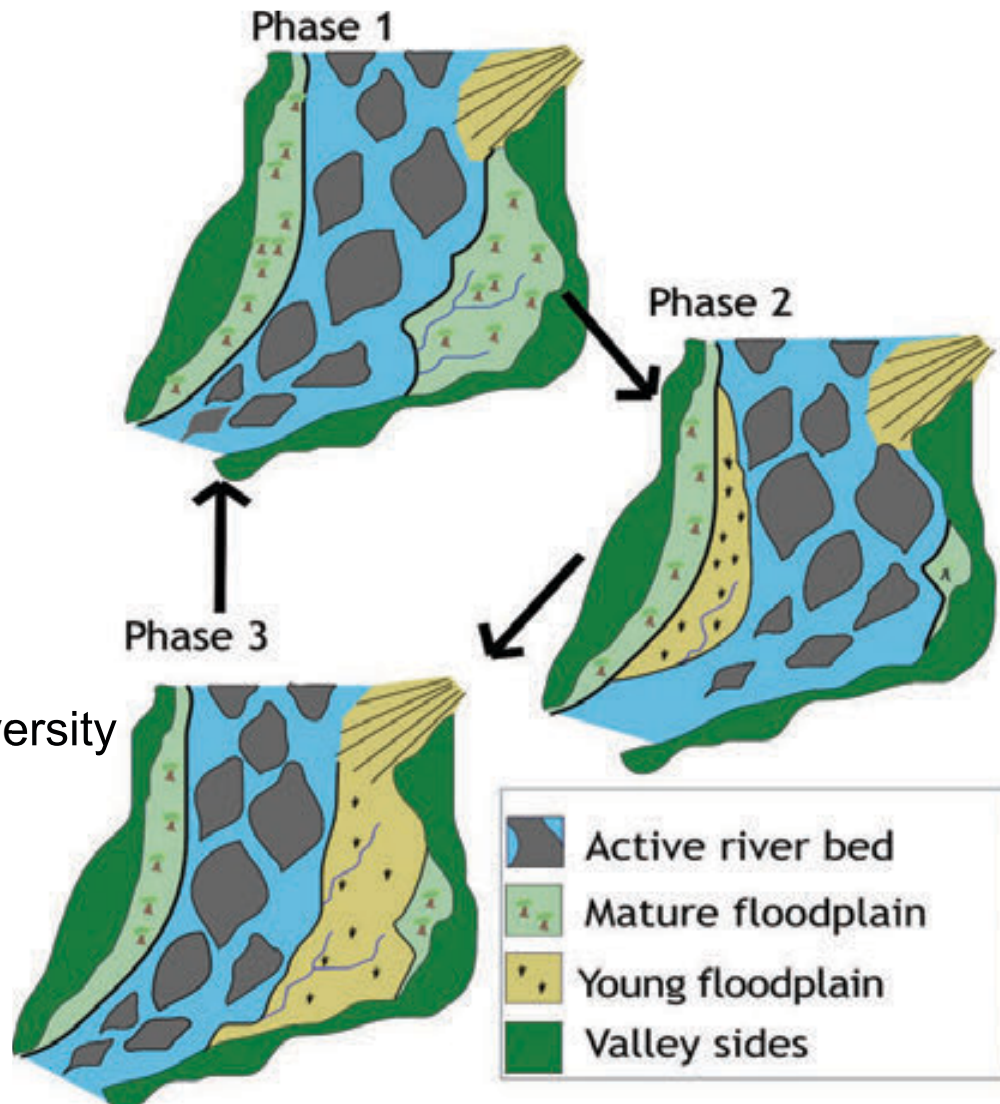
- Ecological deserts?
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- Wider braidplain
- Lateral habitats
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THUS

- Overall high ecological biodiversity







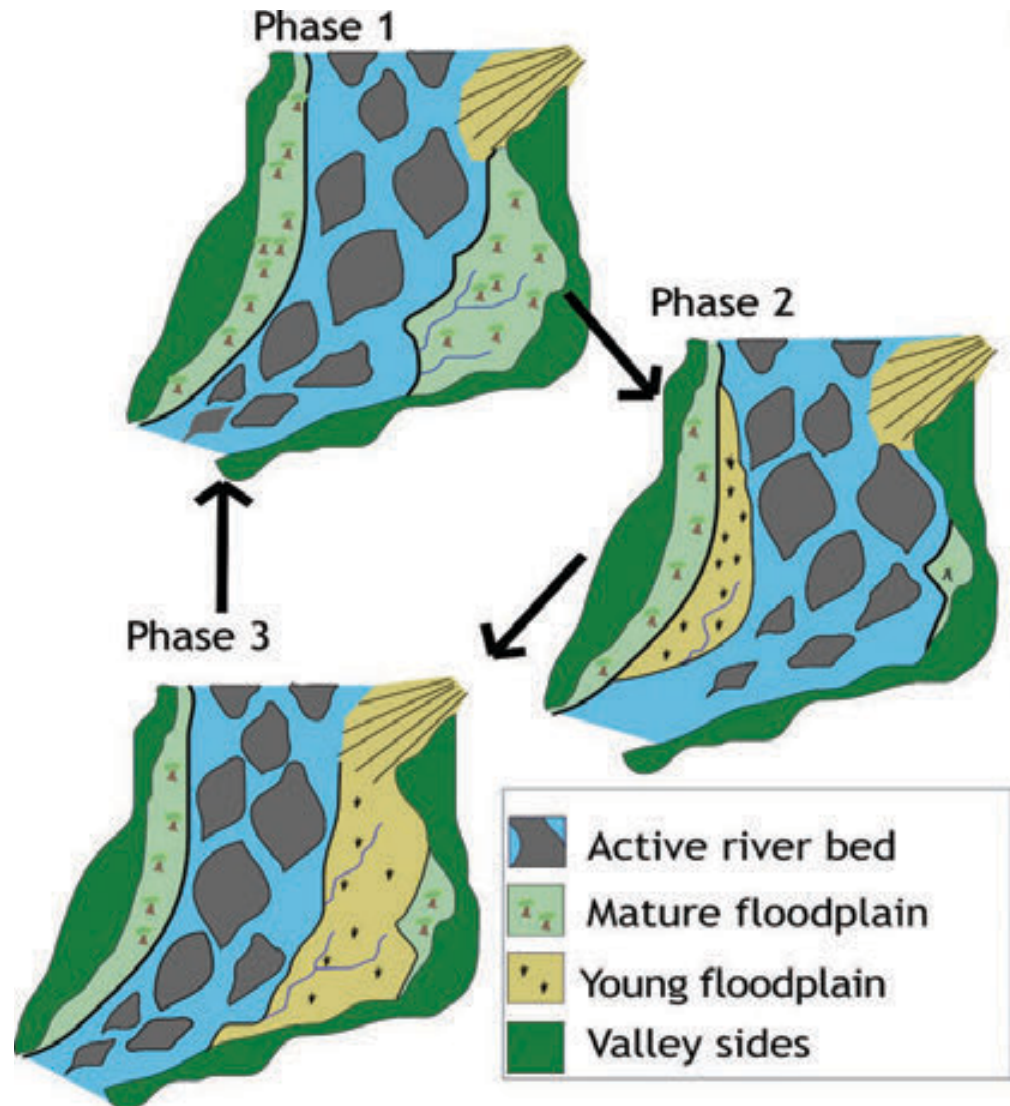
# Habitats constantly turnover



Dynamic yet stable?

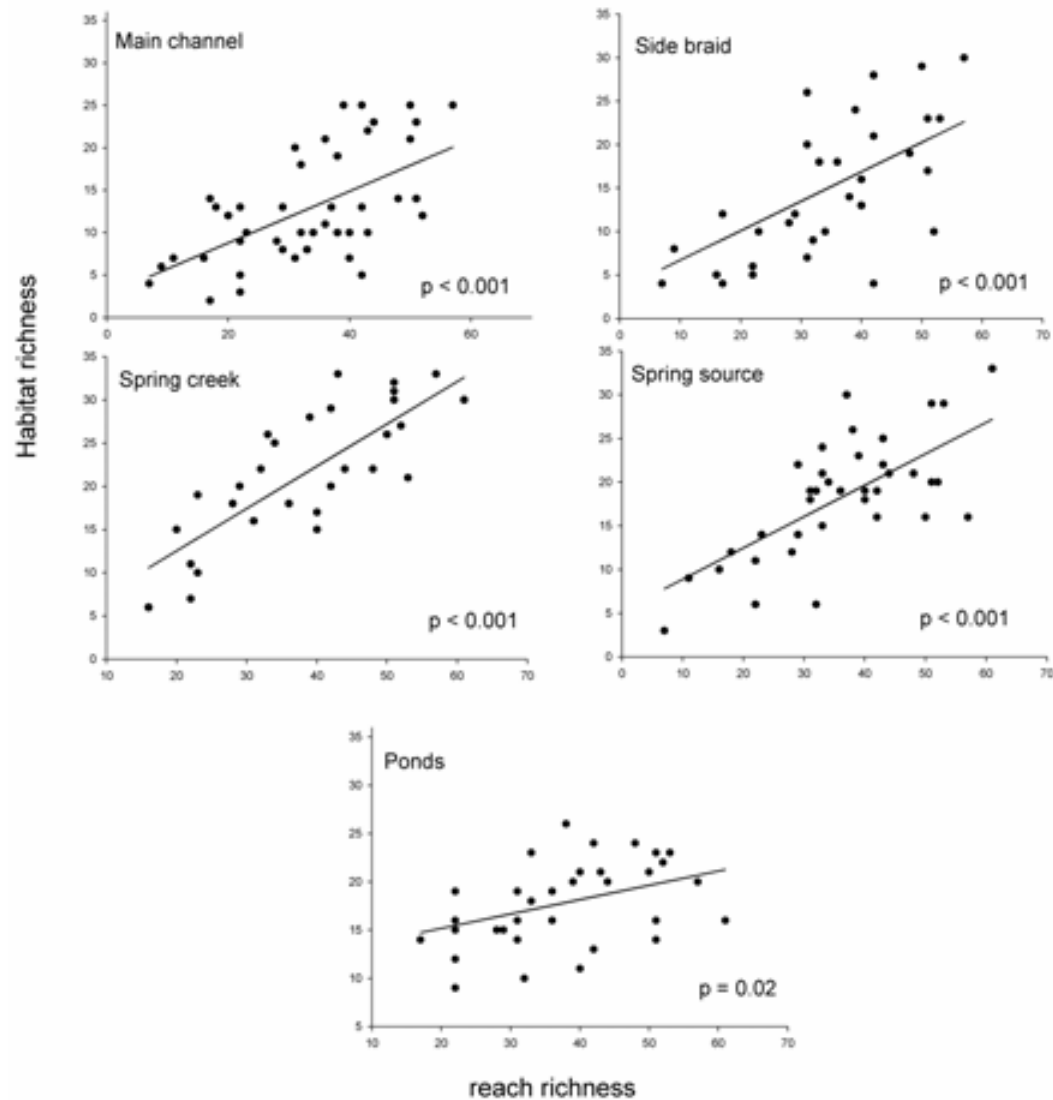
Sub-populations transient but  
total populations very stable?

Dispersal?





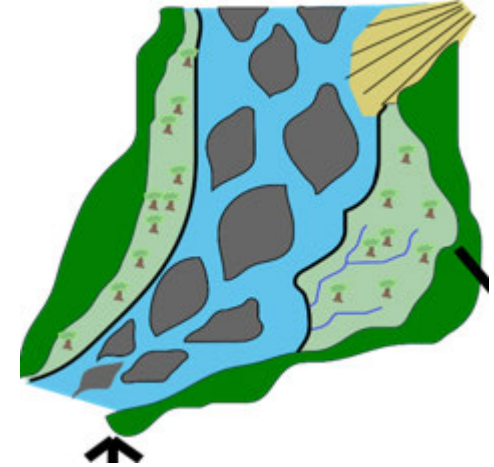
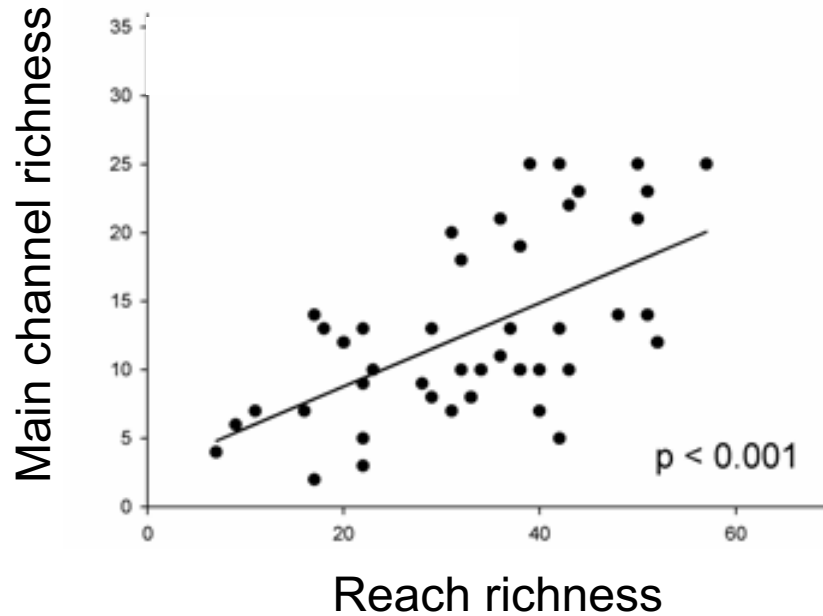
# Habitats are interdependent





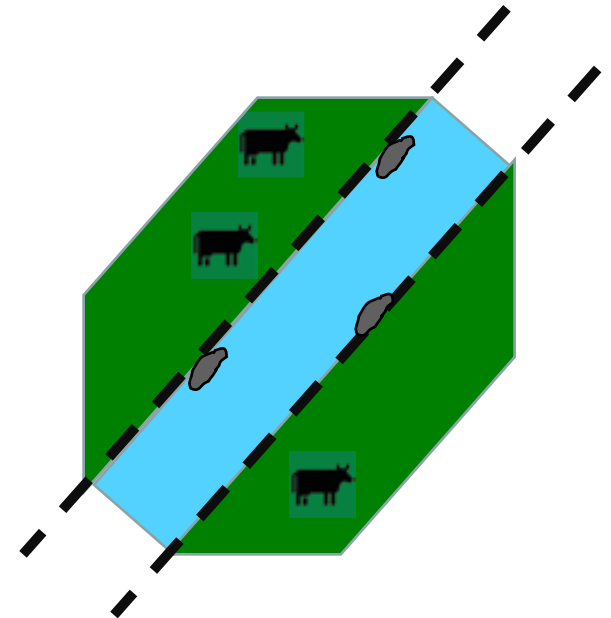


# Habitats are interdependent



Loss of lateral habitats  
degrades the main channel

Reduces resilience to  
disturbance – floods and  
climate change



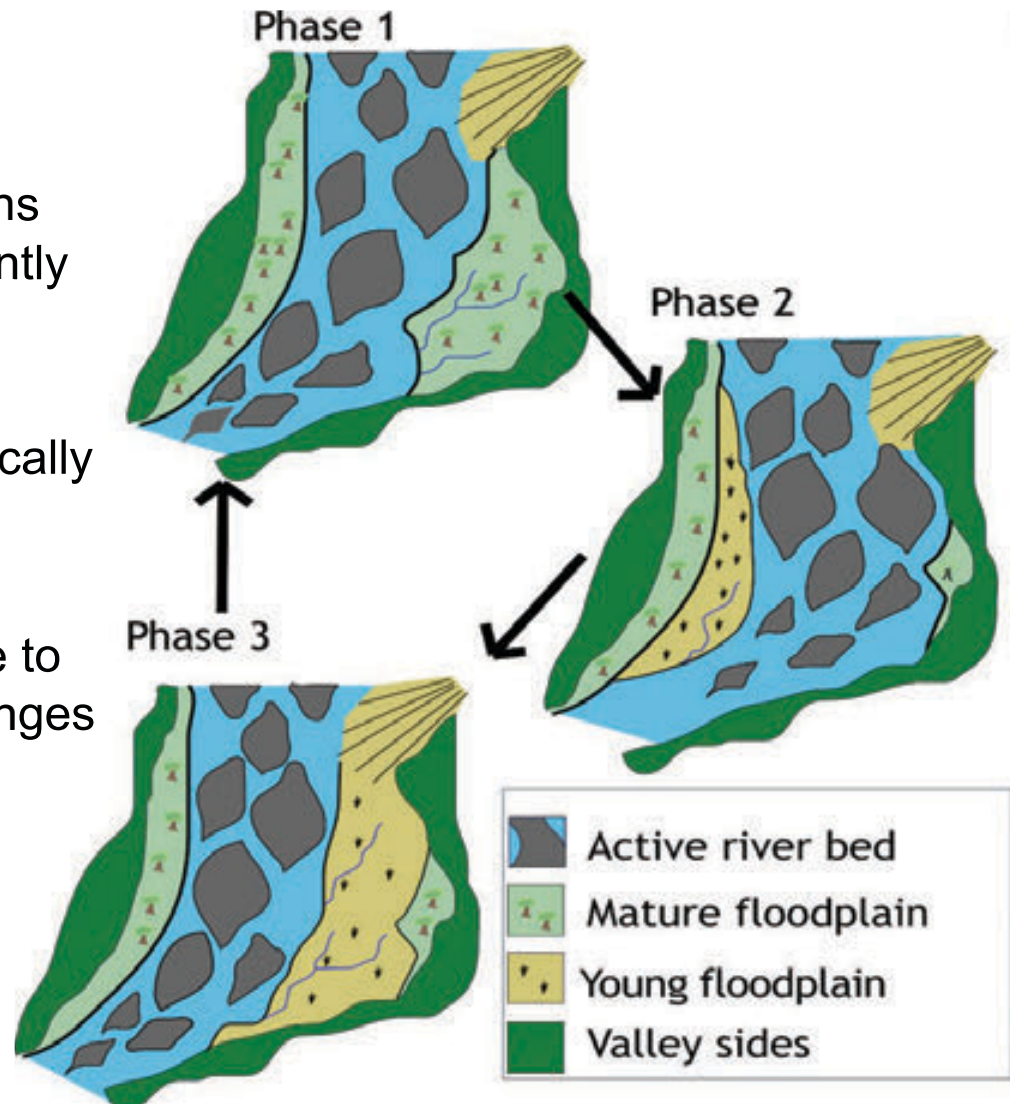


# Diverse ecological systems



- Intact braided rivers and braidplains are physically complex and constantly changing.
- The habitat mosaic allows ecologically rich communities to exist.
- The whole systems are vulnerable to the loss of lateral habitats and changes in the mosaic.

**Not just aquatic bugs but also, birds, fish, lizards, plants, terrestrial insects and the values of people**





# Trouble in paradise







# The Rub



- Many of the impacts on braided rivers have an economic basis
- There will be an economic cost to resolving these issues
- How much do we value these rivers?