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Investigating the demogenetic responses of exploited Atlantic salmon populations to climate change

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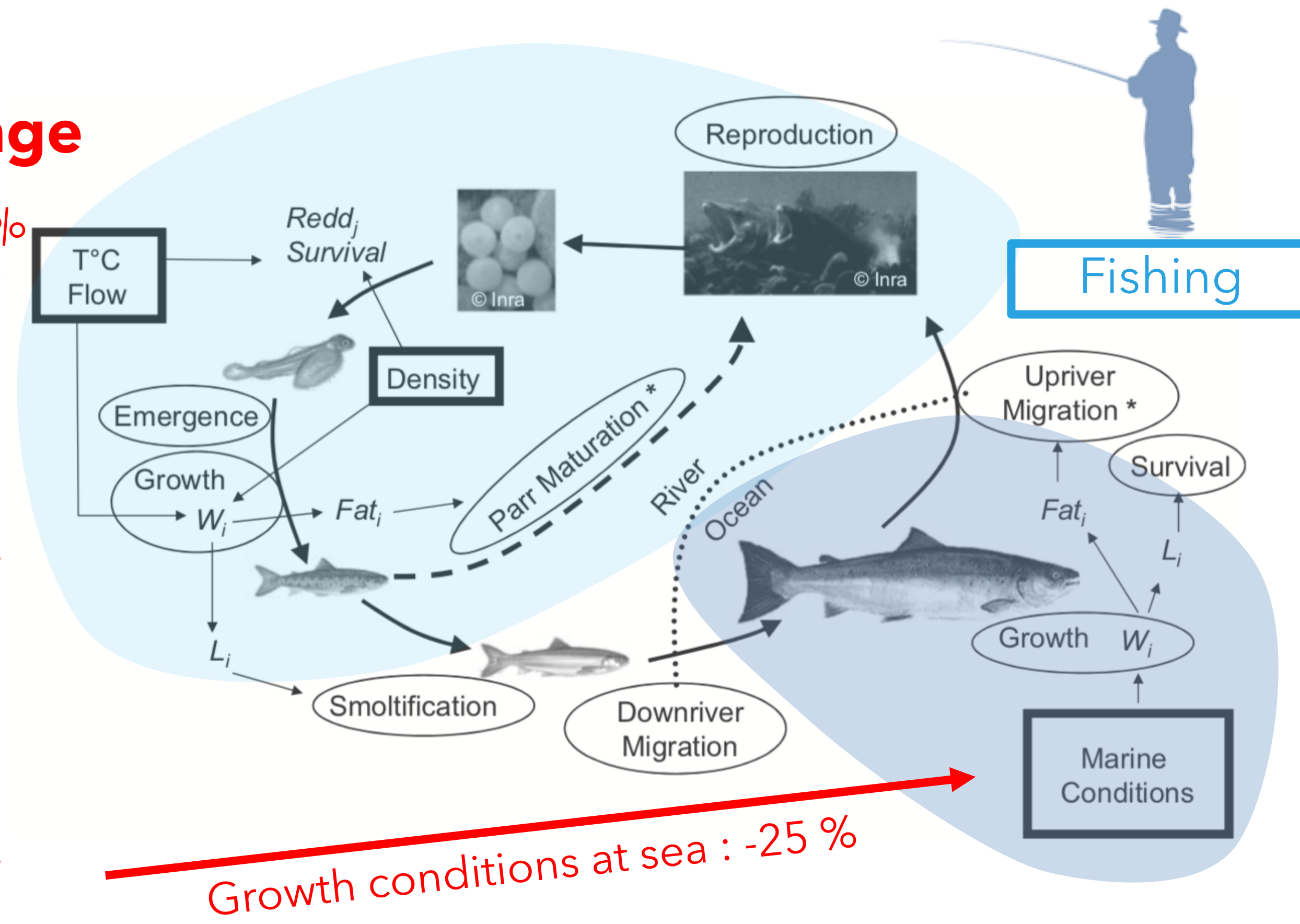
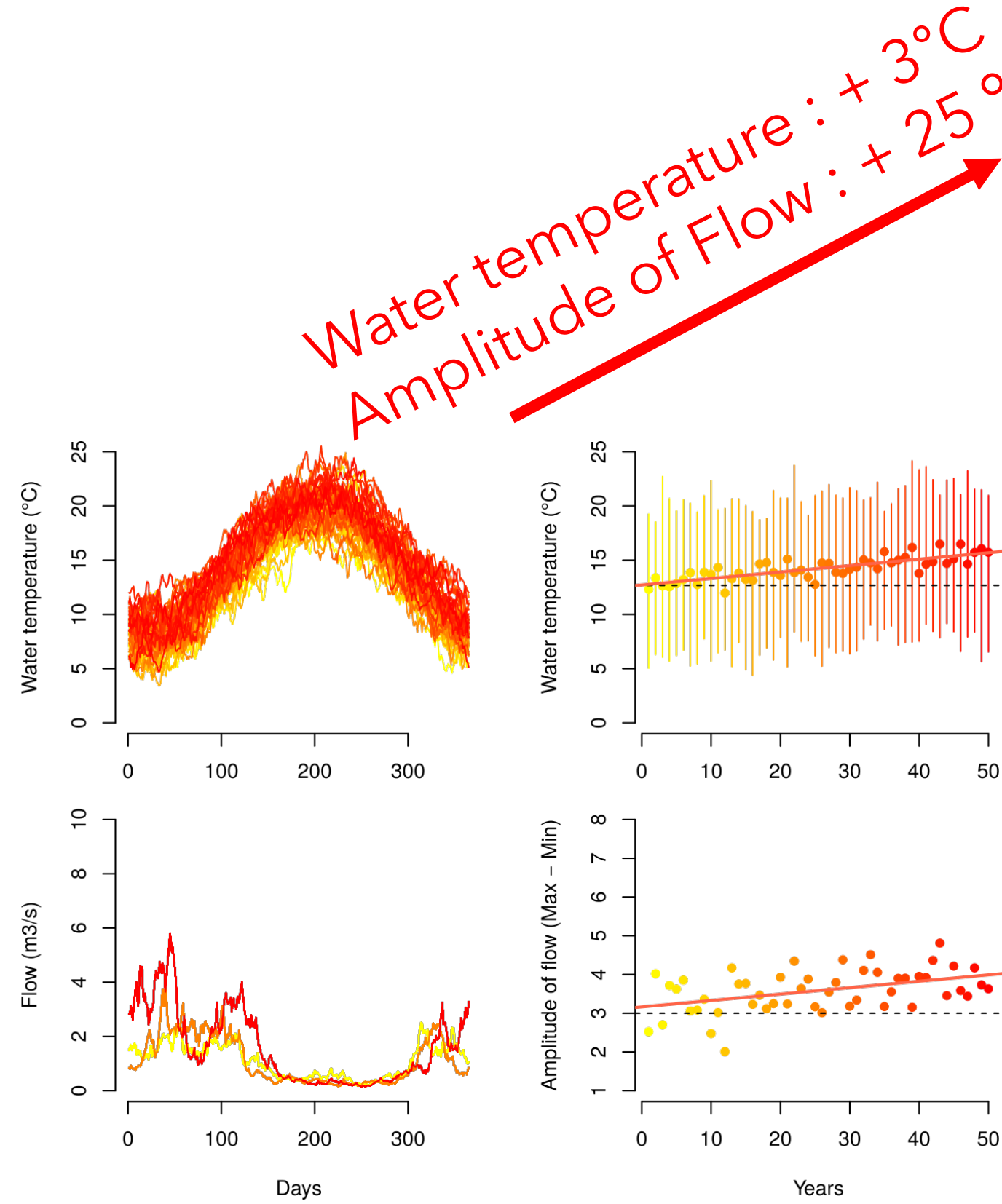
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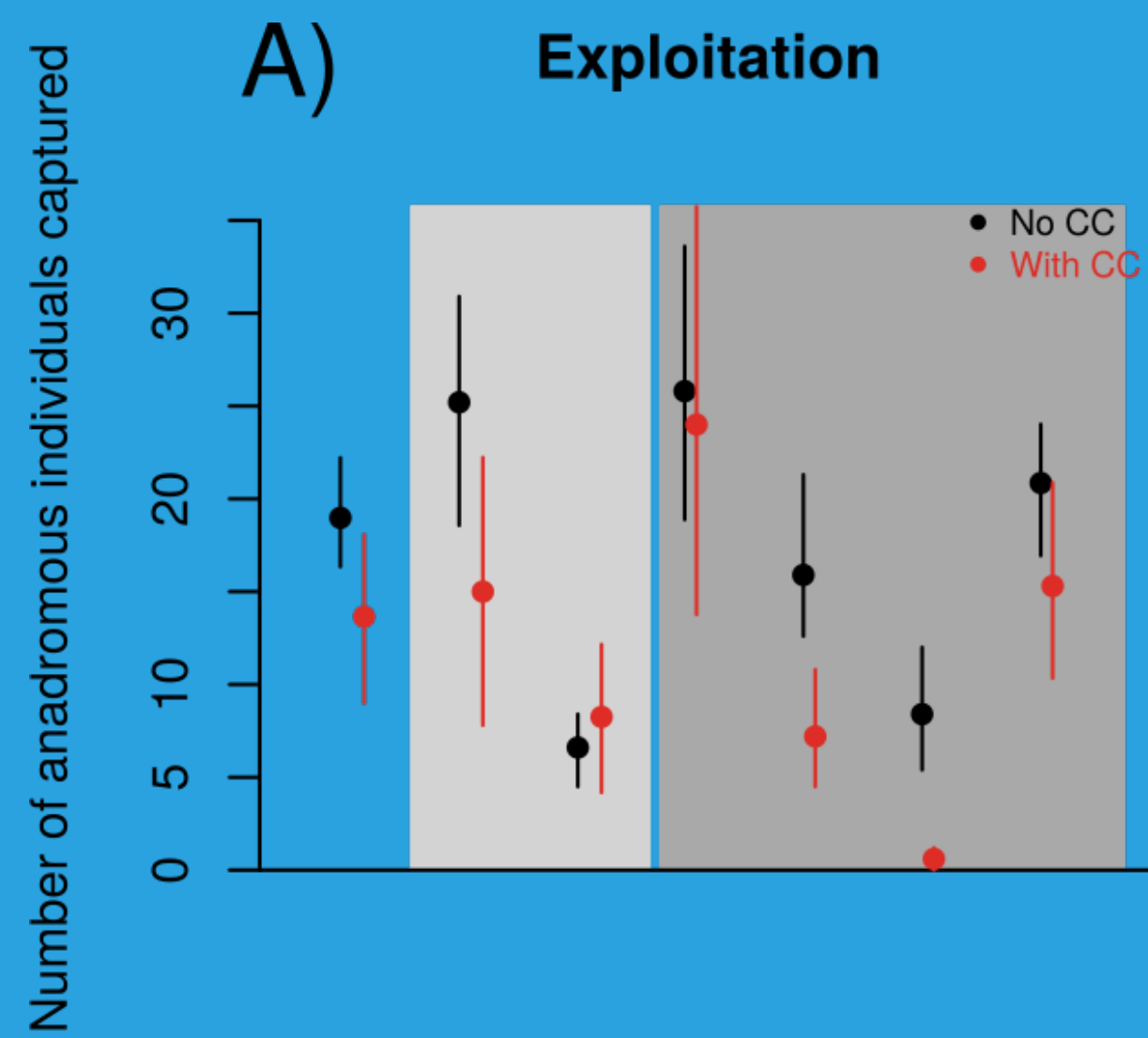
A demo-genetic individual-based model for Atlantic salmon populations (IBASAM, Piou & Prévost 2012)
 → mimics a small population typical of french coastal streams
 → connect demo-genetic dynamics with biotic (e.g. fisheries) & abiotic factors (e.g. Water temperature, Flow)

Effects of Climate Change

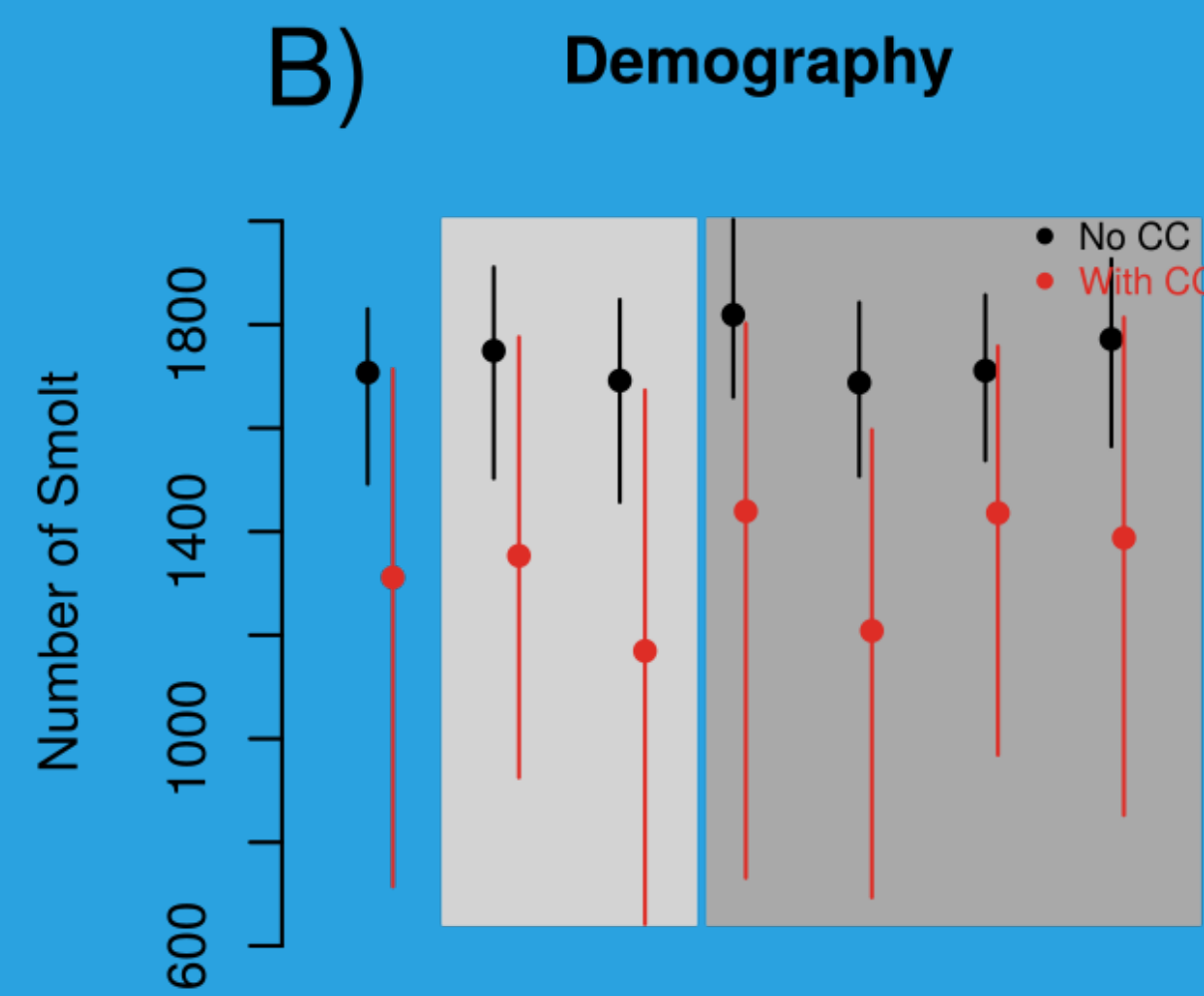


Effects of selective fisheries
 (e.g. Grilse vs Multiple Sea Winter fish)

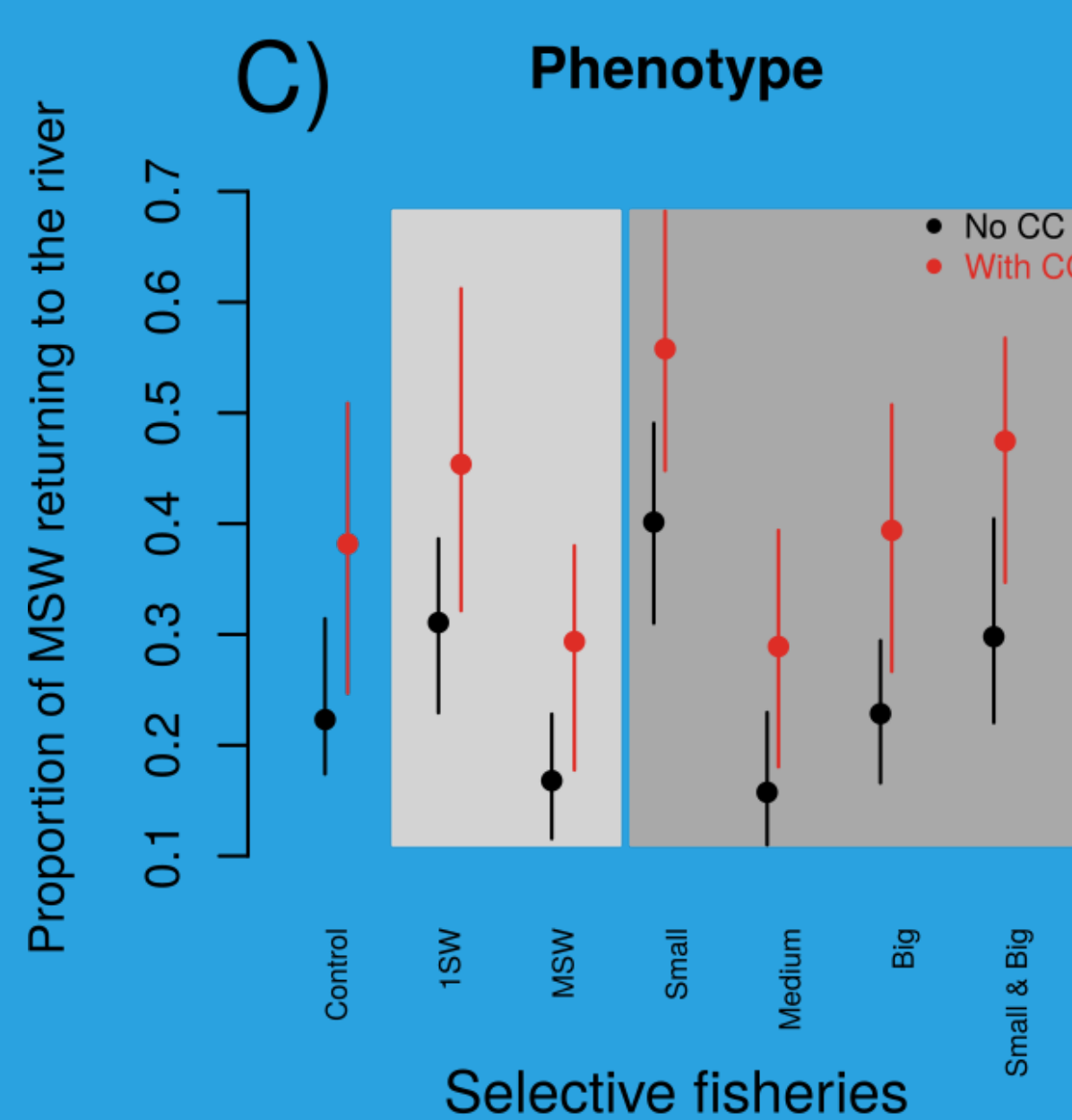
A) Exploitation rates tend to decrease under CC
 Selective fisheries worsen the effect of CC



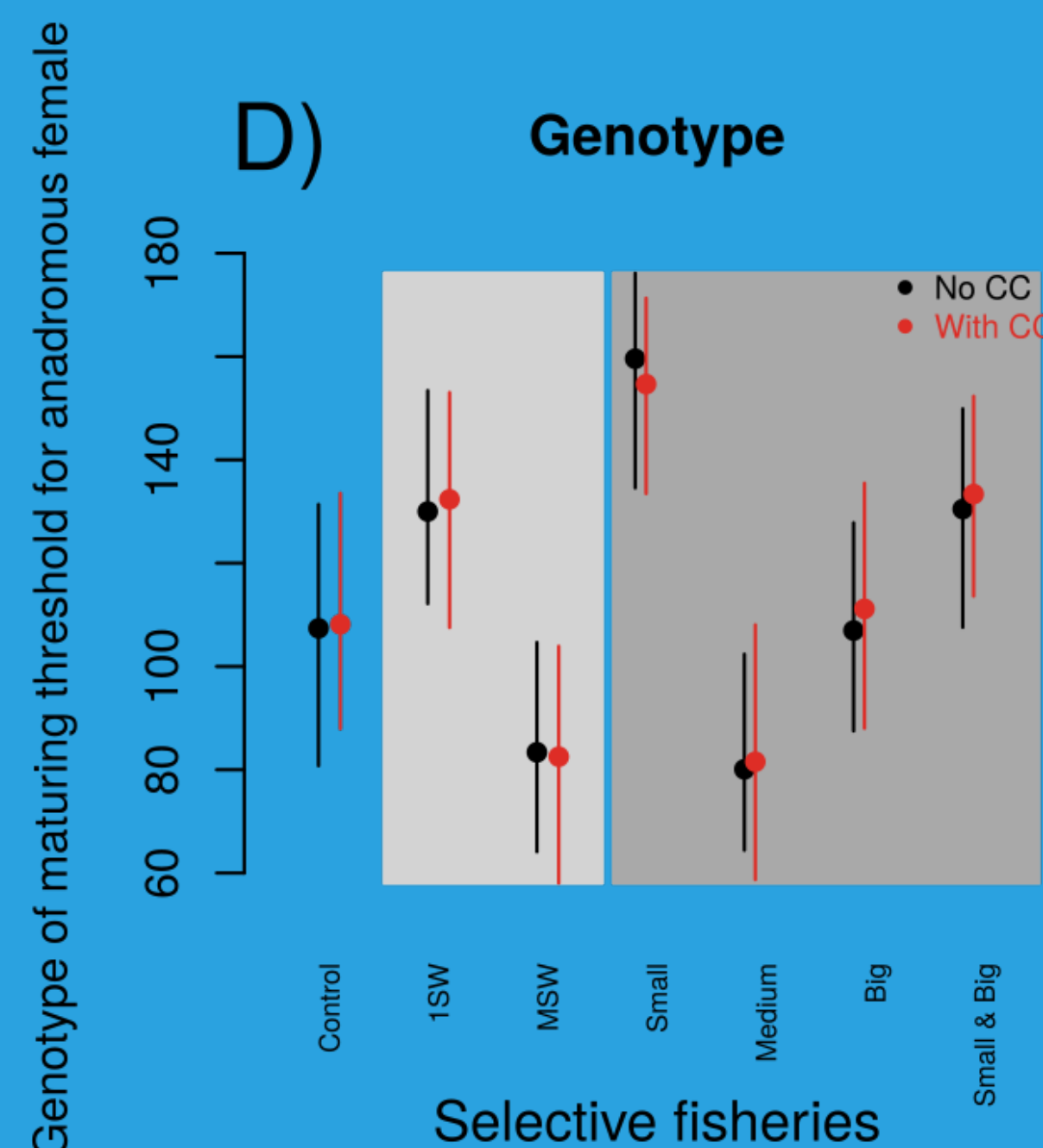
B) Effect of CC on population size
 No impact of selective fisheries



C) CC & selective fisheries induce phenotypic changes



D) No significant effect of CC
 But selective fisheries induced genetic changes (females)



Conclusion: A. salmon population size and composition (age structure) could be severely affected under CC and no selective exploitation strategies mitigate the effects of CC
 But current selective exploitation of Multiple Sea Winter fish could worsen the effects of CC

Perspectives: Explore the potential of management strategies that would be unselective and that would increase intra-population biodiversity, favoring the "portfolio effect" and resilience to CC.