

Kiwi kohanga: optimising translocations from healthy populations for kiwi conservation

Dean Anderson
John Innes

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LANDCARE RESEARCH
MANAAKI WENUA

Kohanga:



- ‘Nest’
- Kohanga kiwi population
 - “**Source**” population for translocations to boost recovering populations
 - Island or fenced populations
 - Low or zero predation
 - High genetic diversity

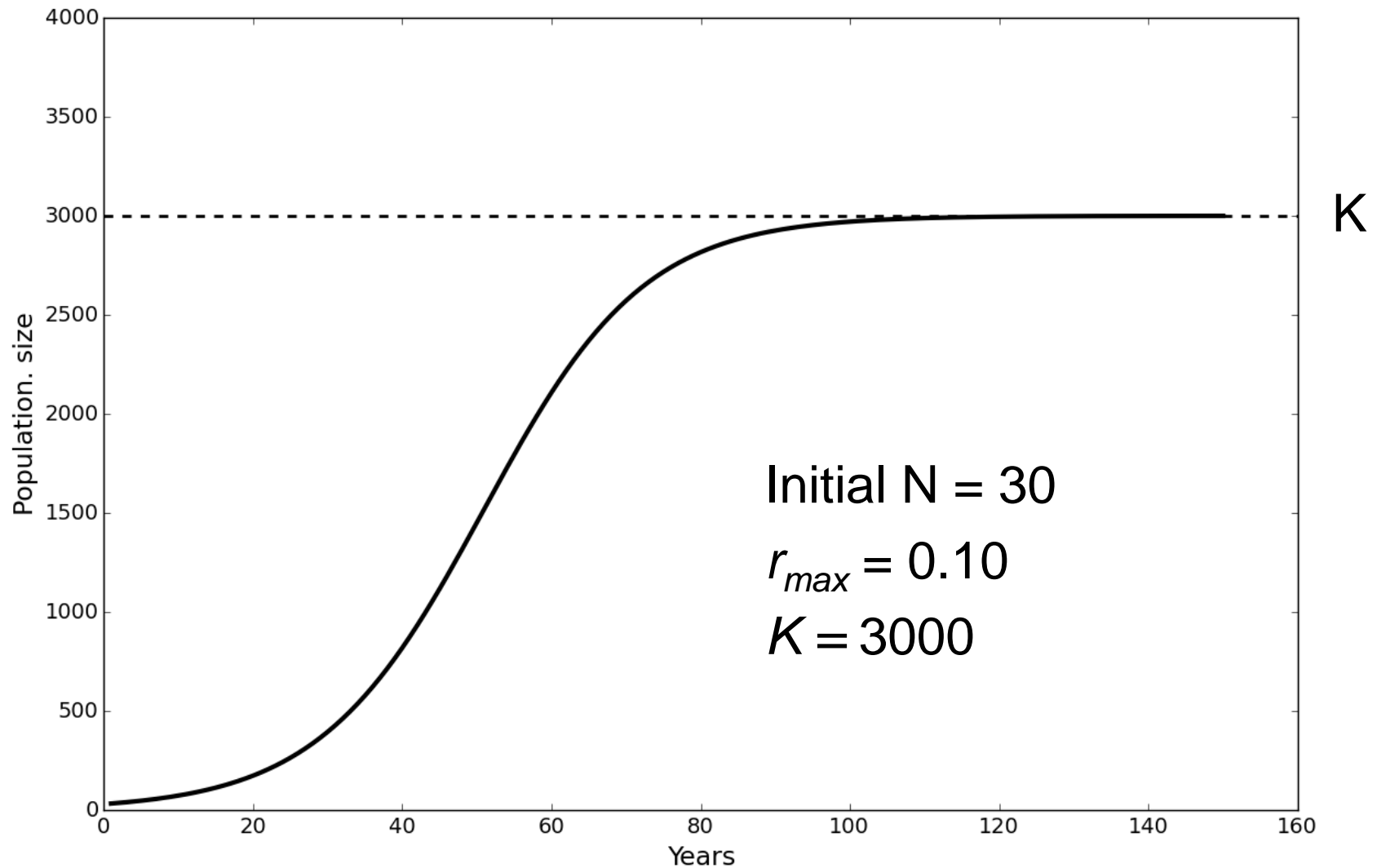
Today's objectives

Population modelling is used to explore:

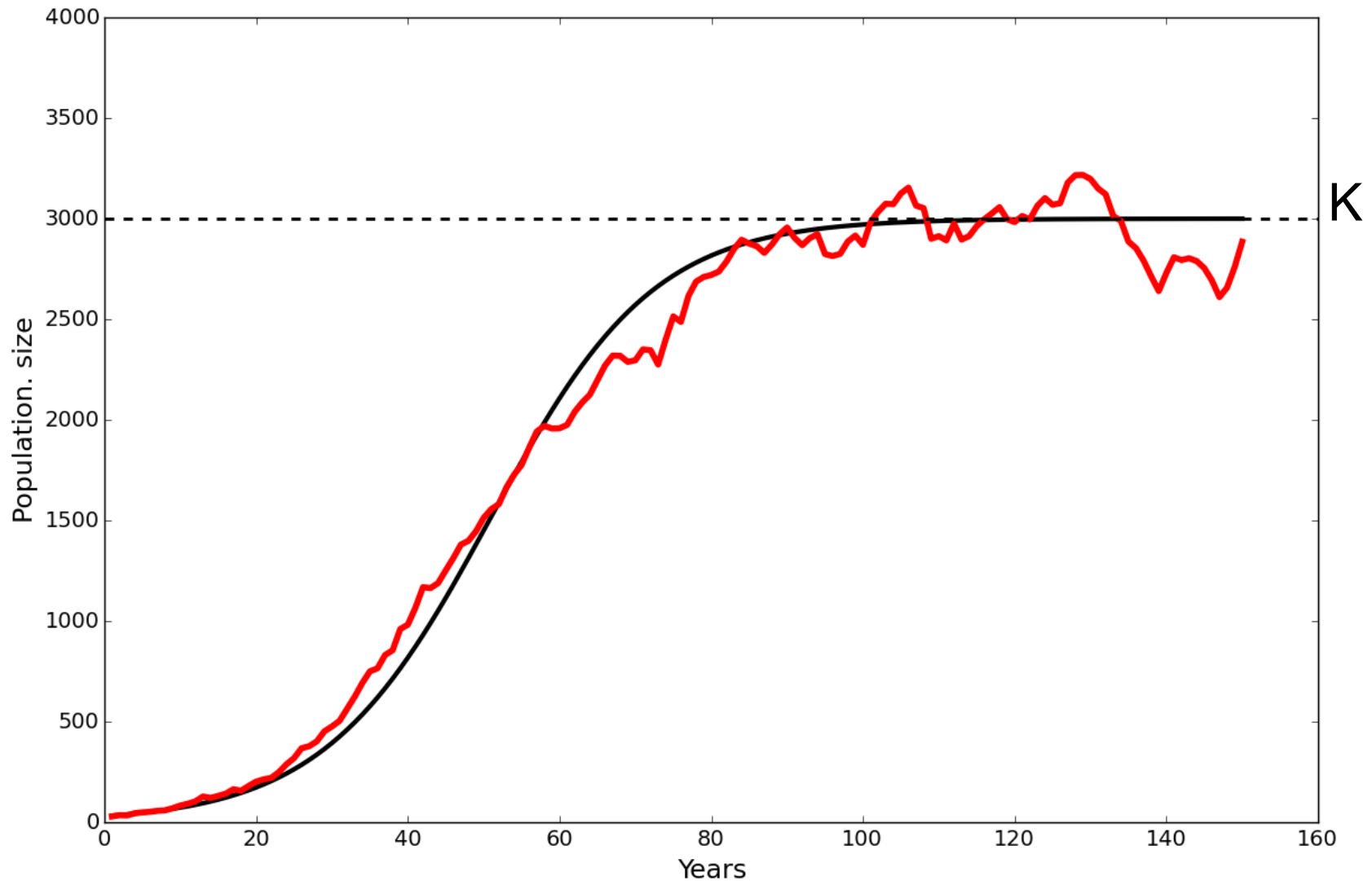
- Dynamics between source and recipient populations
- Trade-offs and issues
- Optimal strategies



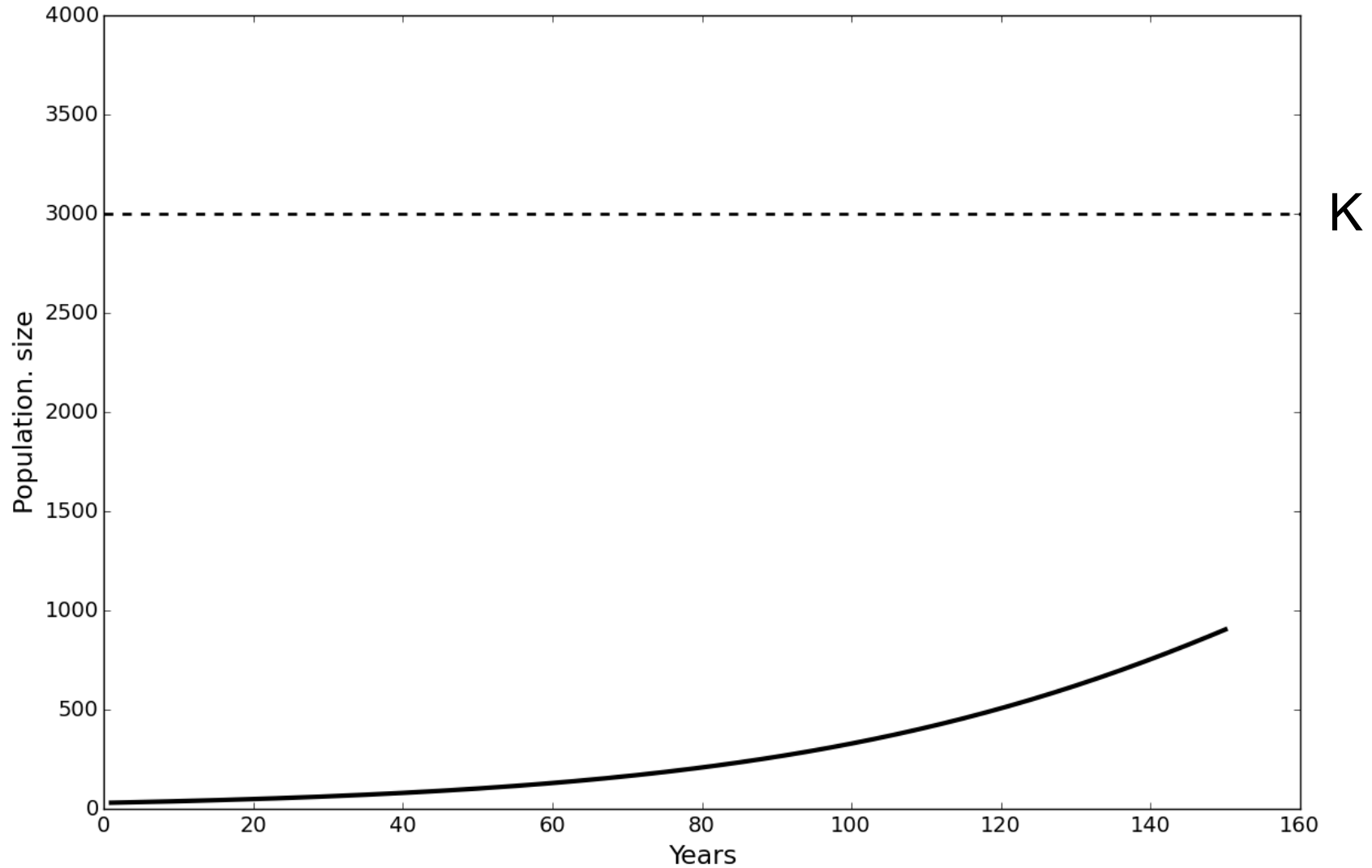
Population growth model



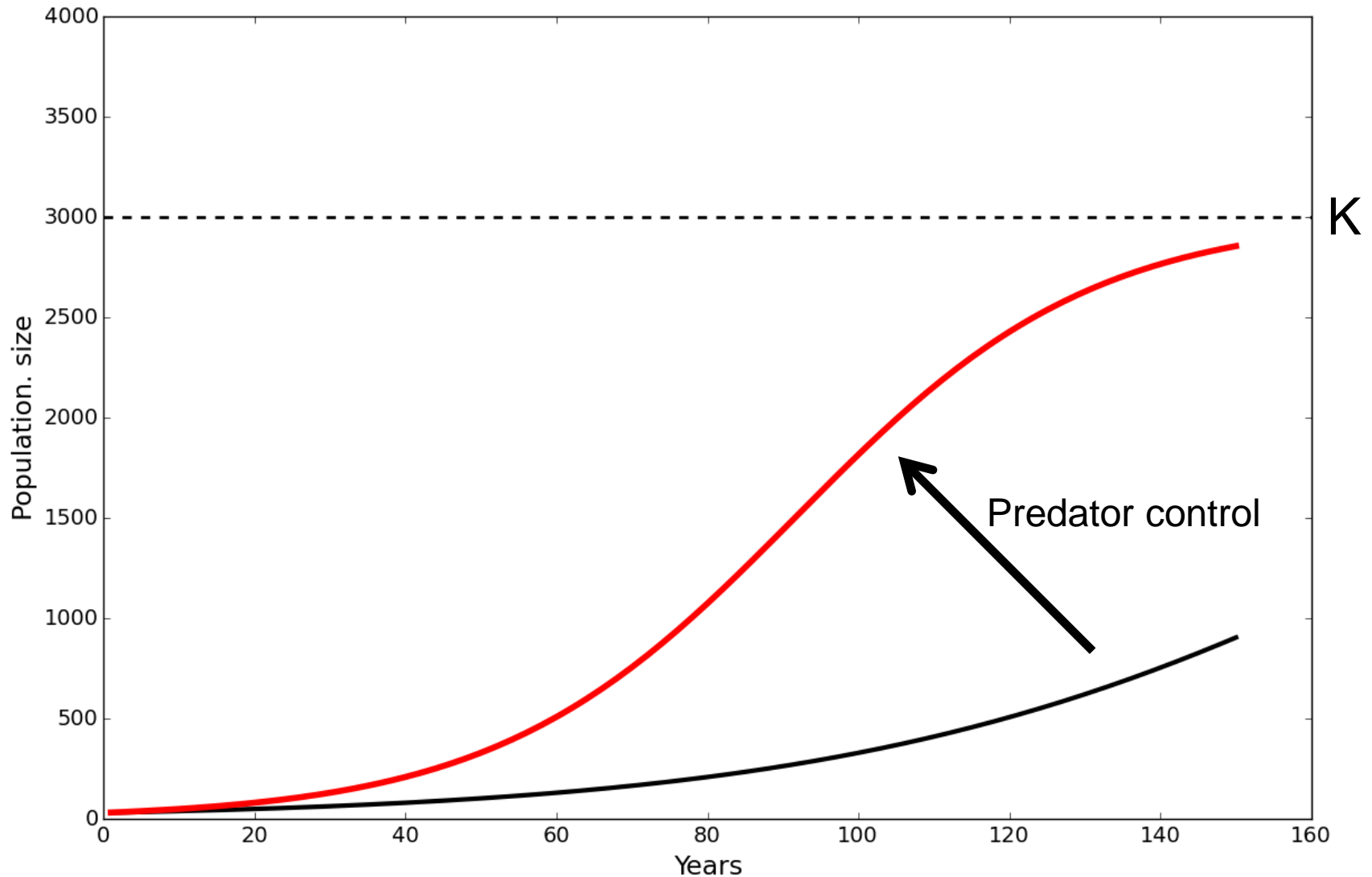
Stochastic population dynamics



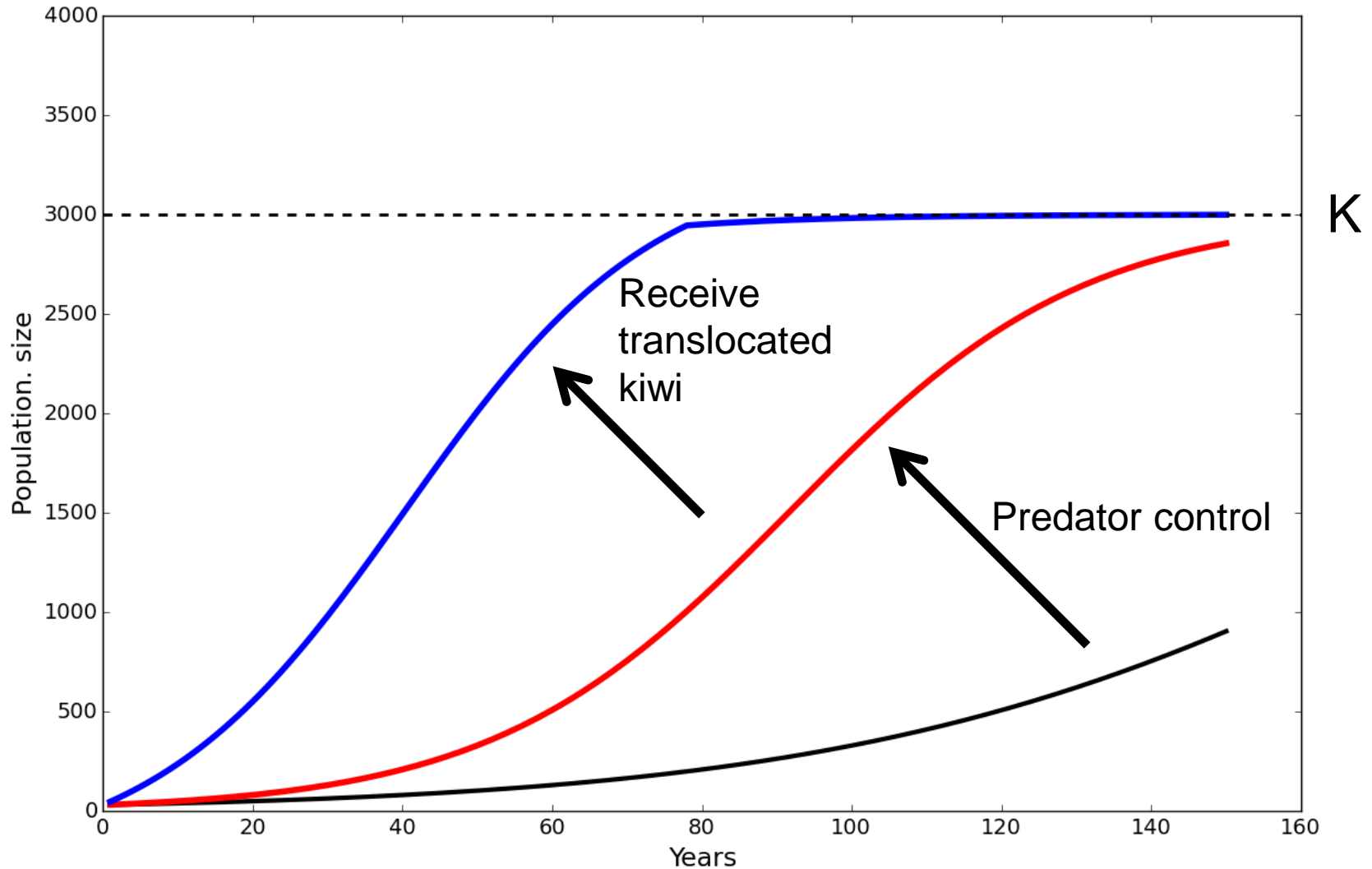
Moderate predation pressure



Kiwi benefit from predator control

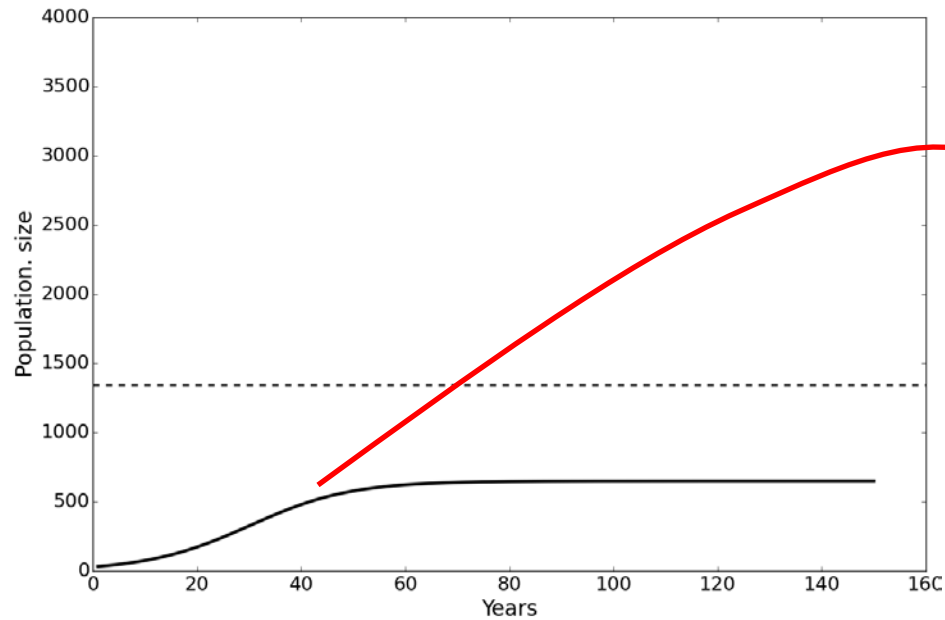


Translocated kiwi and predator control

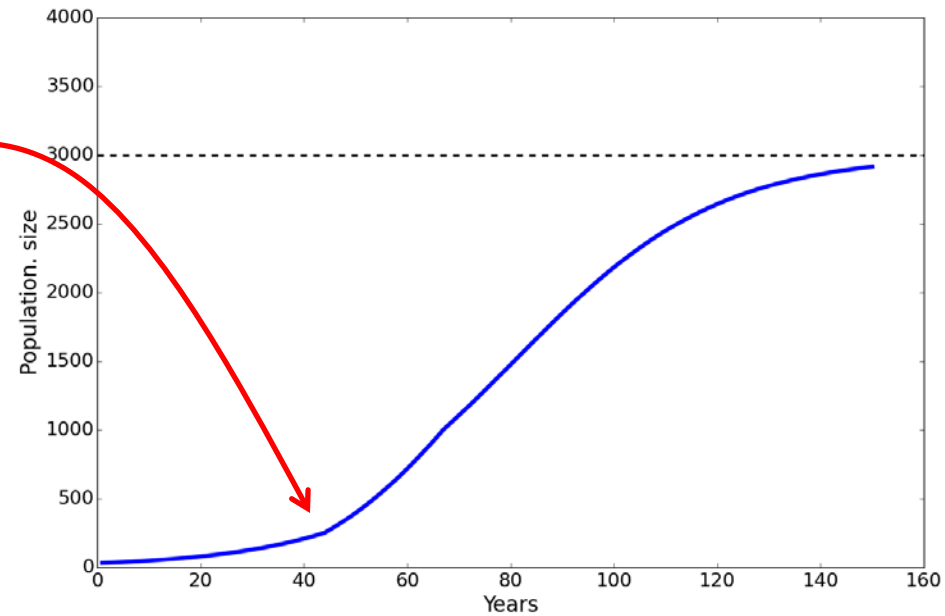


Dual population dynamics

Source population

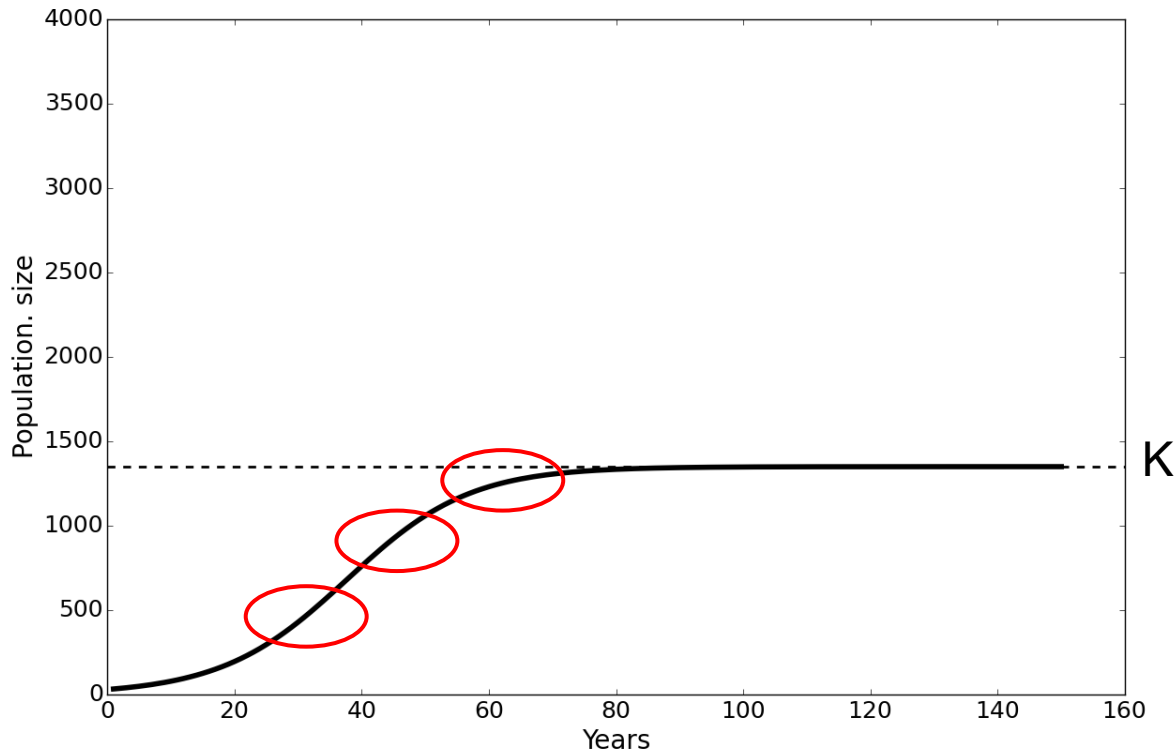


Recipient population



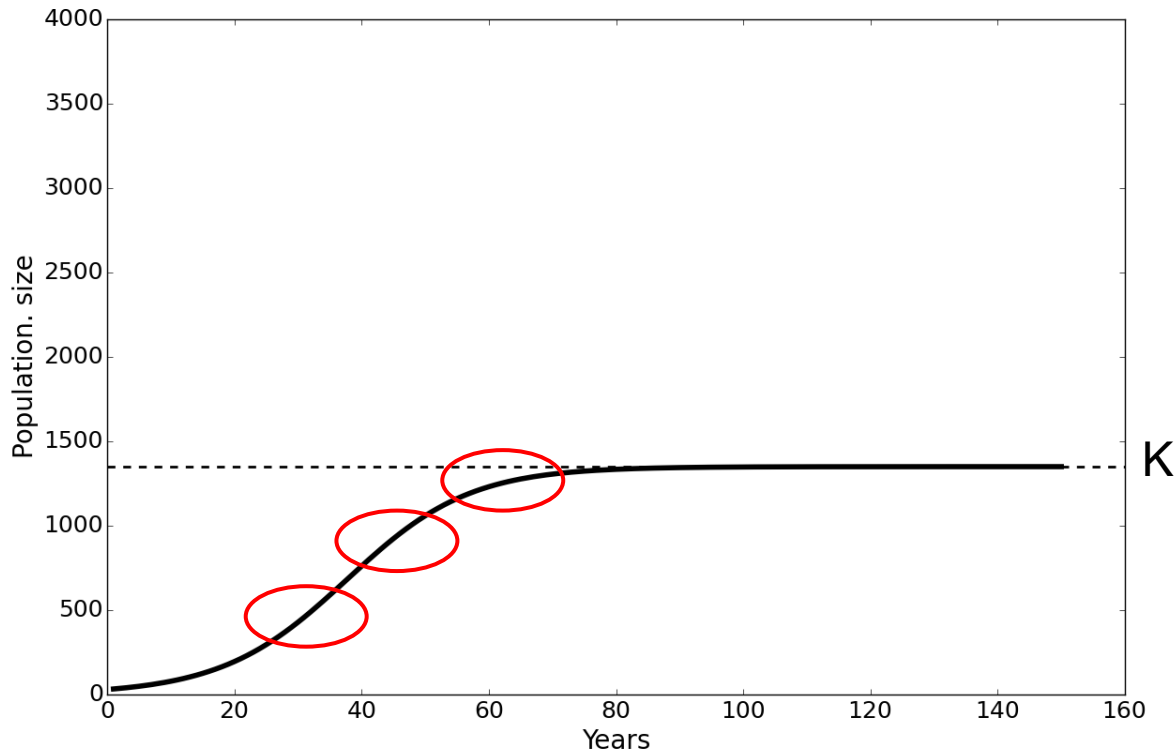
Modelling questions:

- 1) When do we begin to harvest kiwi from the source population?
- 2) How many do we remove to translocate?
- 3) How does predation levels influence strategy?



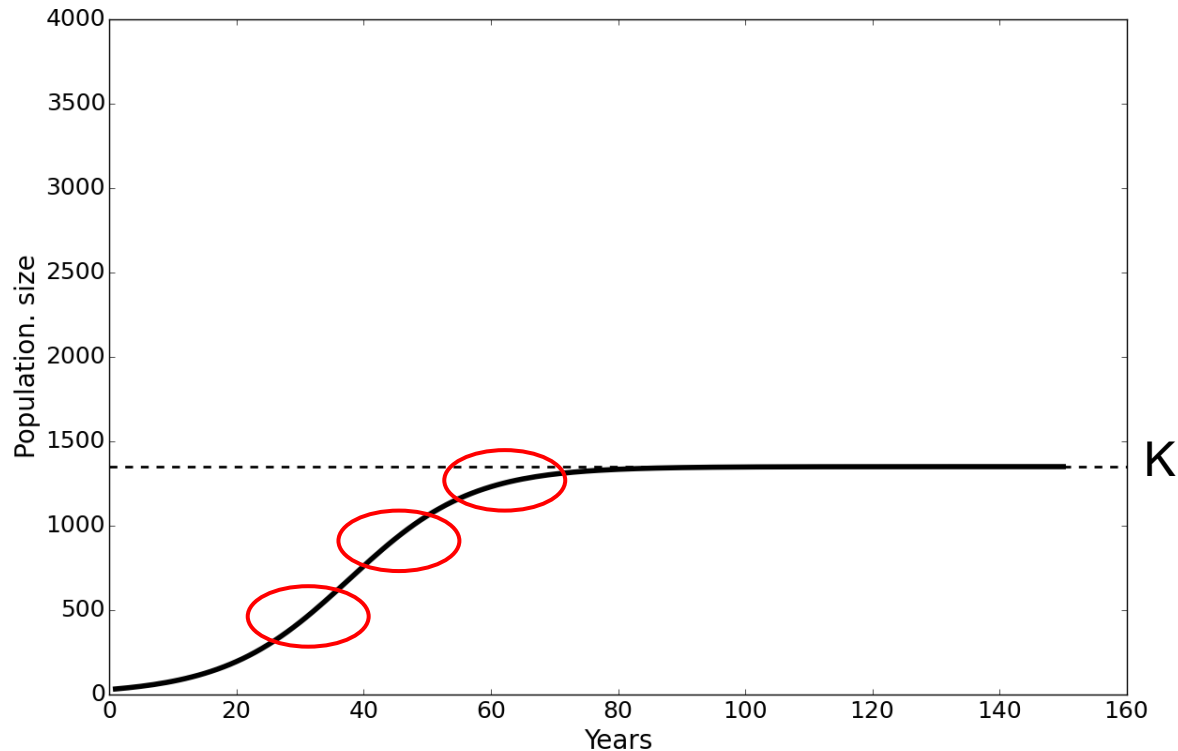
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Optimal solutions:

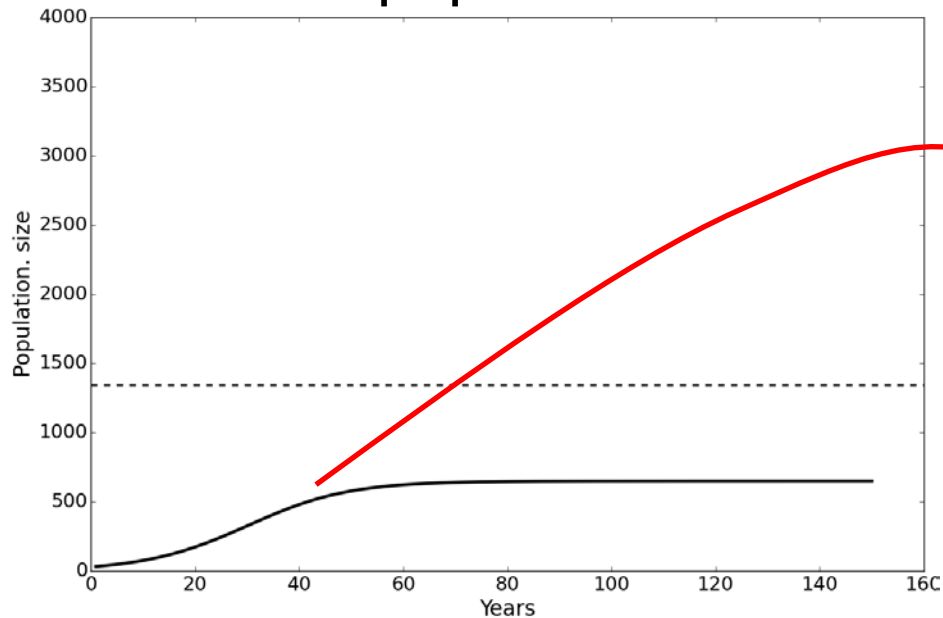
- 1) Maximise output of source kiwi population
- 2) Maximise recipient population size



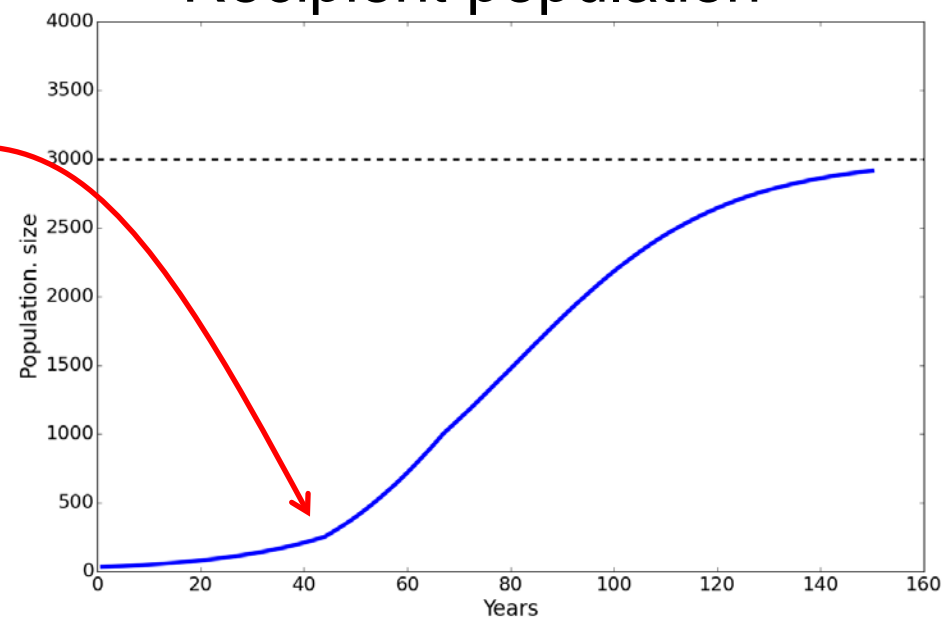
Dual population model

- Density dependence
- Population stochasticity
- 2 predation levels

Source population



Recipient population



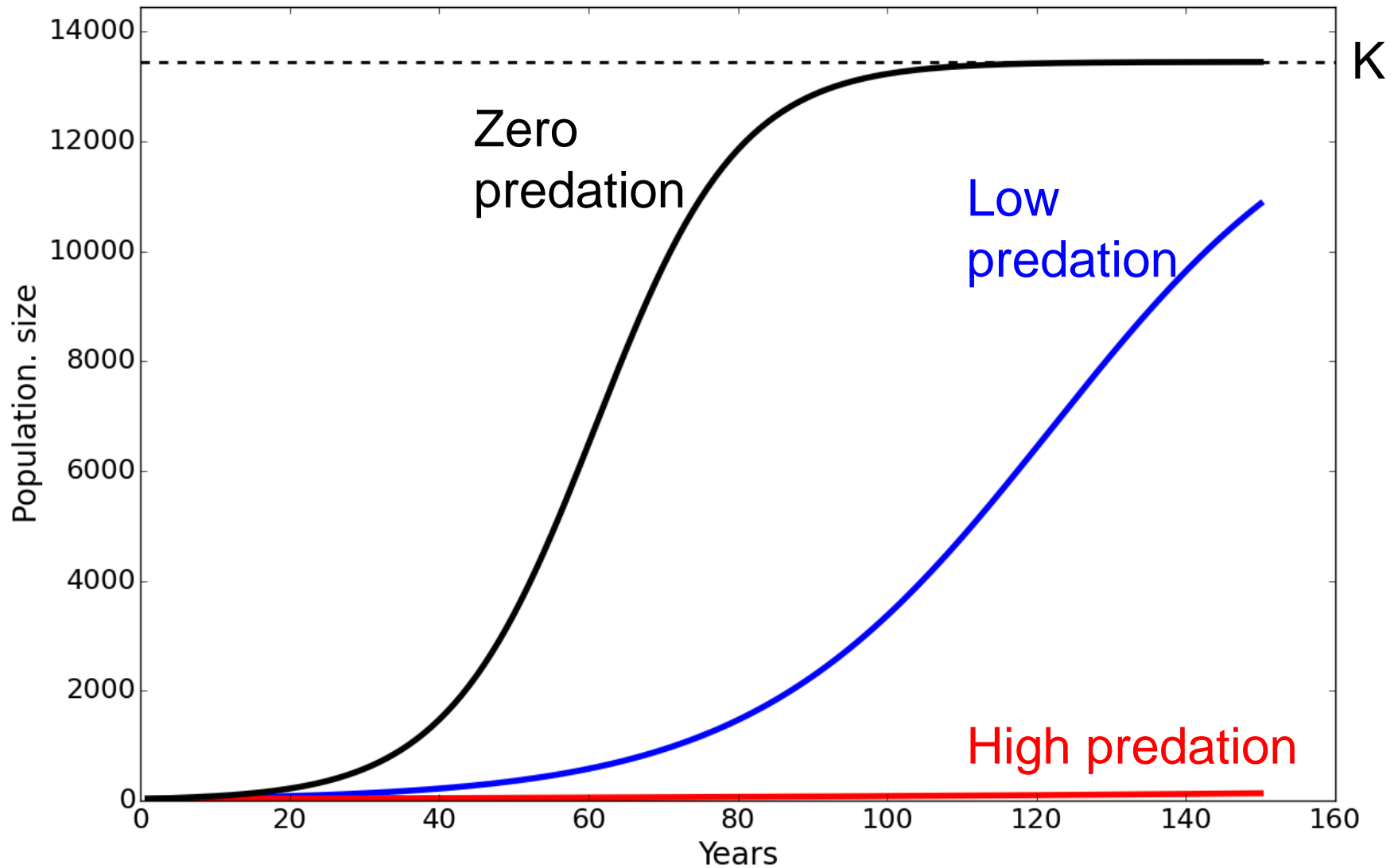
Source population

Maungatautari Sanctuary

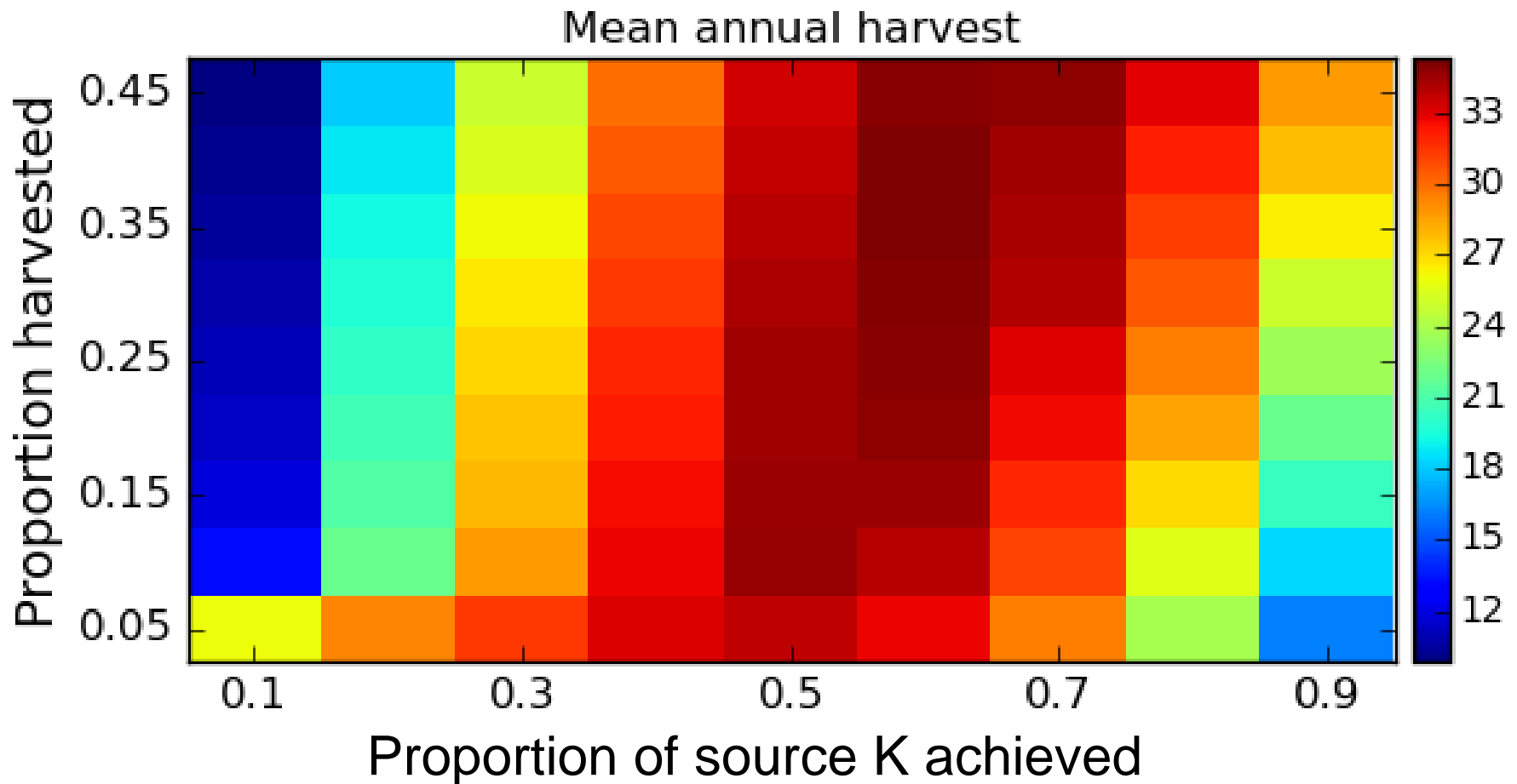
- Initial population = 69 kiwi
- $K = 1345$



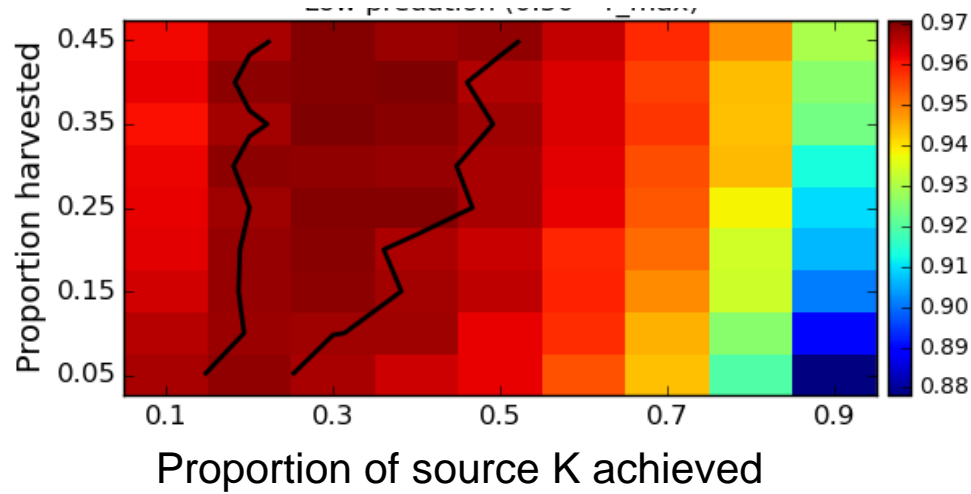
Hypothetical recipient pop. (no transplants)



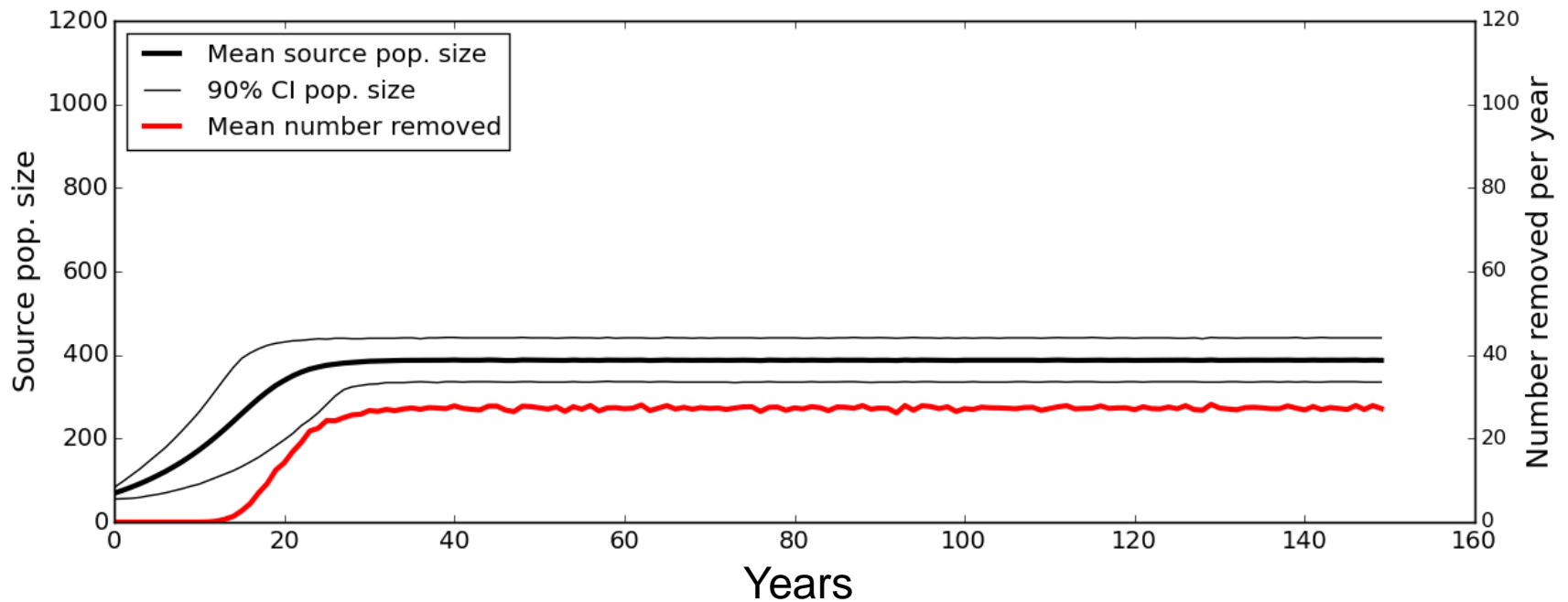
When and how much to harvest?



Recipient population: Proportion of K at 150 years

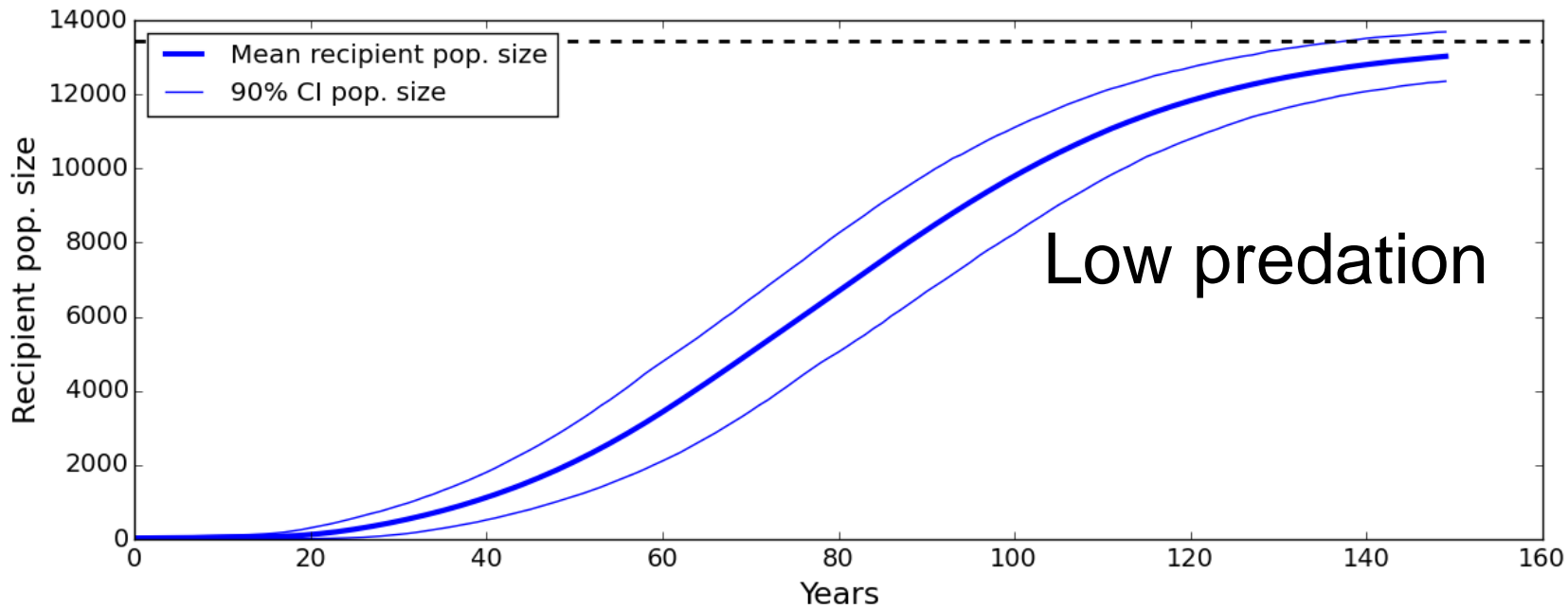
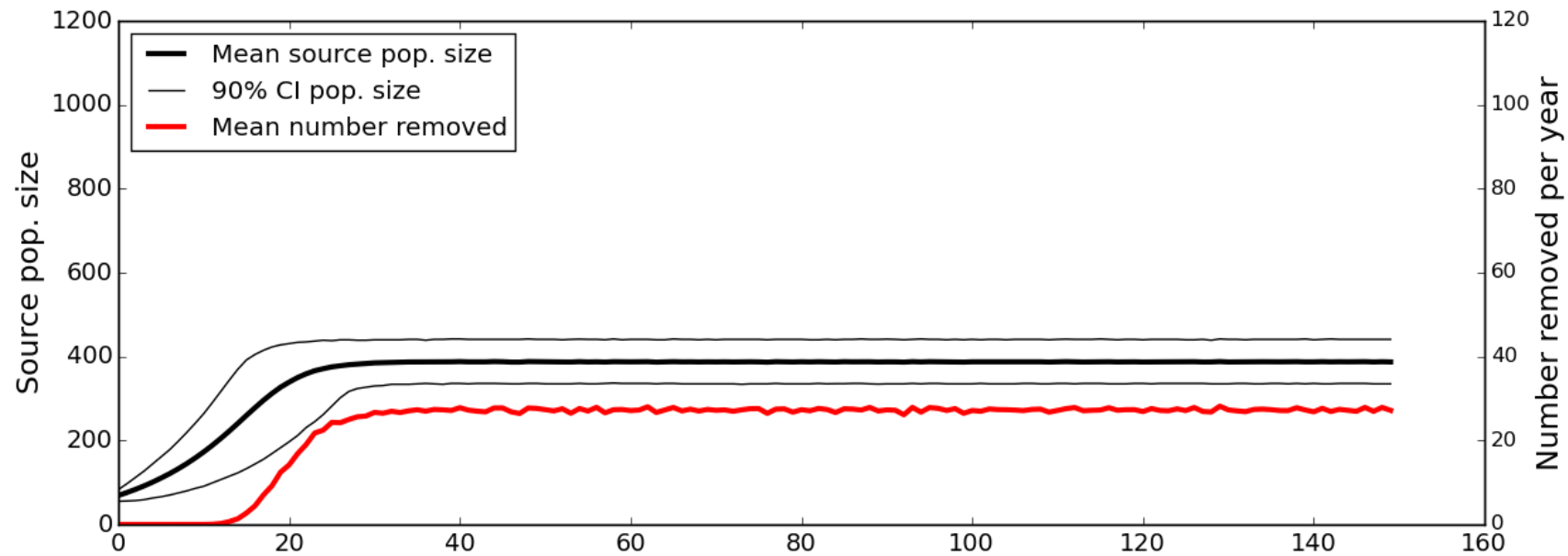


Low predation

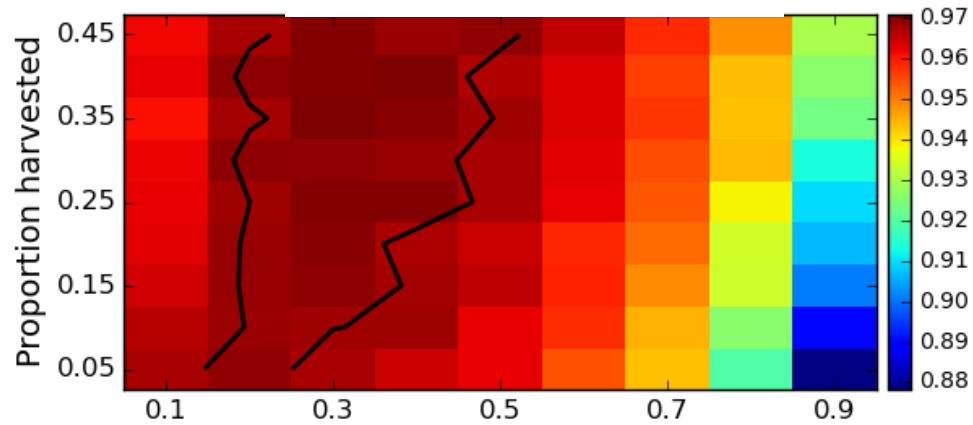


Source:

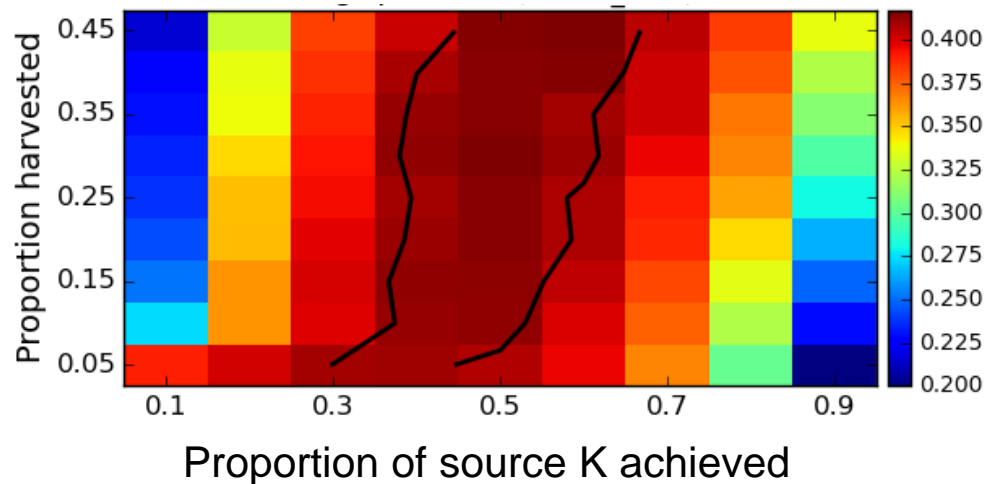
- Begin harvest at 30% of K
- Harvest 20% of population
- Optimal for low predation



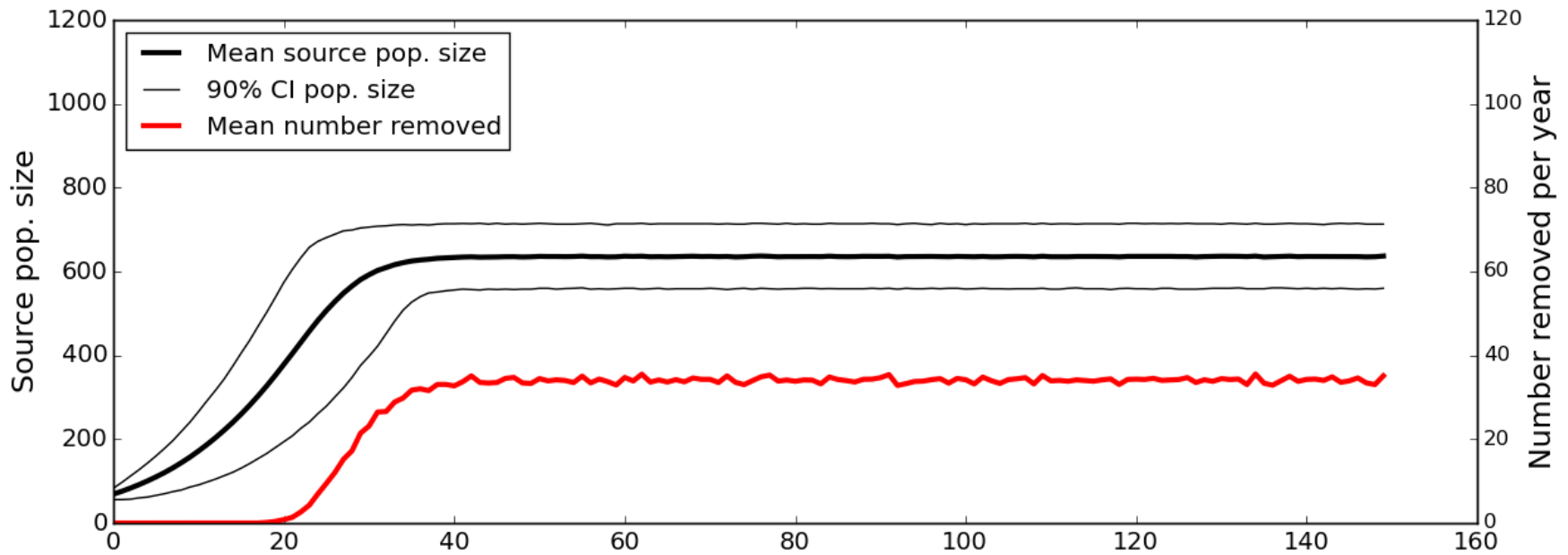
Recipient population: Proportion of K at 150 years



Low predation

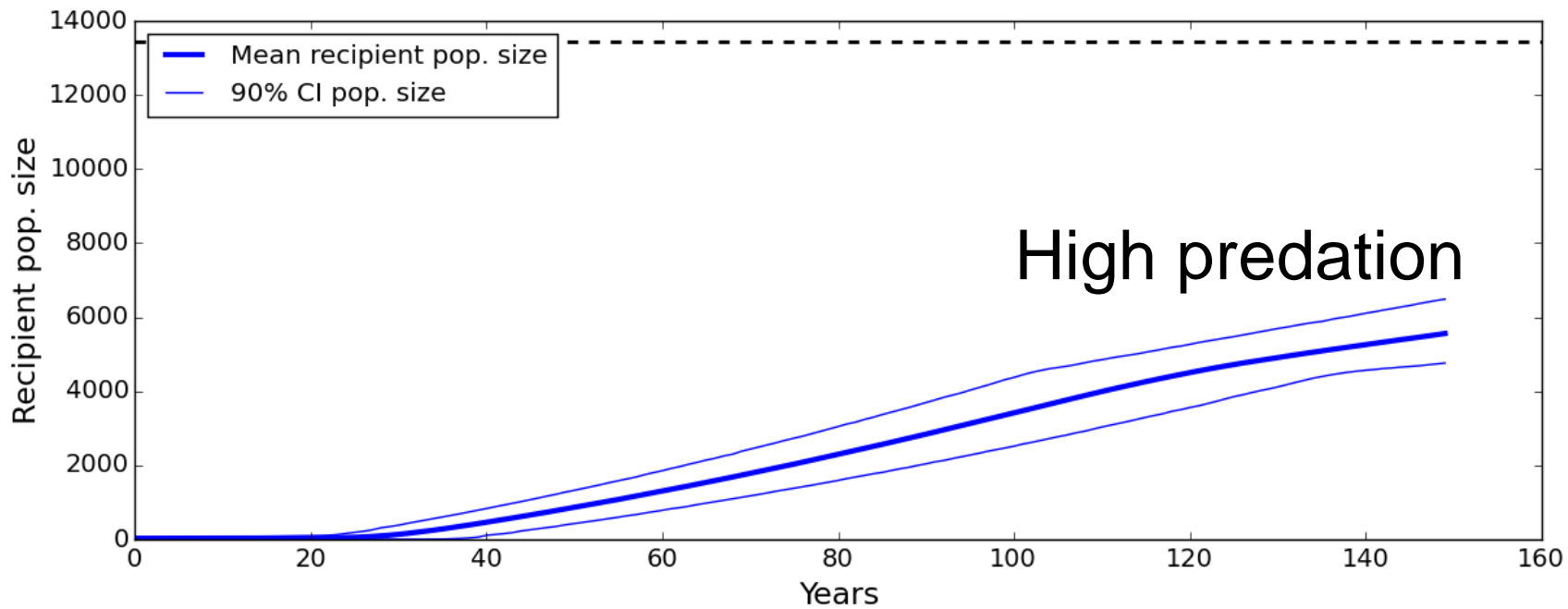
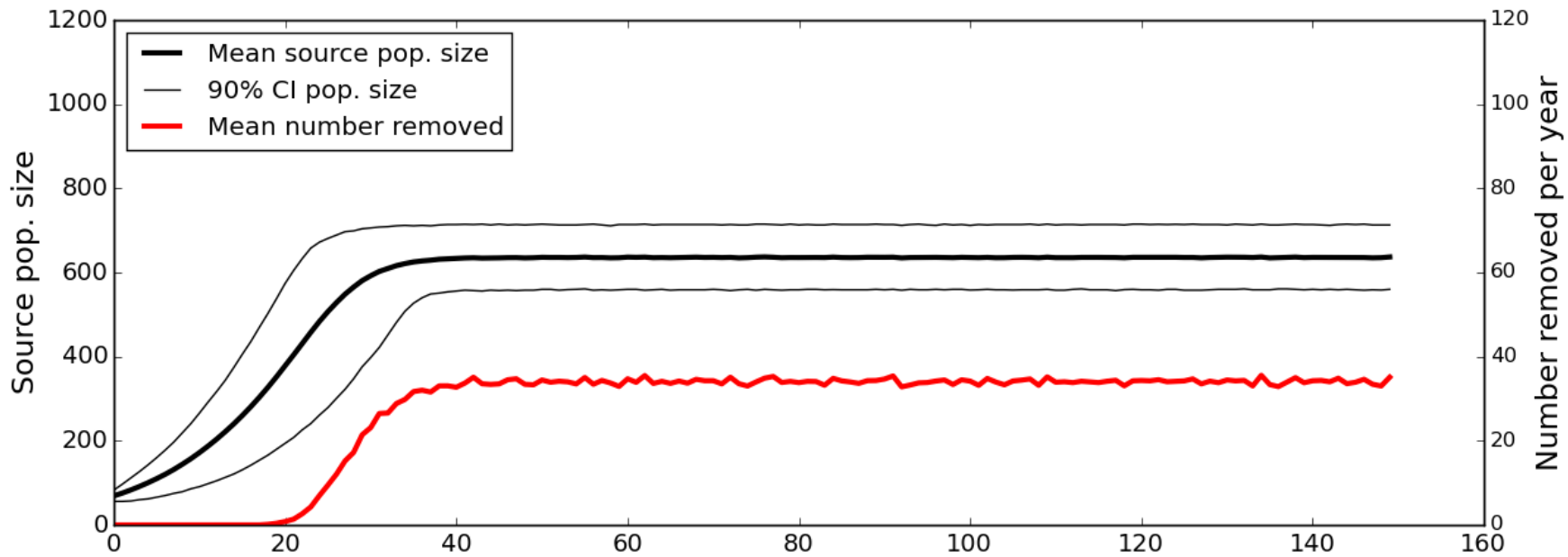


High predation



Source:

- Begin harvest at 50% of K
- Harvest 20% of population
- Optimal for high predation



Summary

- Translocated kiwi can accelerate population recovery
- It is not a replacement for predator control



Summary

- Source populations may need many years to grow
 - Maungatautari: up to 20 – 30 years
- Limited annual numbers of transplants
 - Maungatautari: up to 35



Summary

- Predation pressure influences strategy
 - **Low predation:** best to translocate sooner rather than later, even if transplant numbers are low.
 - **High predation:** best to wait until transplant numbers are high



Thank you

