Alwabra
Al Wabra Wildlife Preservation

Clinic
of Zoo Animals, Exotic Pets and Wildlife

ZRC
ZOO RESEARCH CAMP
Al Wabra Wildlife Preservation
Vetsuisse Faculty

Up, over the top, or down? Population development in closed captive populations of wild ruminants

Dennis W. H. Müller, Sven Hammer,
Catrin Hammer, Marcus Clauss

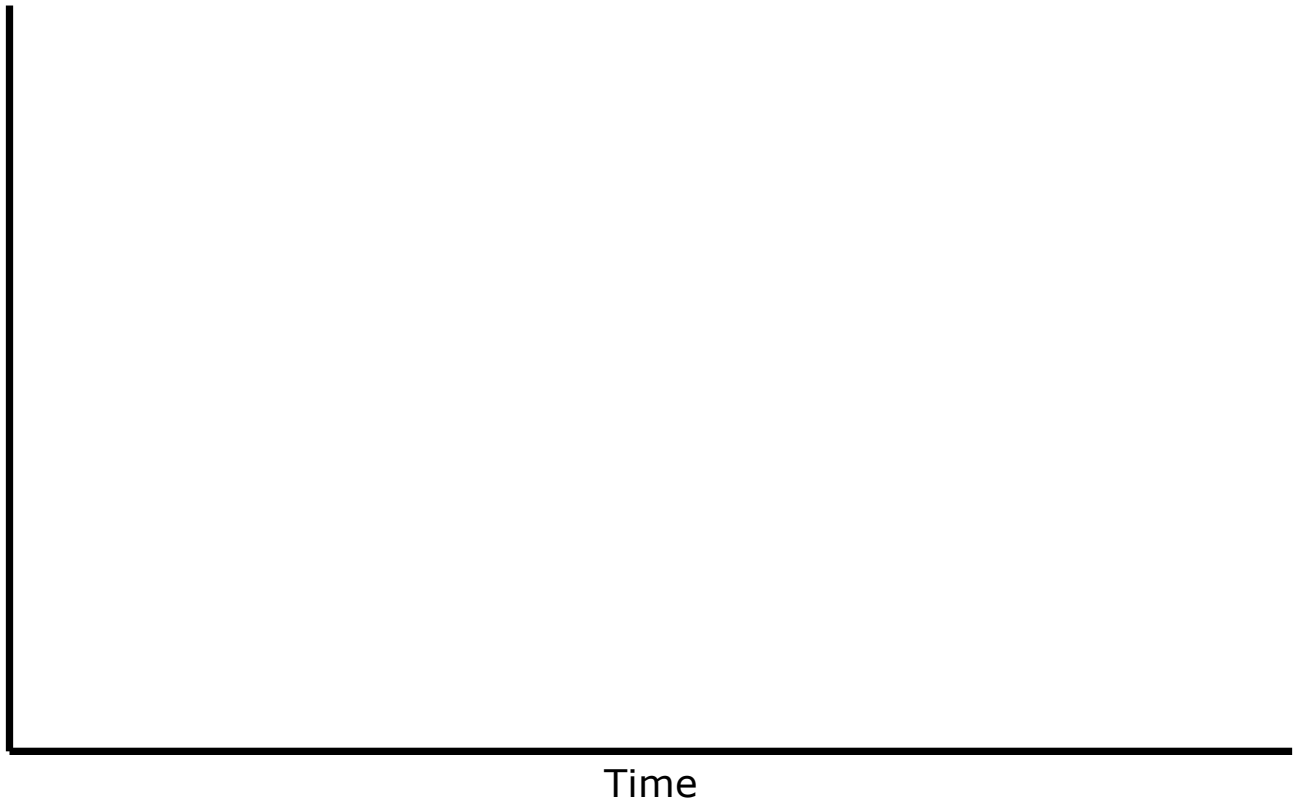
Aim

- Applying principles of population biology to zoo animal collections

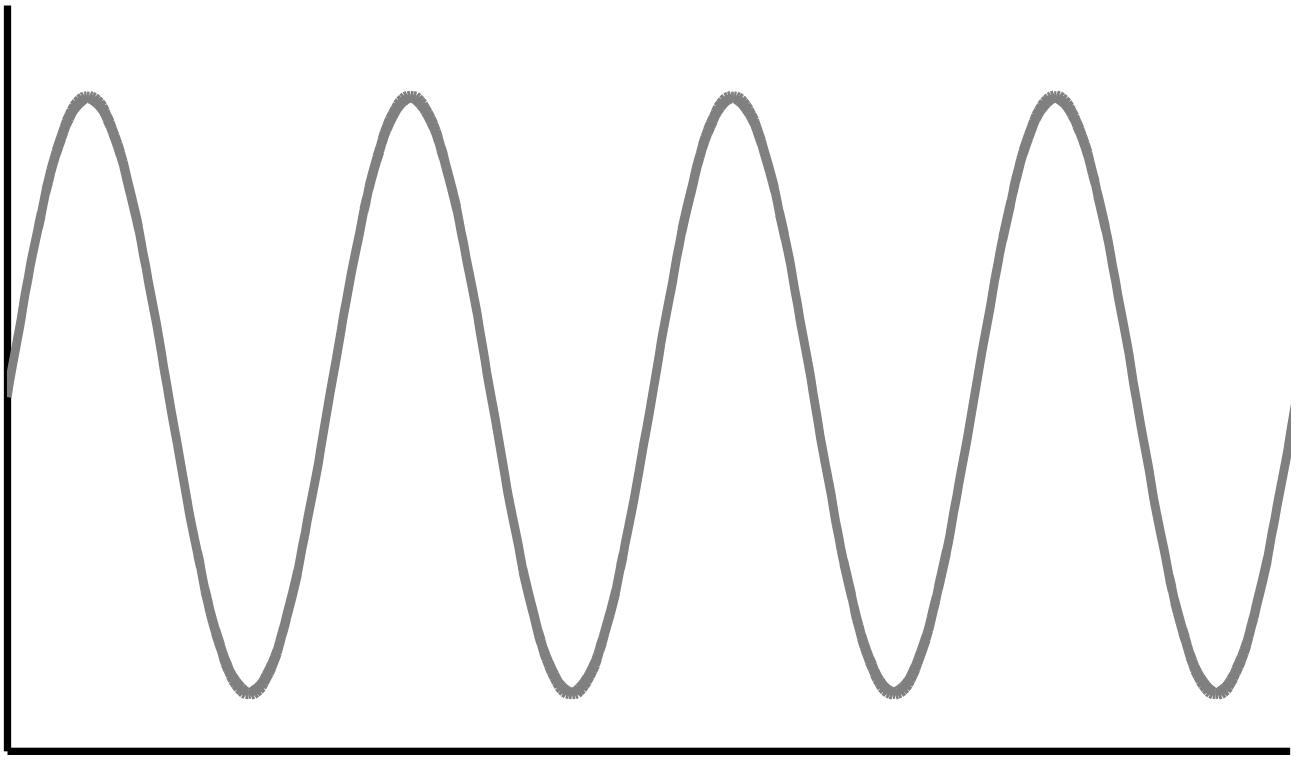
Methods

- Closed populations of captive wild ruminants
- Animal numbers at the end of a year
- Mortality = animals that died in one year in % of all animals that were alive/born in that year

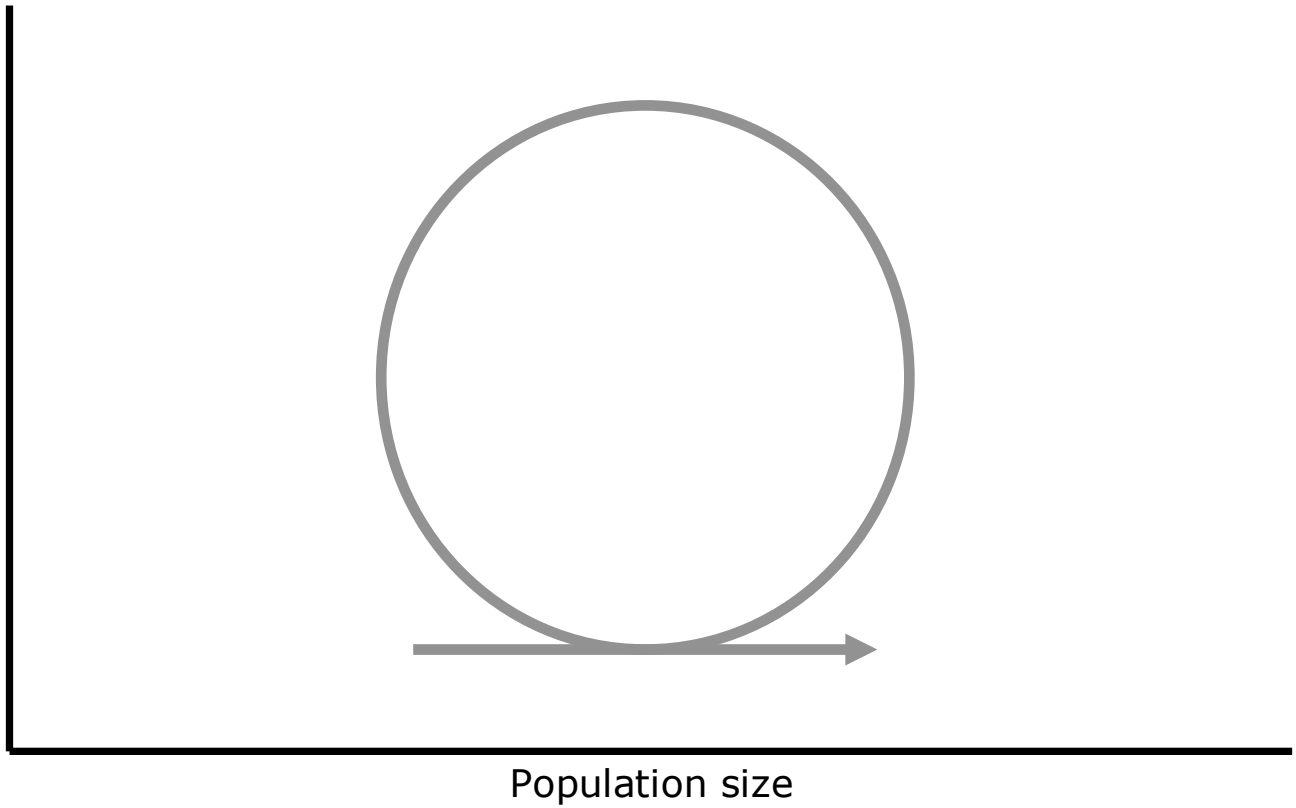
Population development



Population development



Population size and mortality



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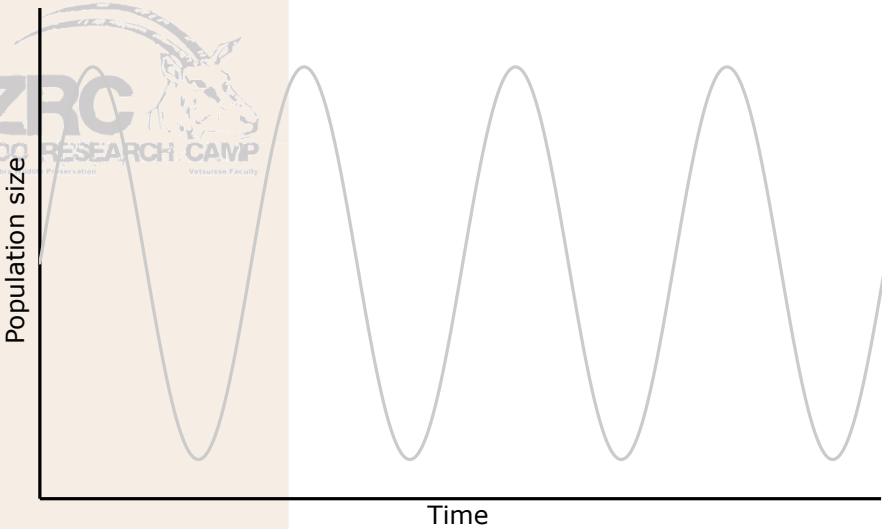

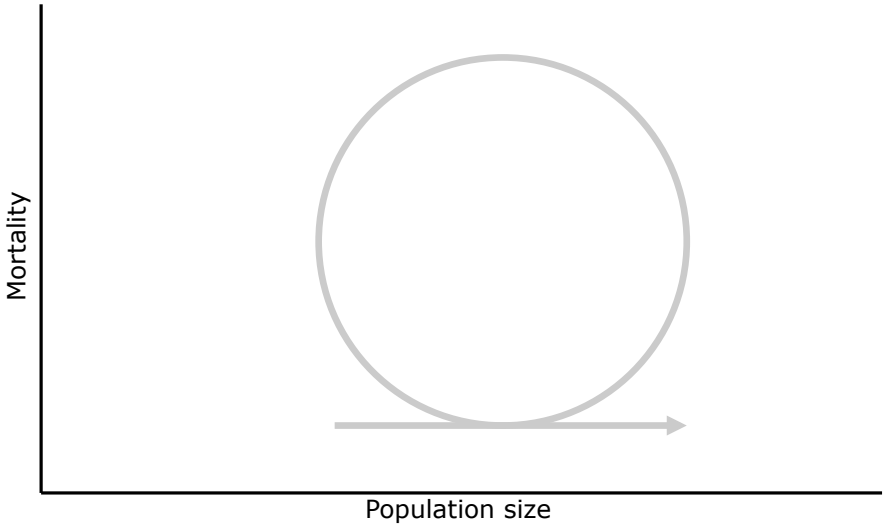

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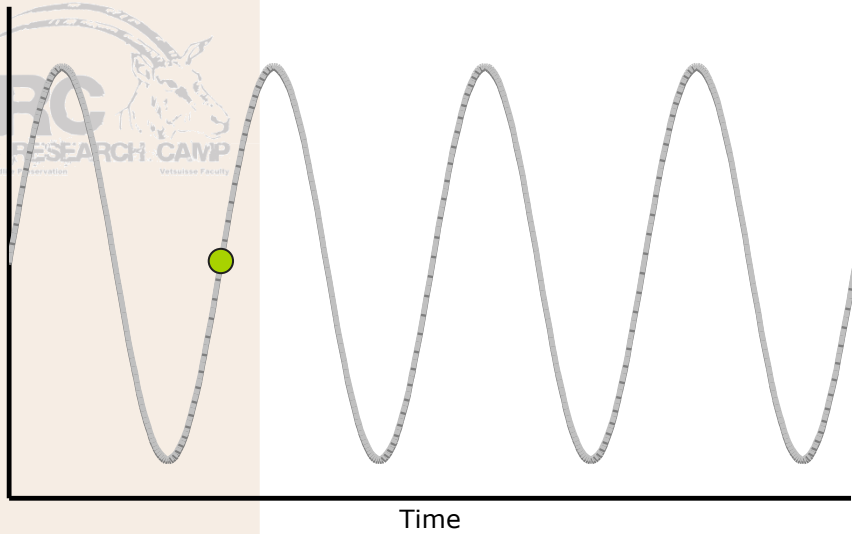

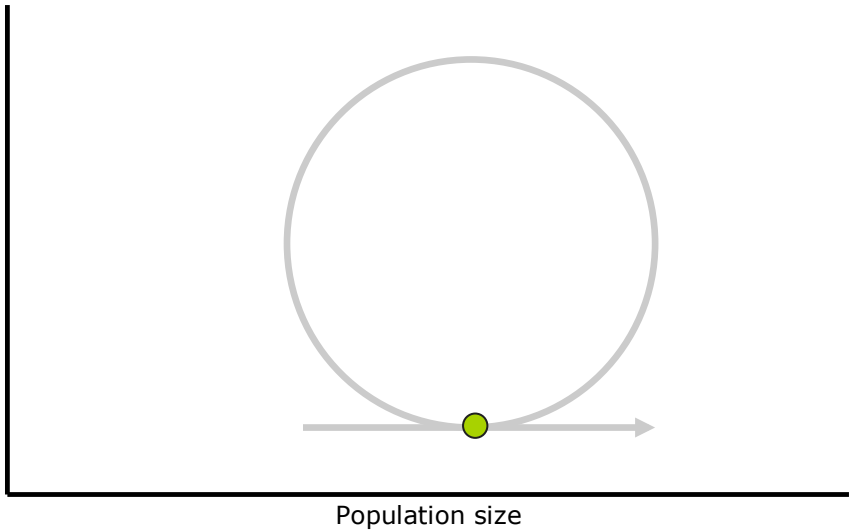

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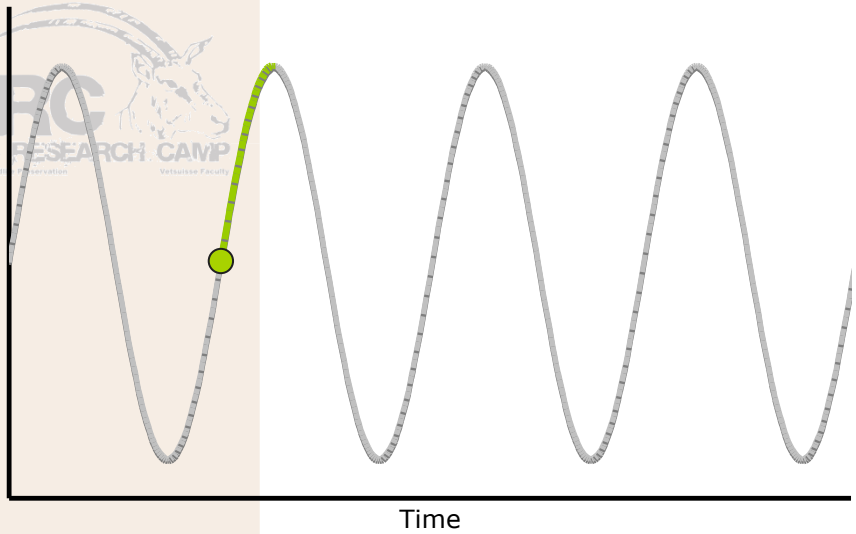

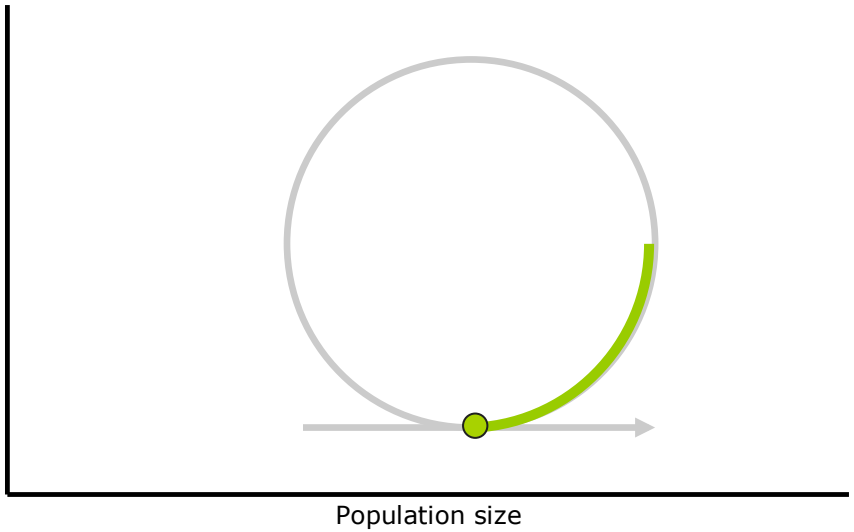

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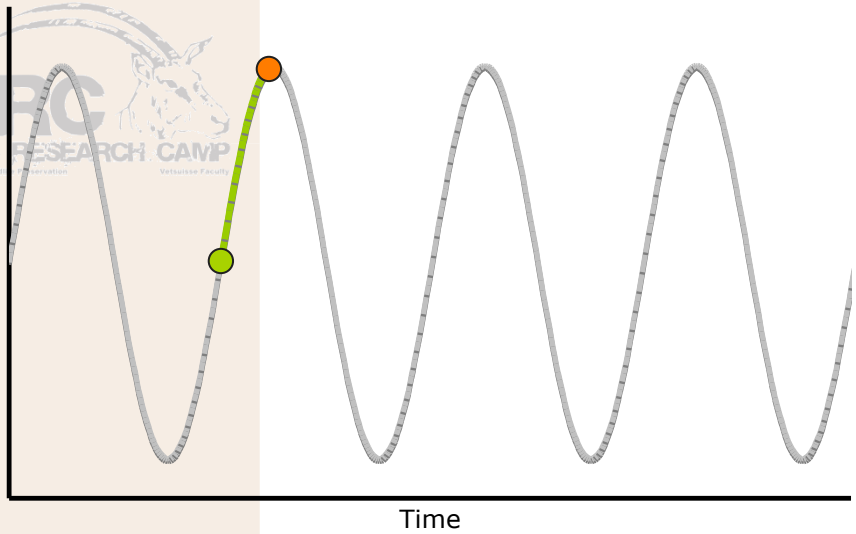

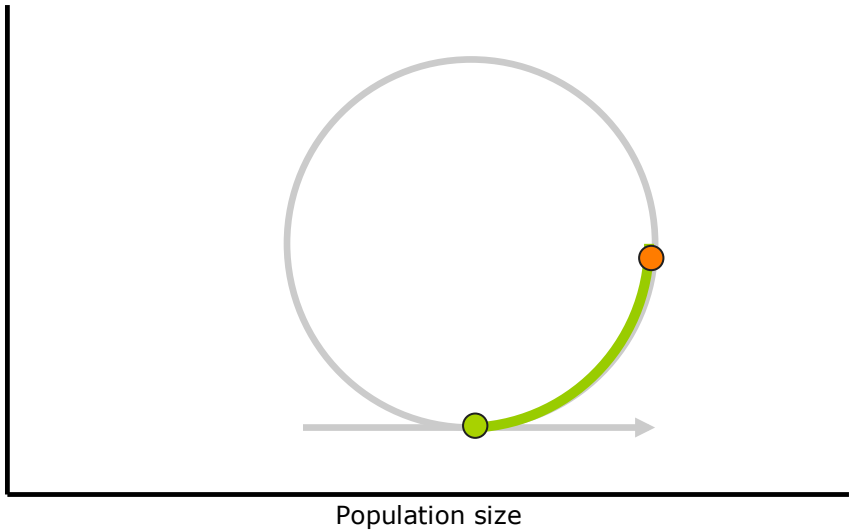

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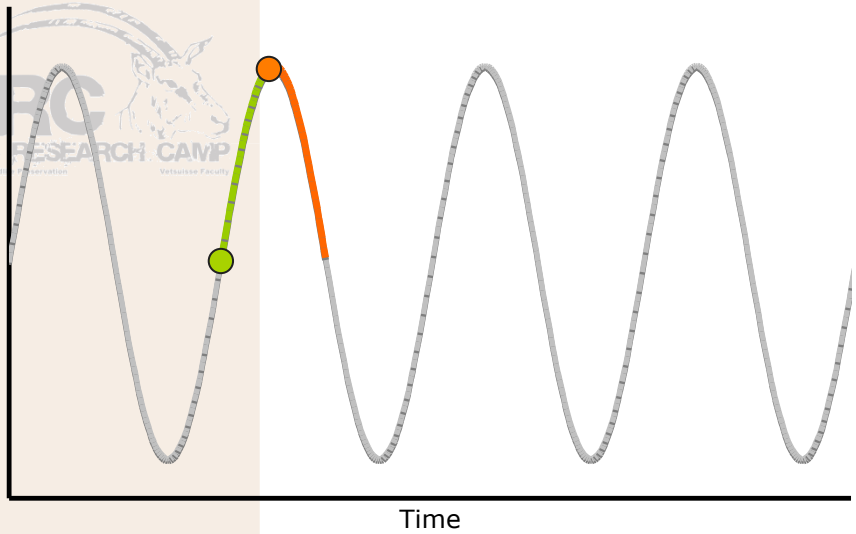

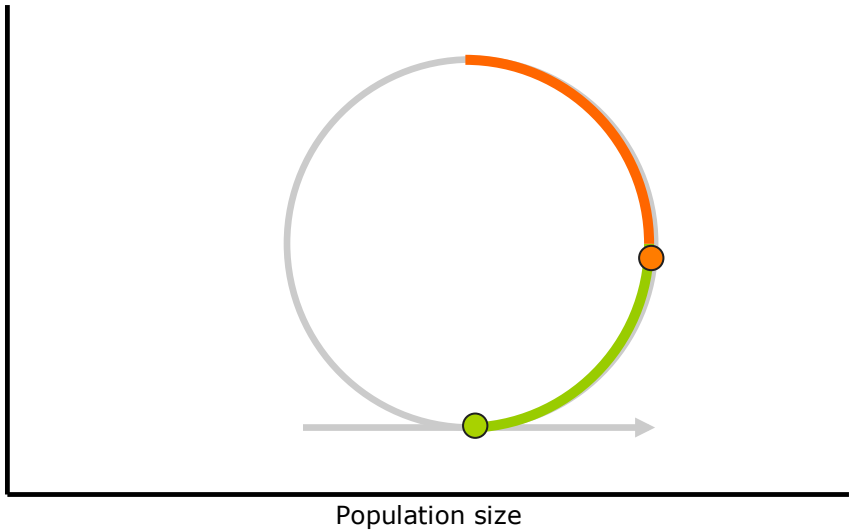

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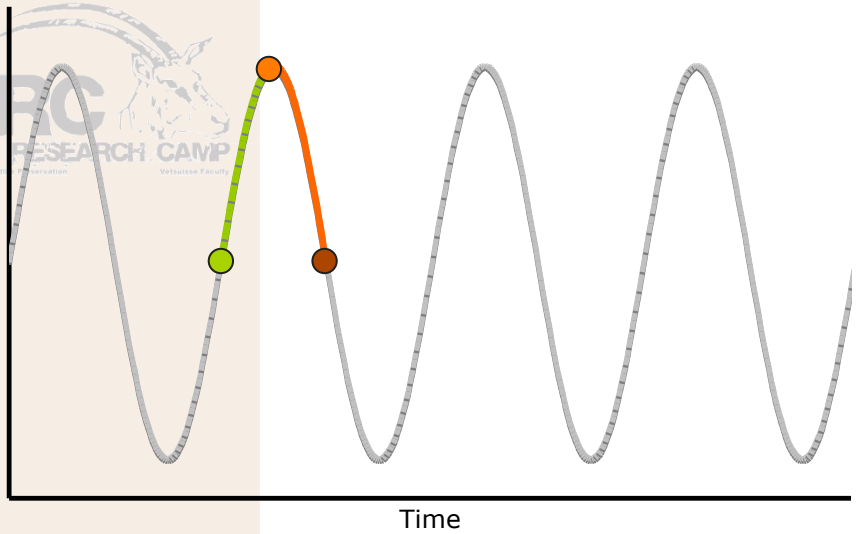

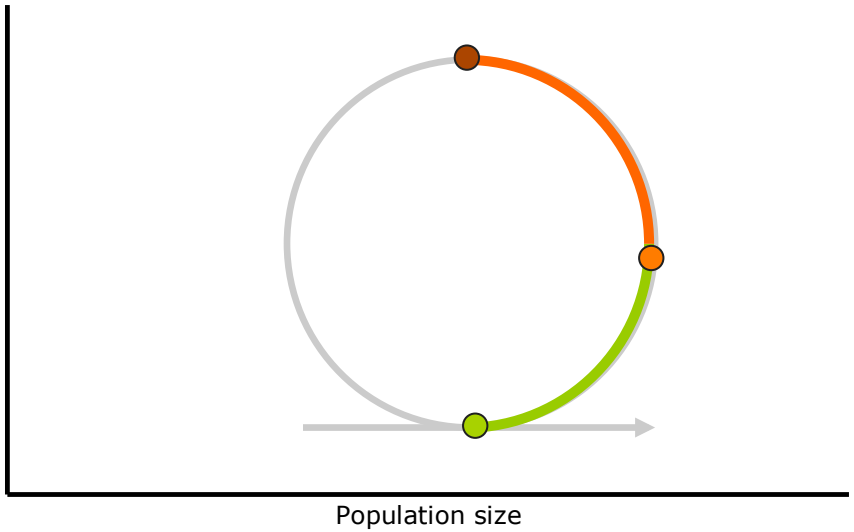

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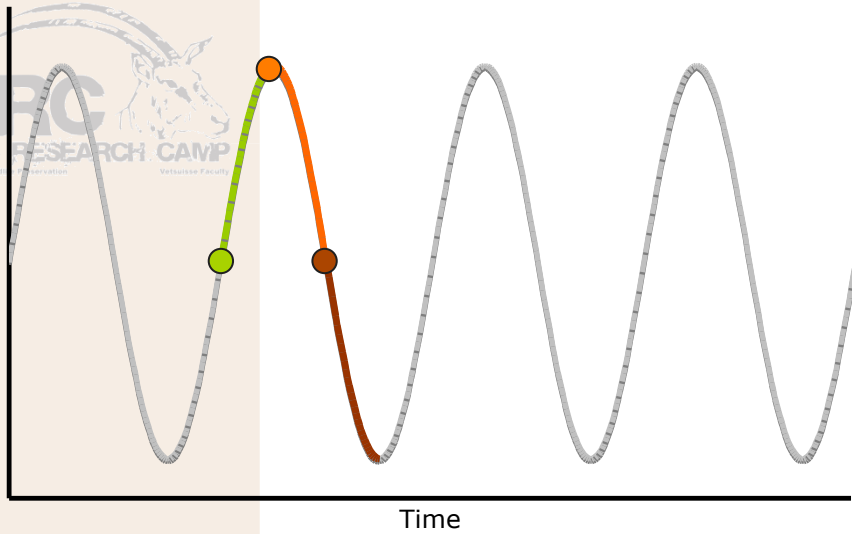
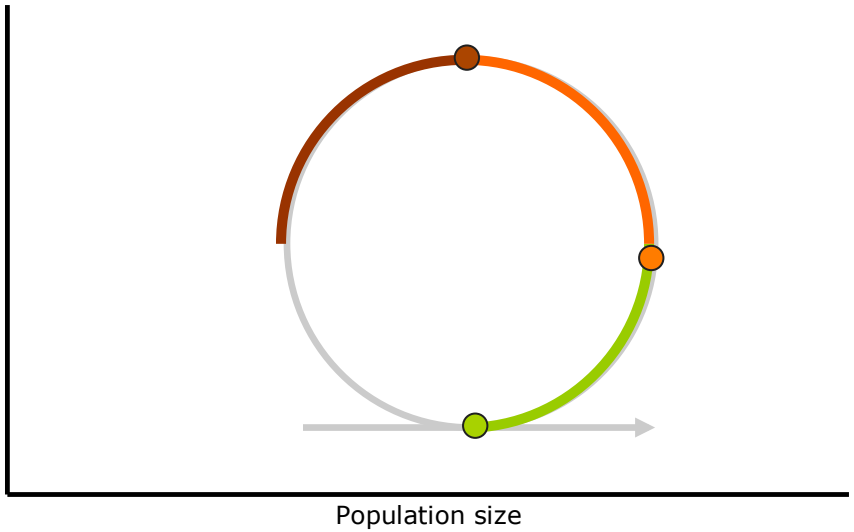
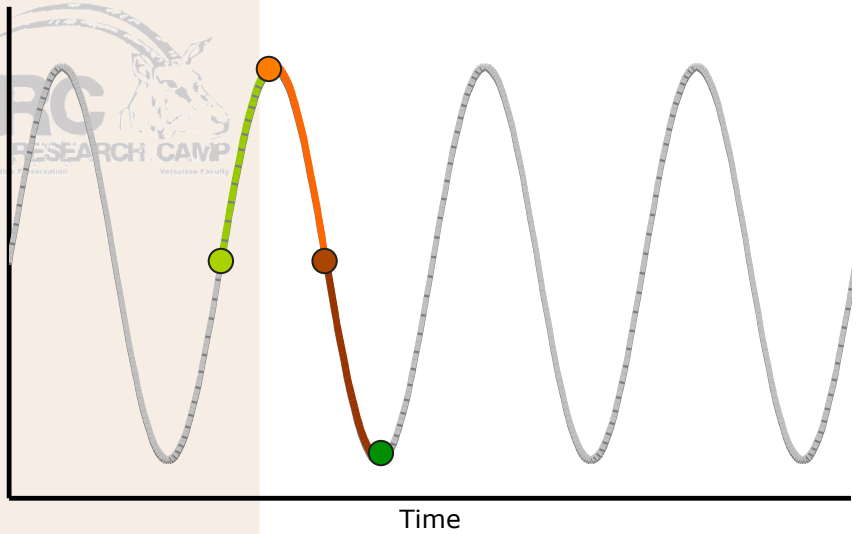
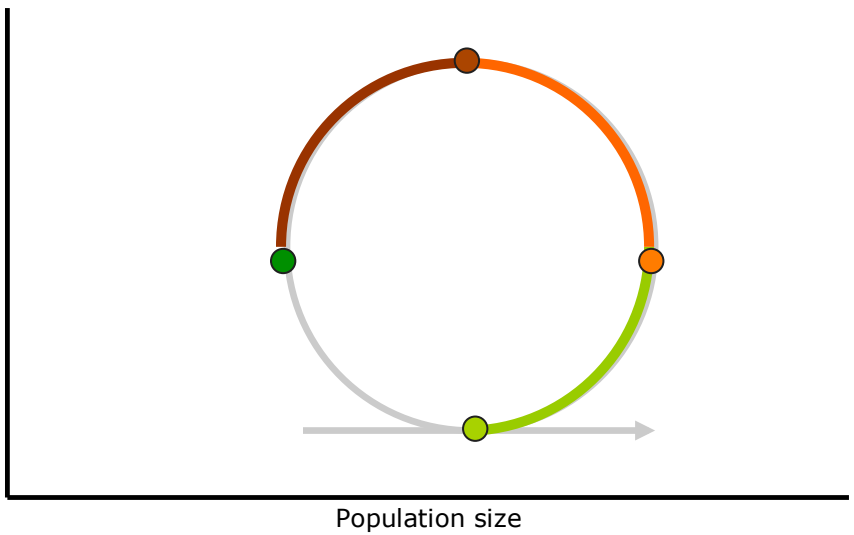




Population size and mortality





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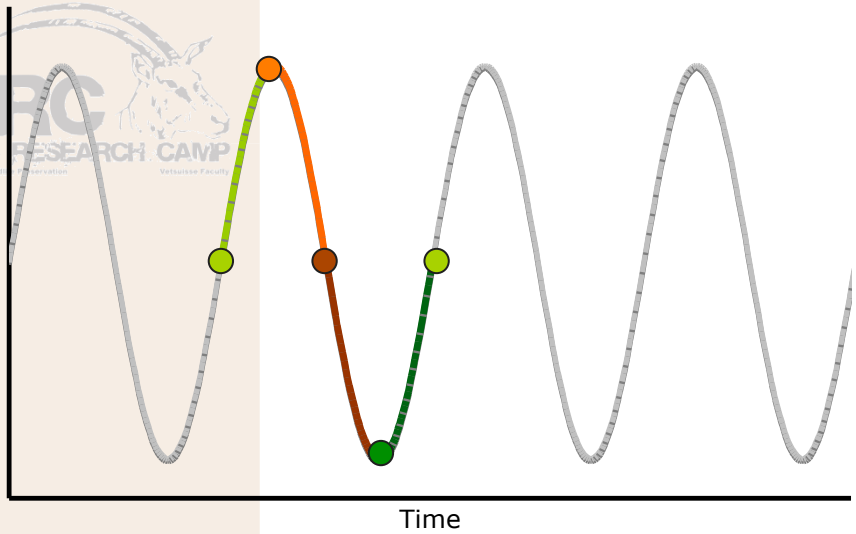
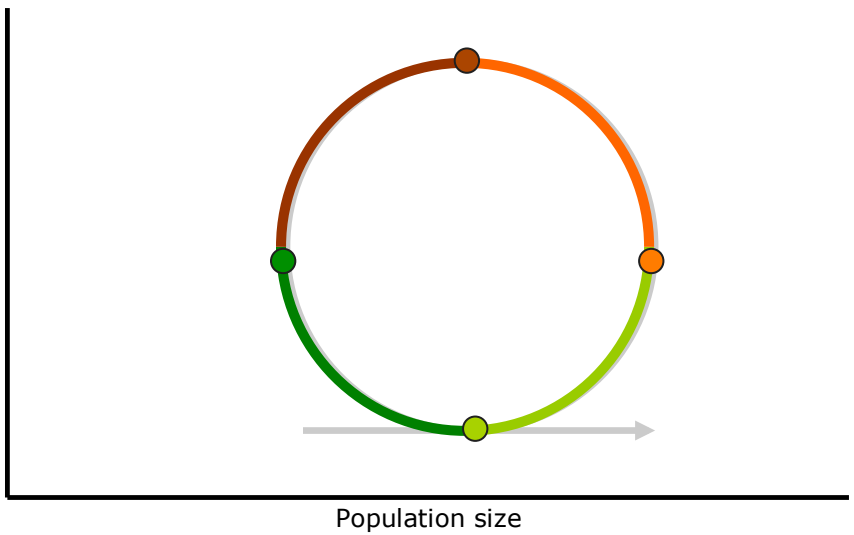
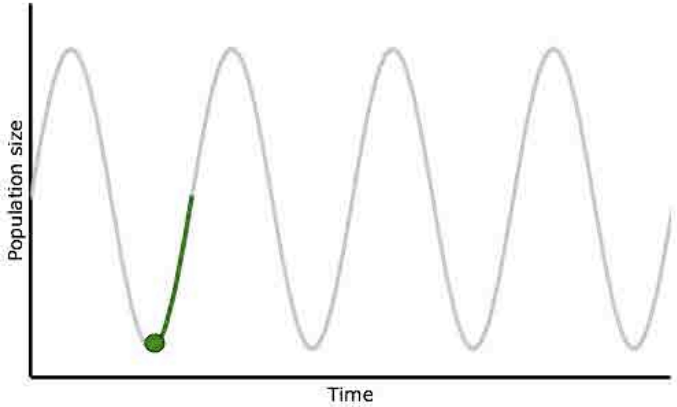
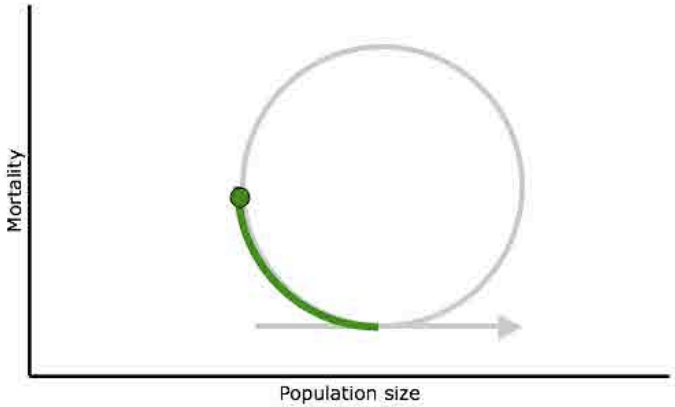


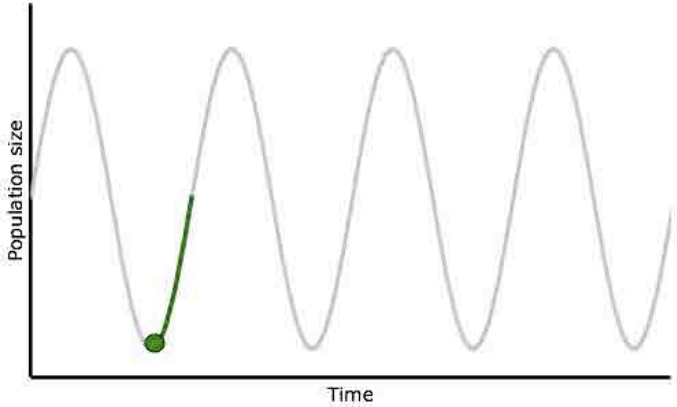


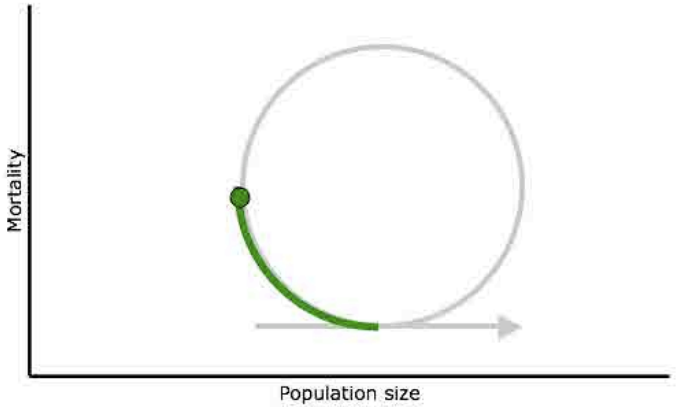
‘Complete success’ - population increase with mortality decrease

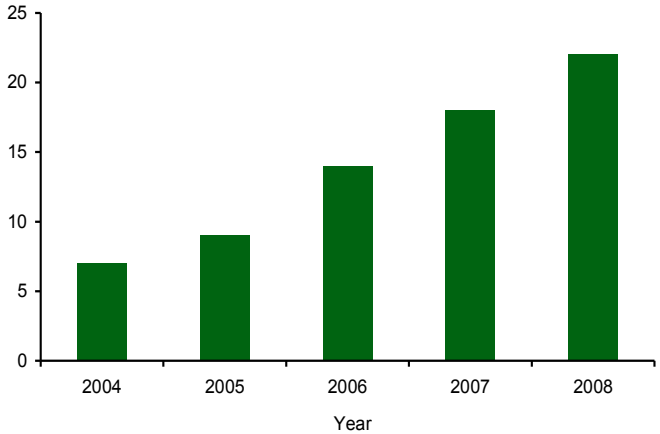


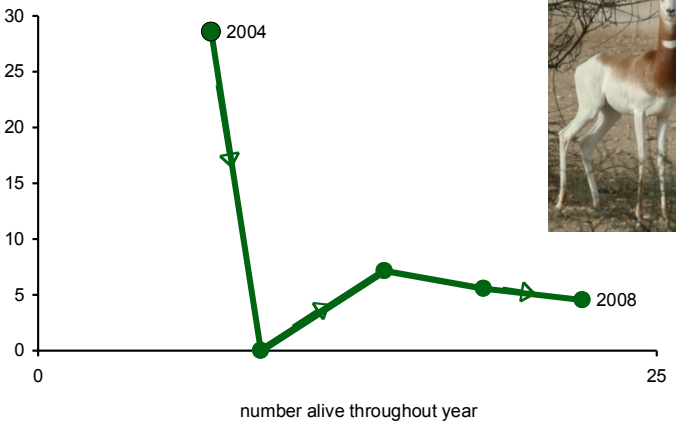


‘Complete success’ - population increase with mortality decrease - *Dama gazelle*

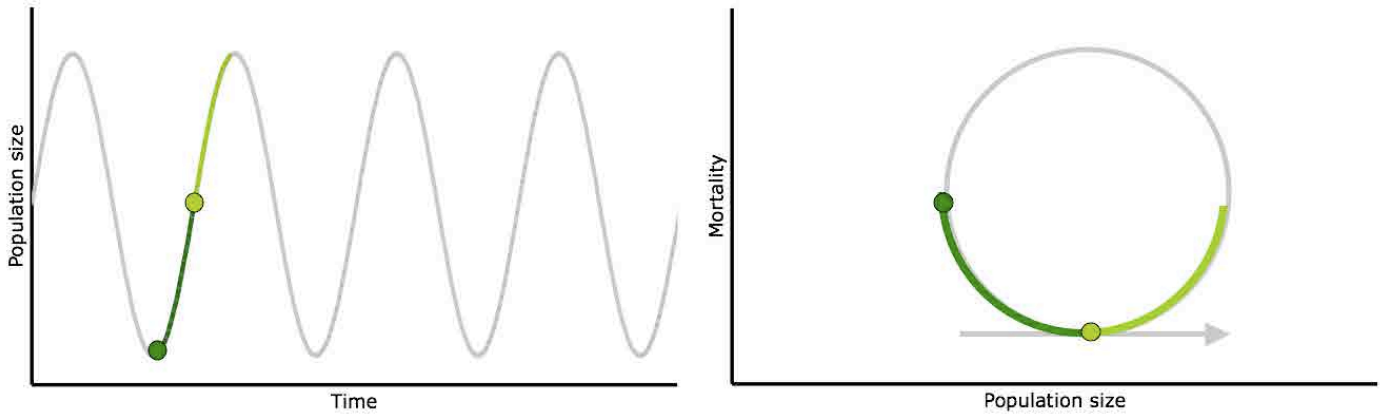




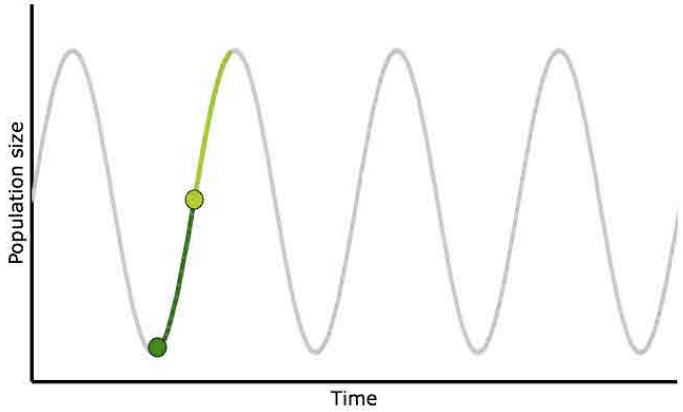


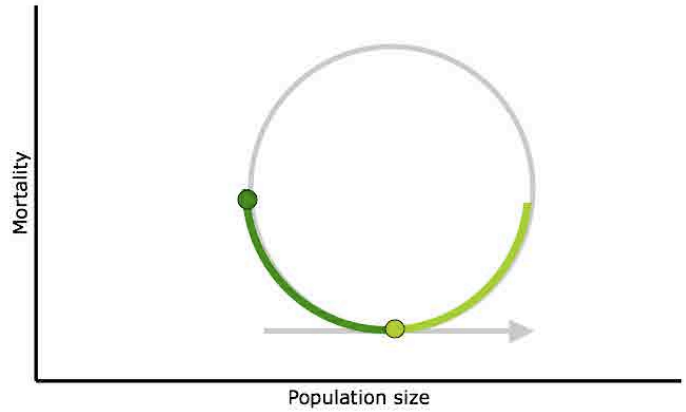


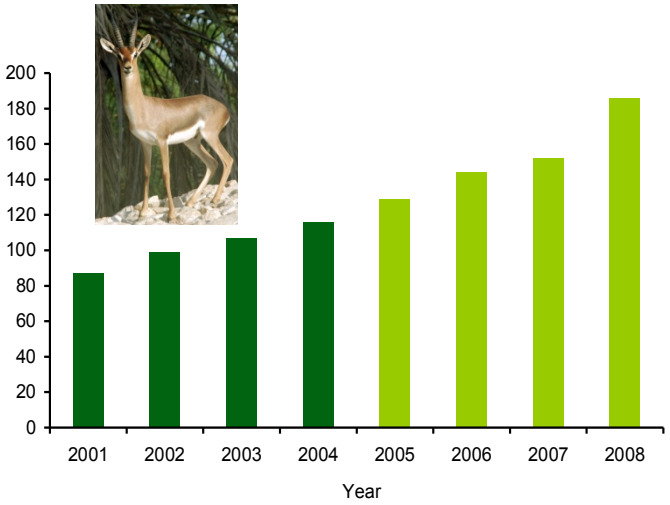
‘Good success’ - population increase and stagnating mortality

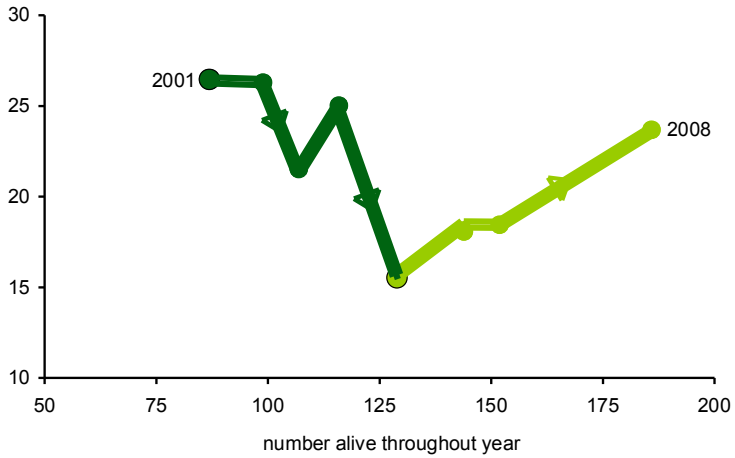


‘Good success’ - population increase and stagnating mortality - *Idmi gazelle*

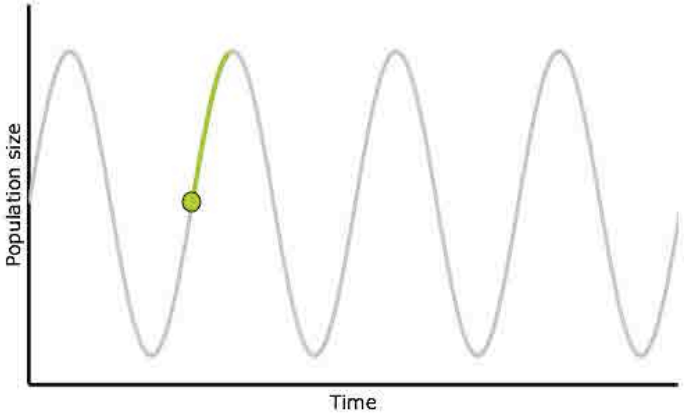


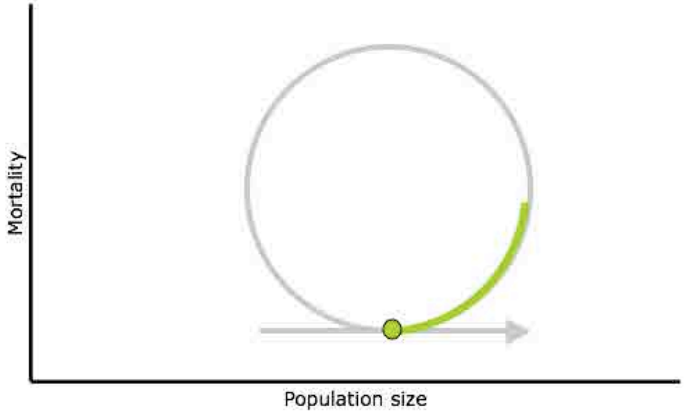




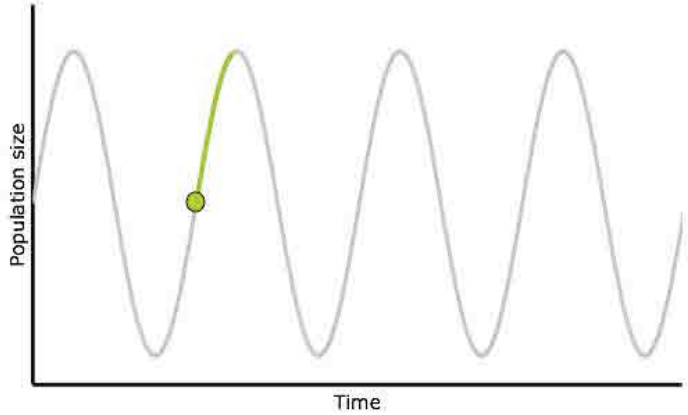


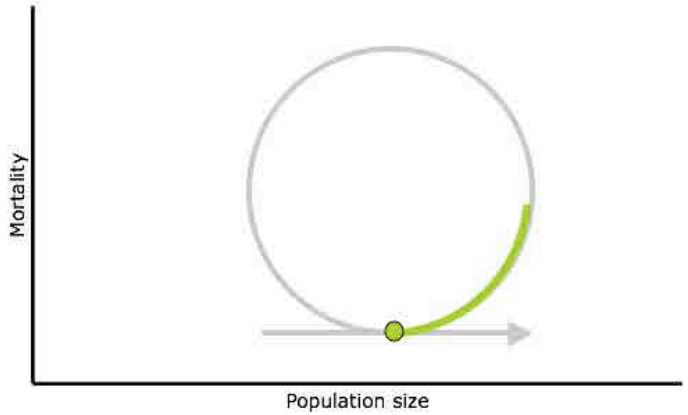
‘Moderate success’ - population increase and mortality increase

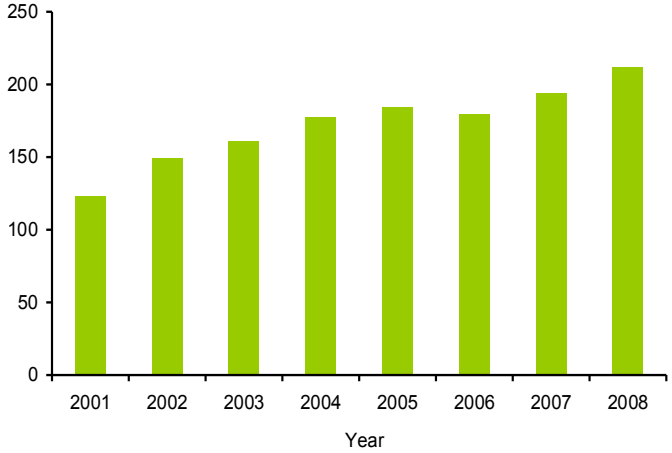


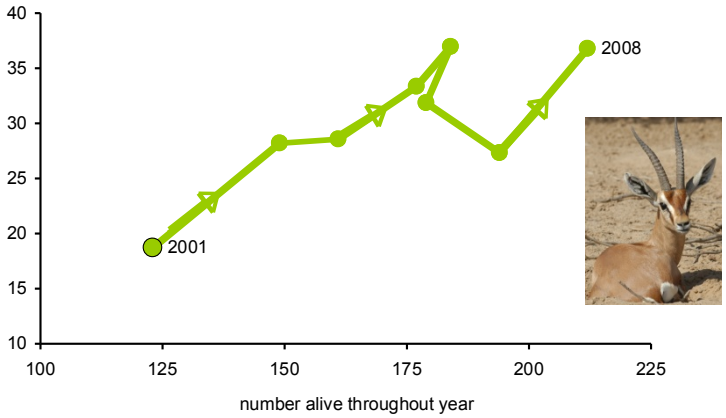


‘Moderate success’ - population increase and mortality increase - *Pelzeln’s gazelle*

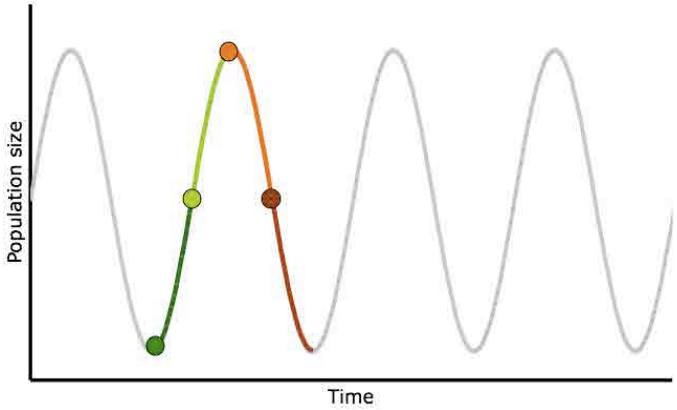


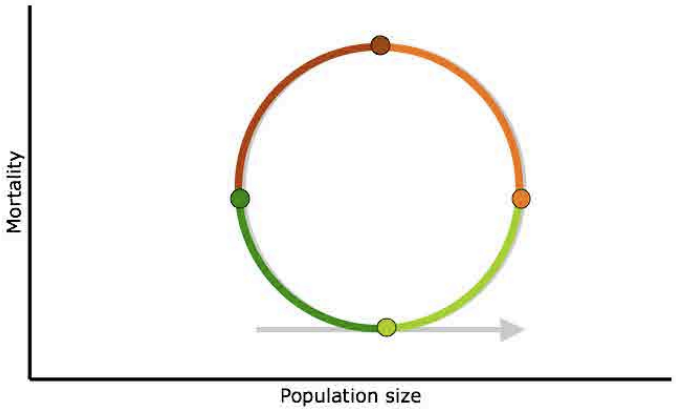




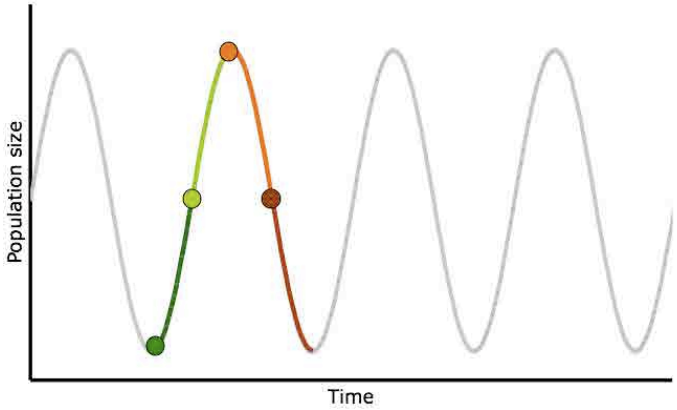


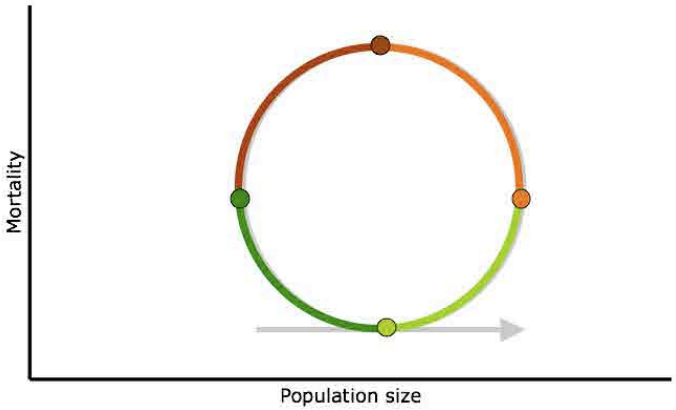
‘Over the top’ - after population peak, mortality decreasing

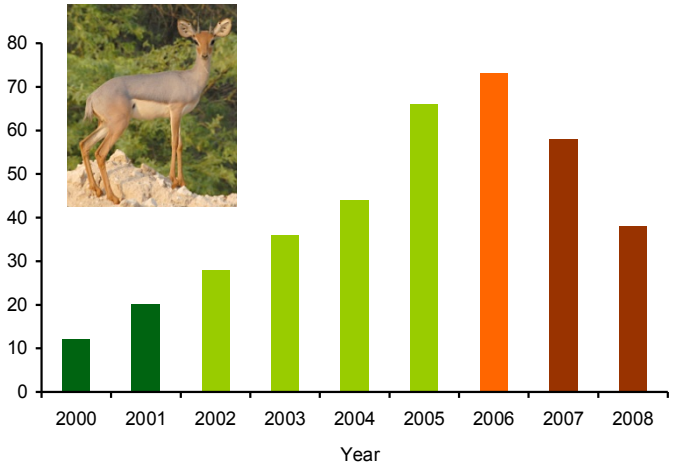


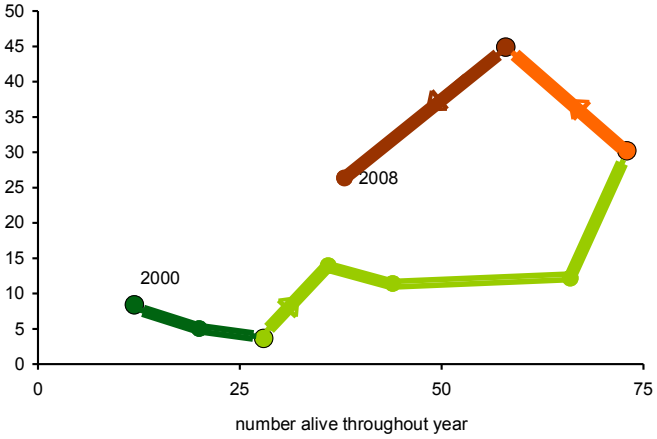


‘Over the top’ - after population peak, mortality decreasing - *Beira antelope*

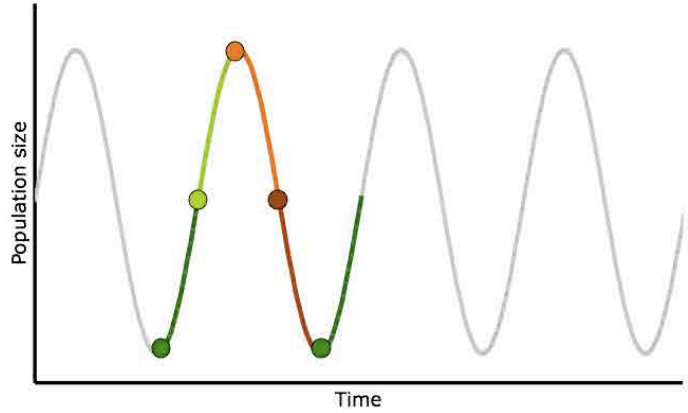


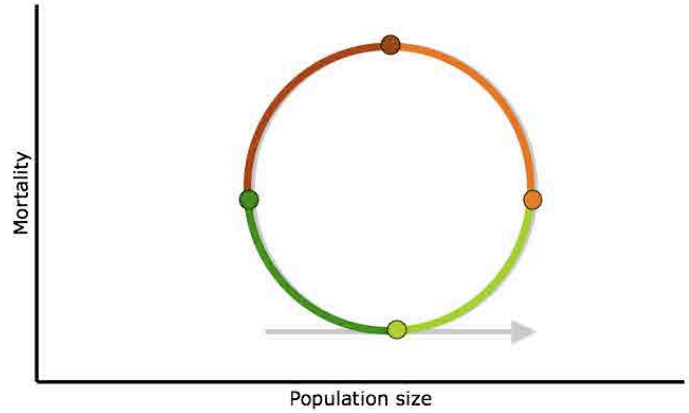


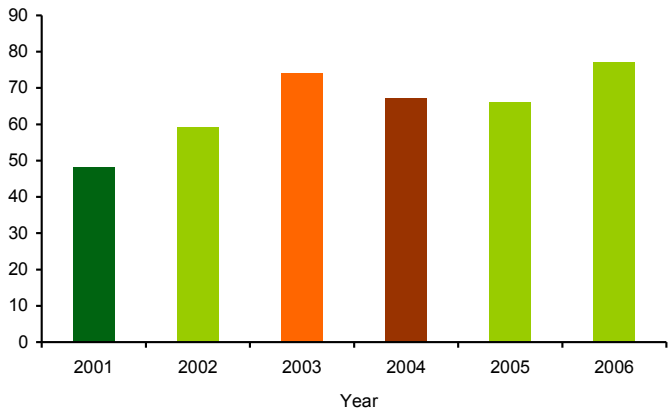


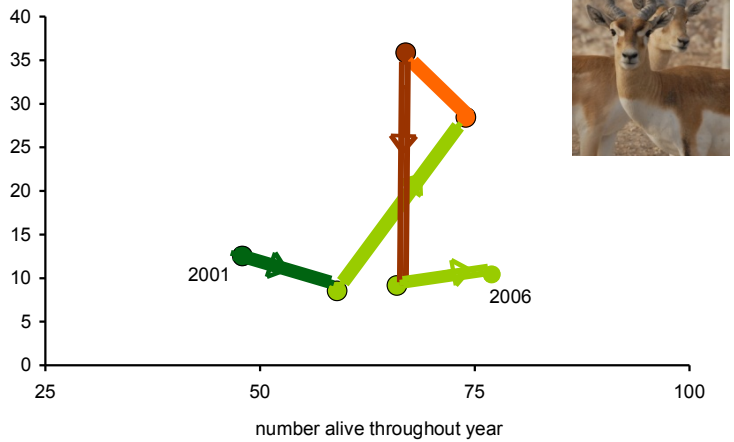


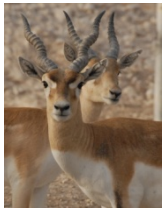
‘Over the top’ - after population peak, mortality decreasing - *Blackbuck*



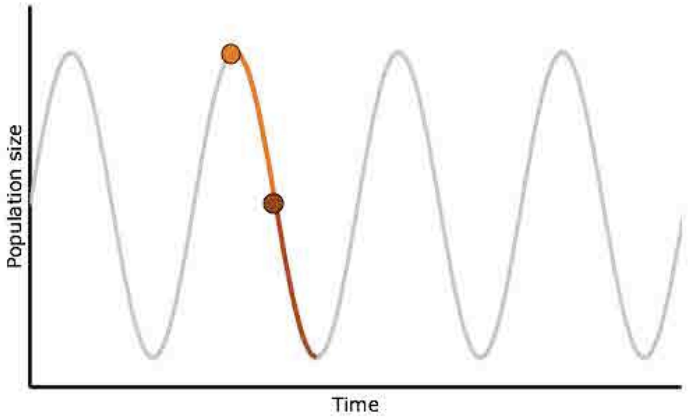


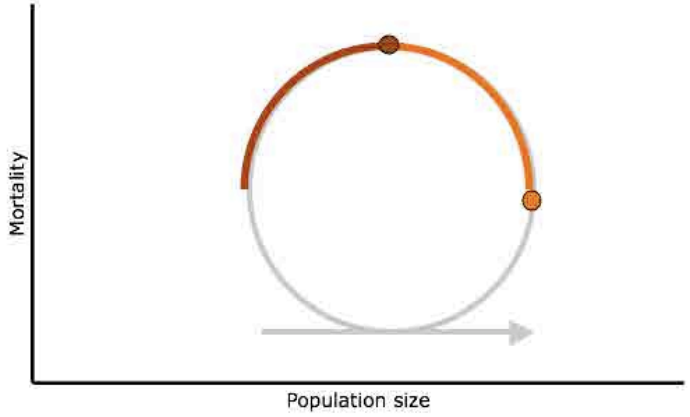




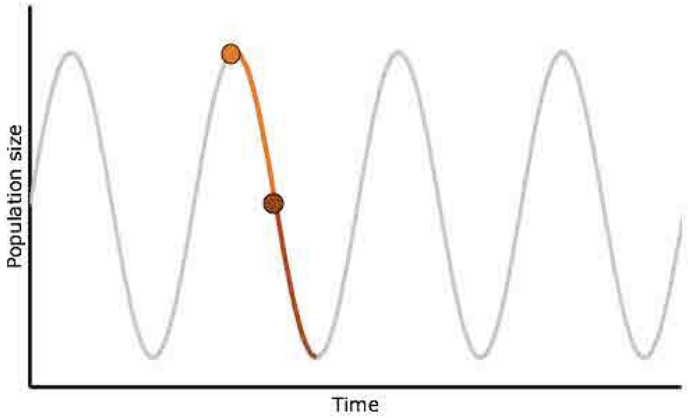


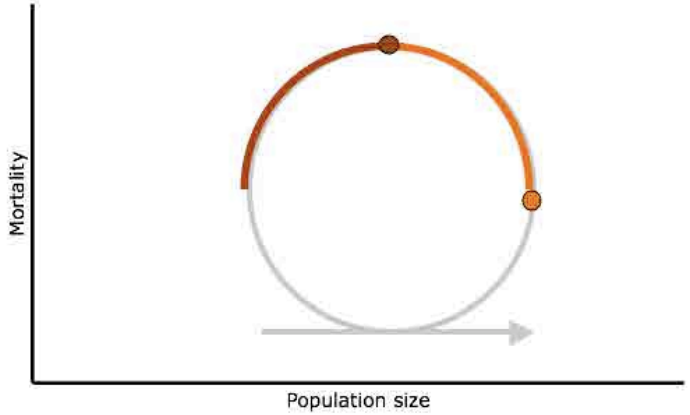
‘Deterioration’ - population decrease and mortality in/decrease

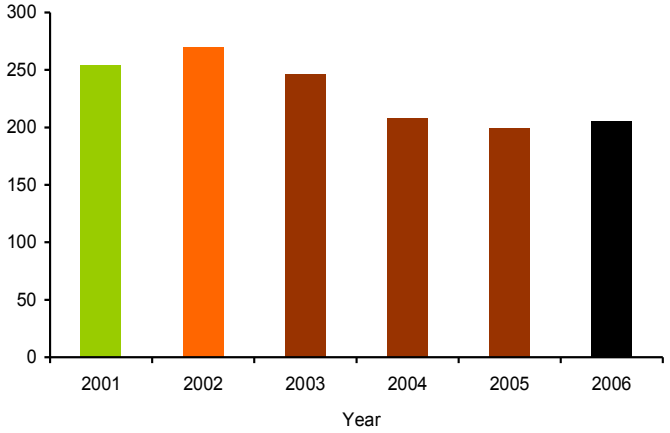


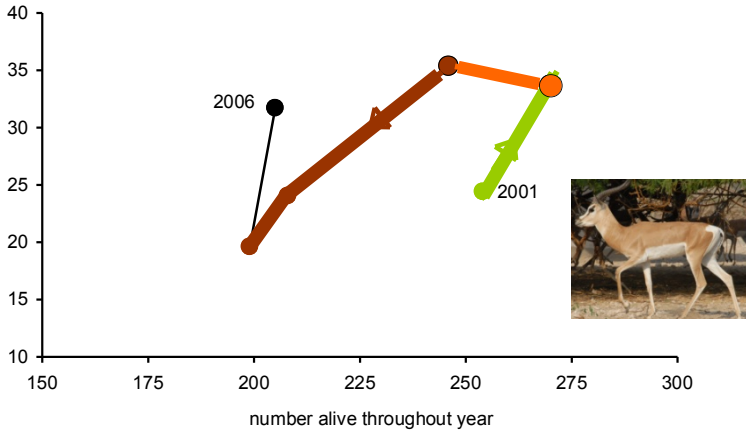


‘Deterioration’ - population decrease and mortality in/decrease - *Soemmerring’s gaz.*









Overstocking right from the start?

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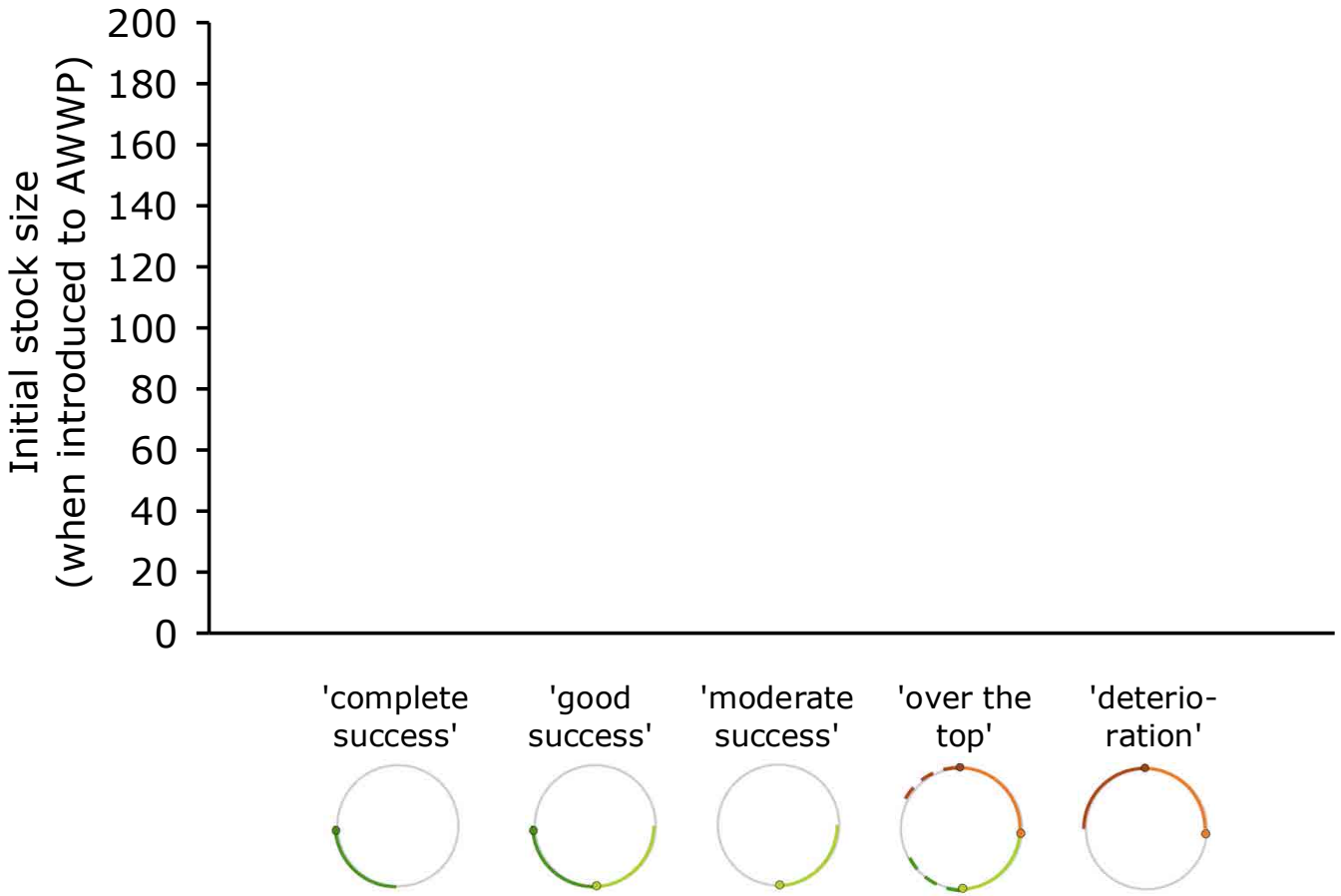

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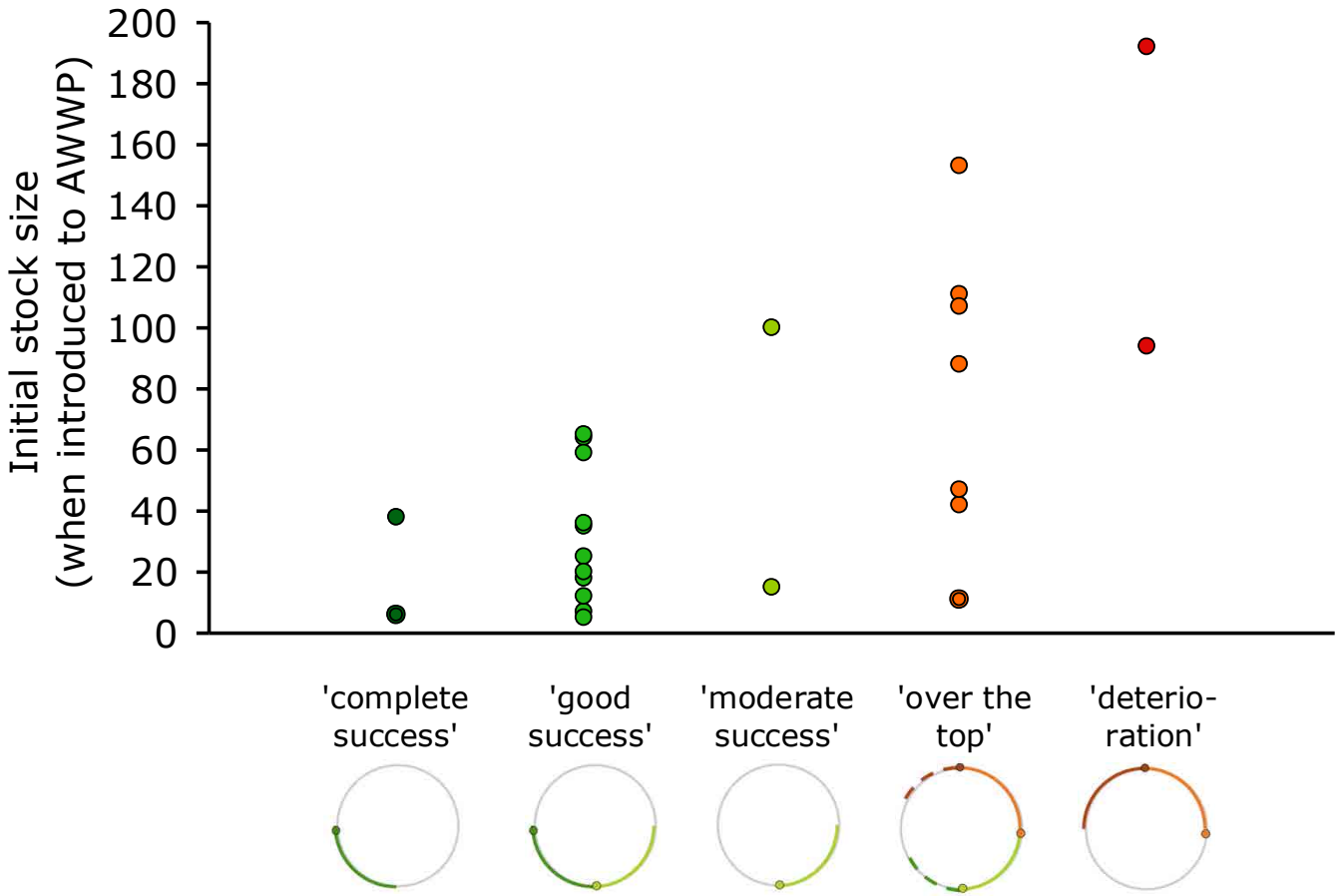

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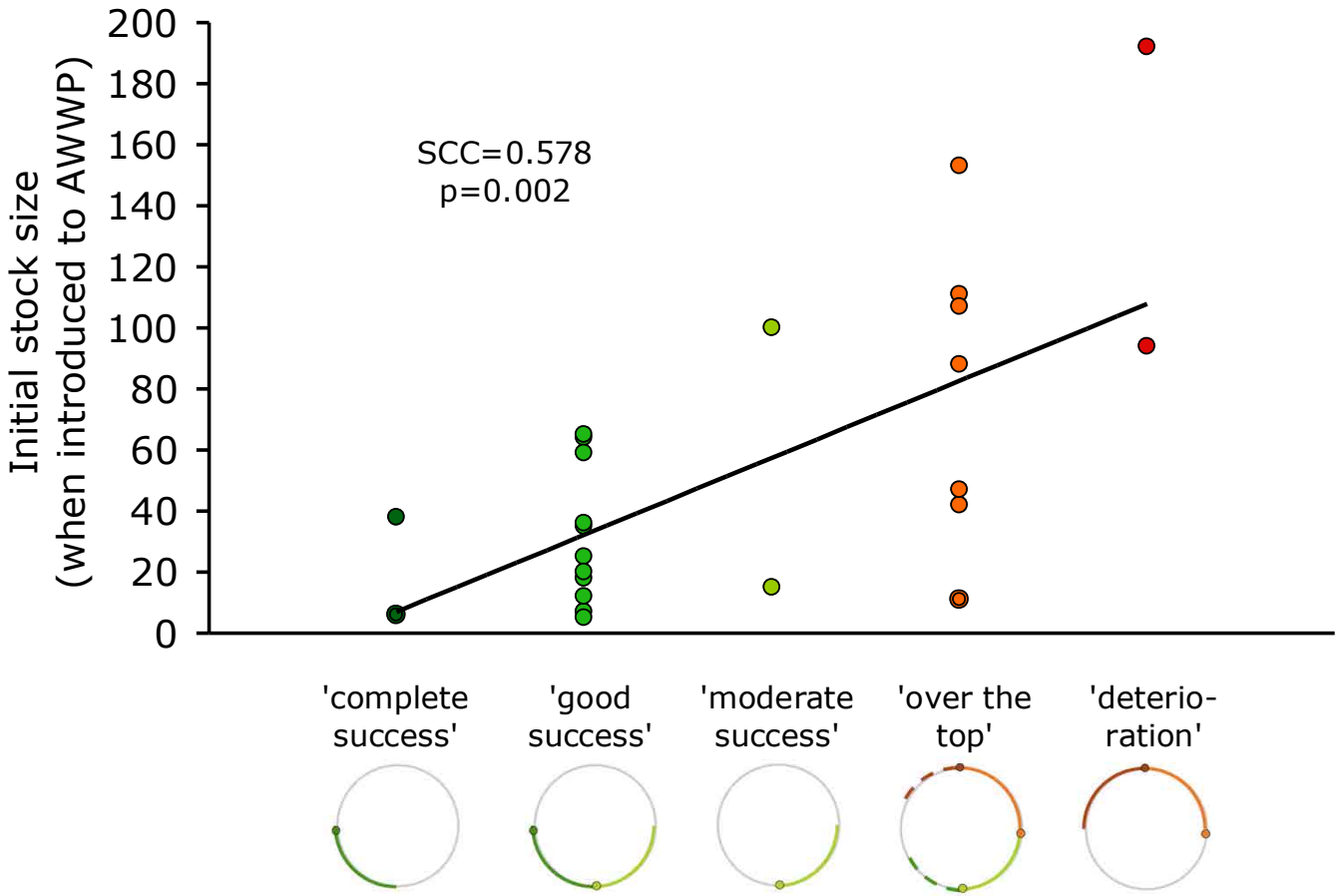
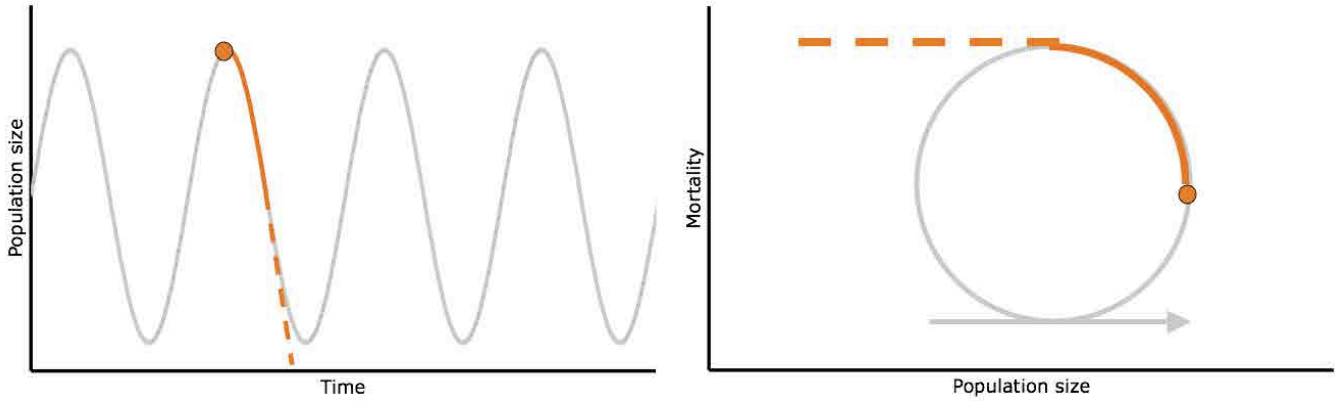
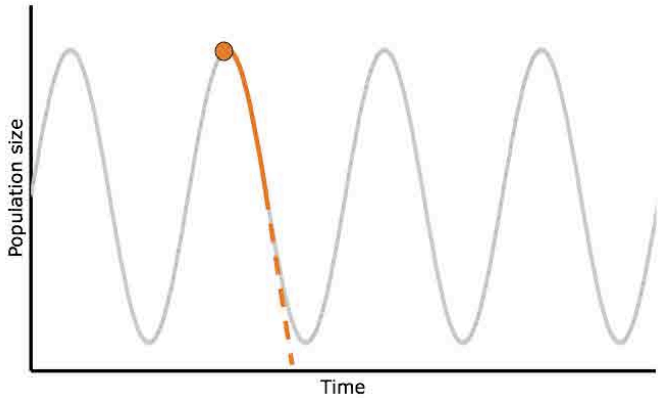
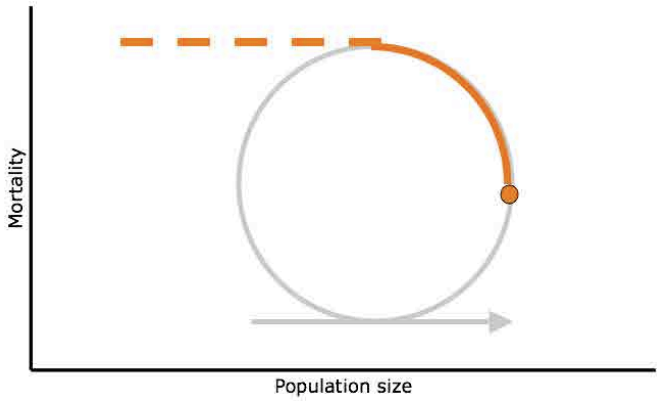


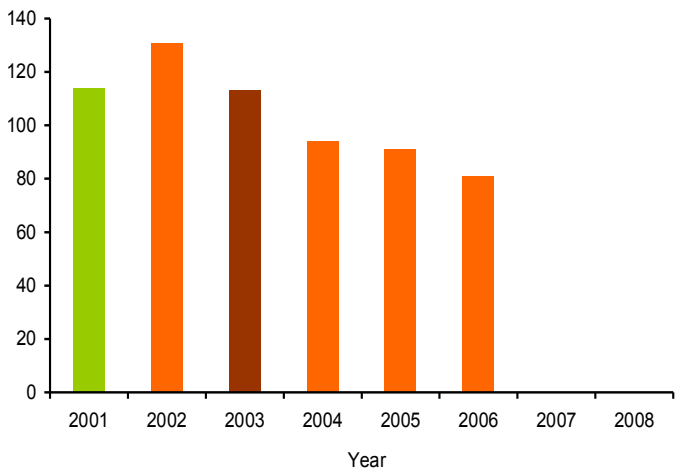
Catastrophe: Population decrease but no mortality decrease

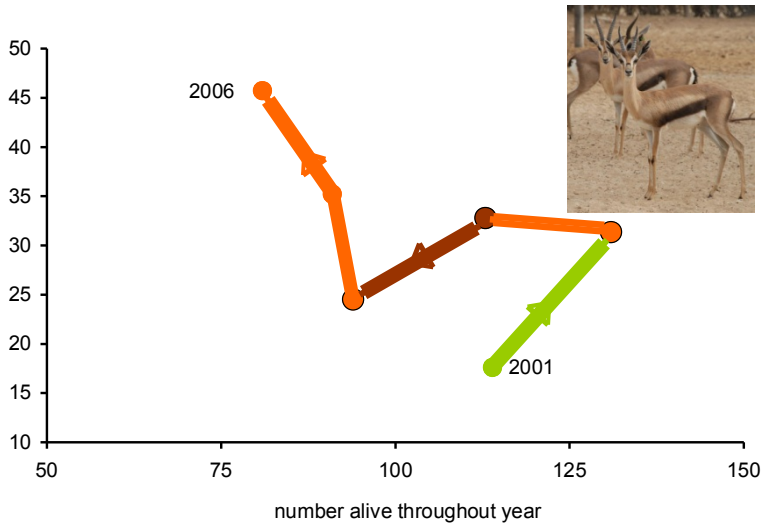


Catastrophe: Population decrease but no mortality decrease - *Speke's gazelle*









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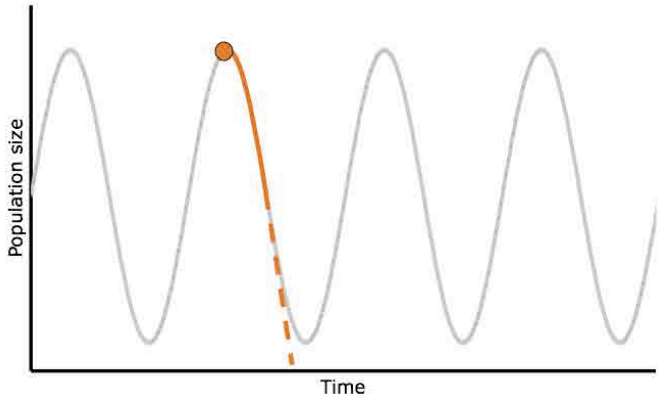

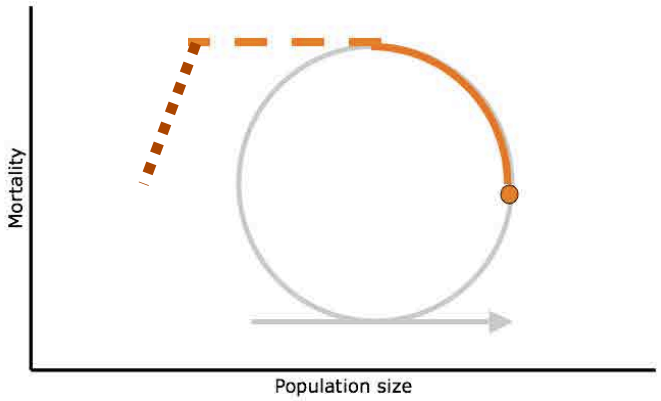

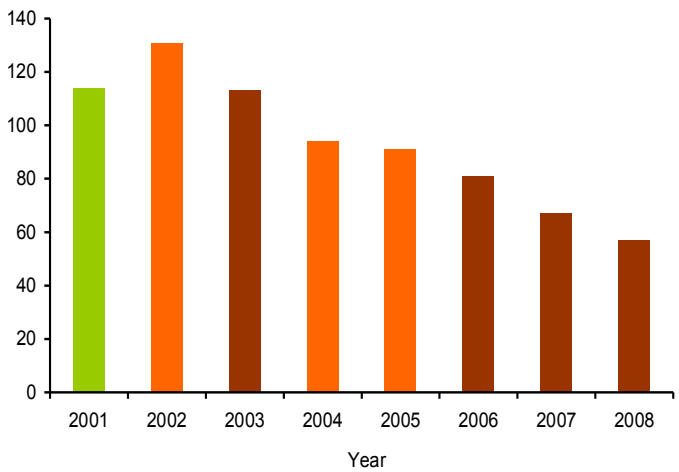

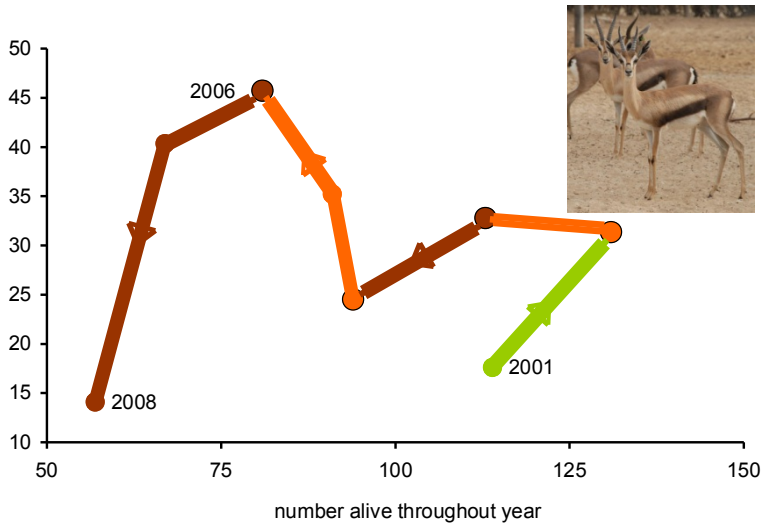

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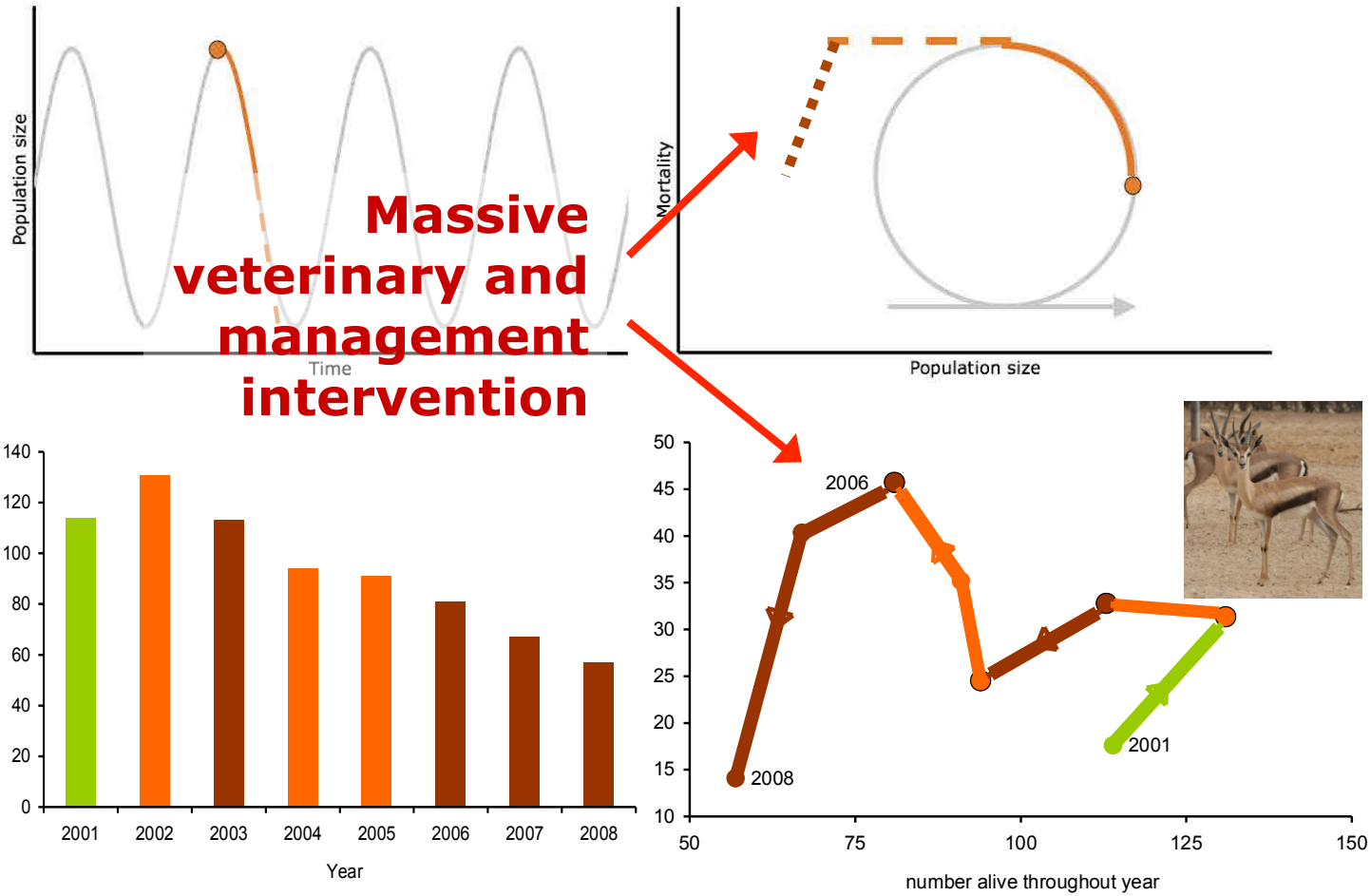
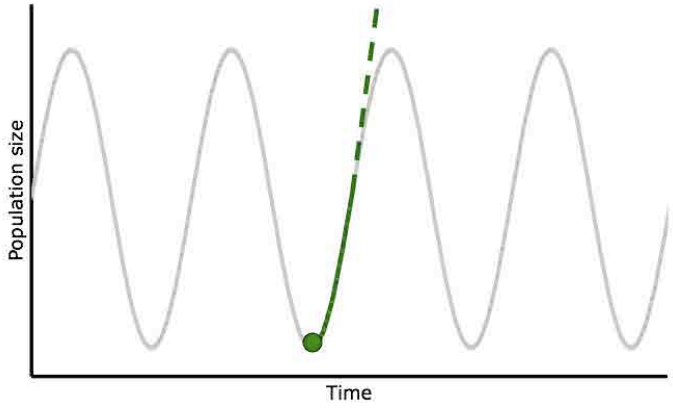
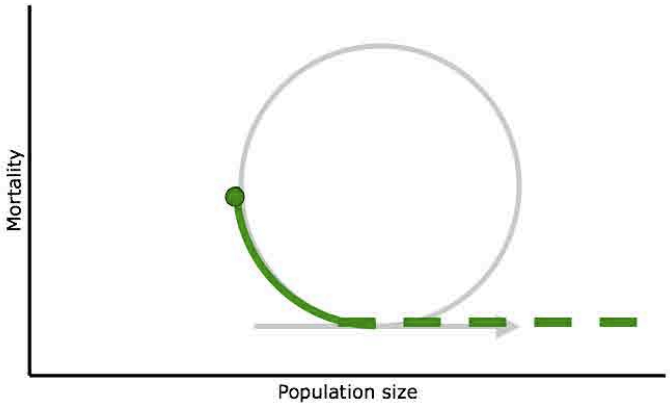


Perfect situation: Population increase with continuous low mortality





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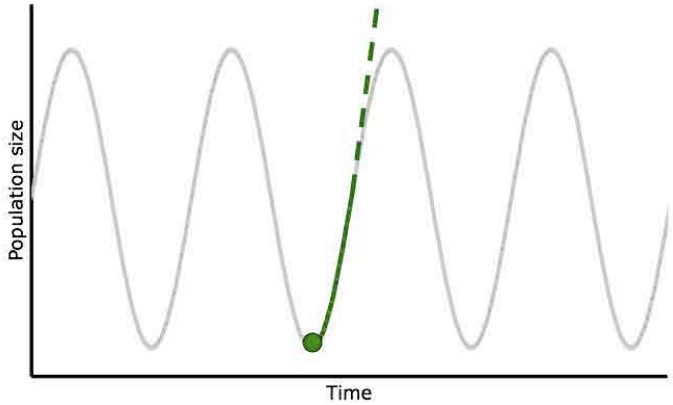

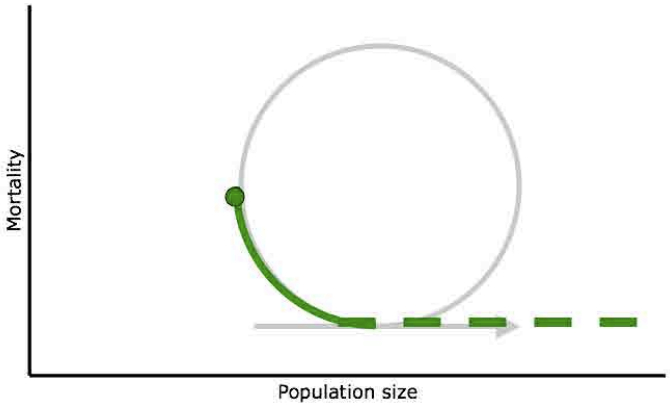

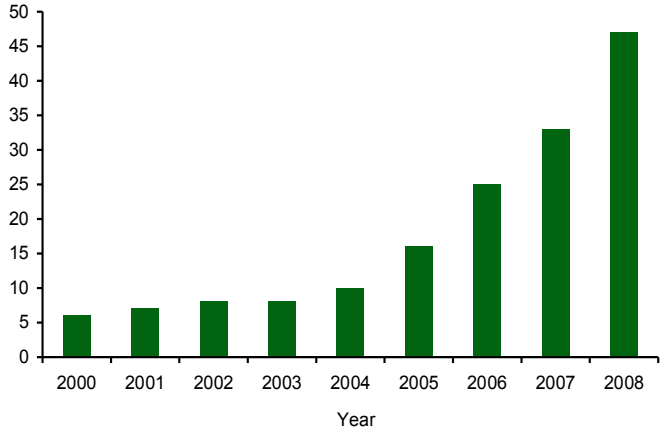

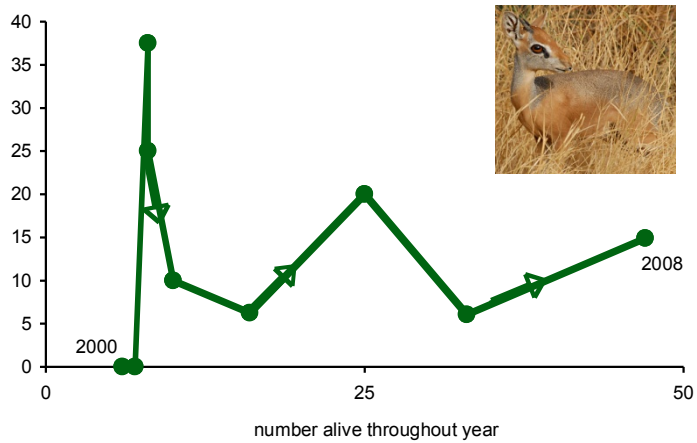

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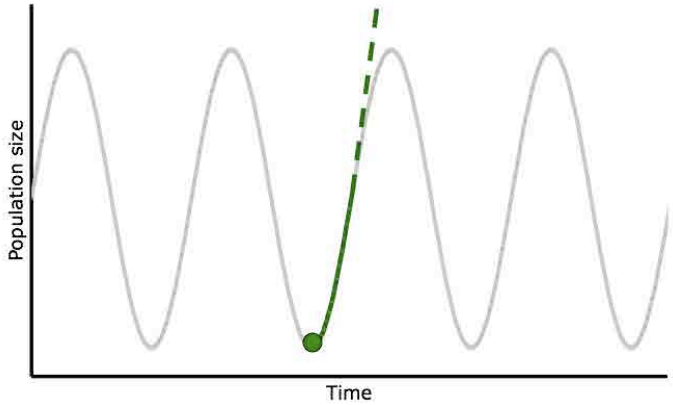
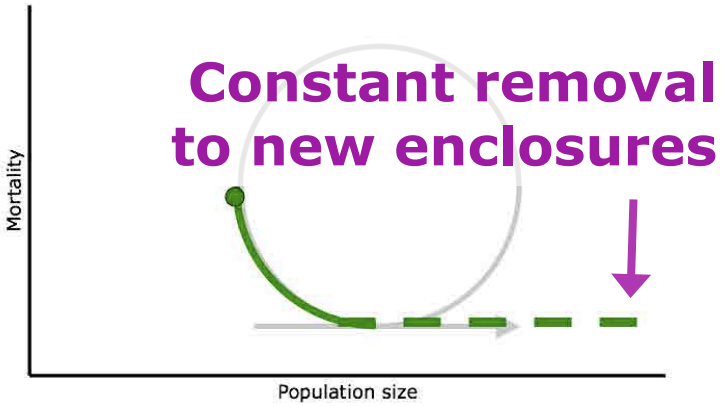
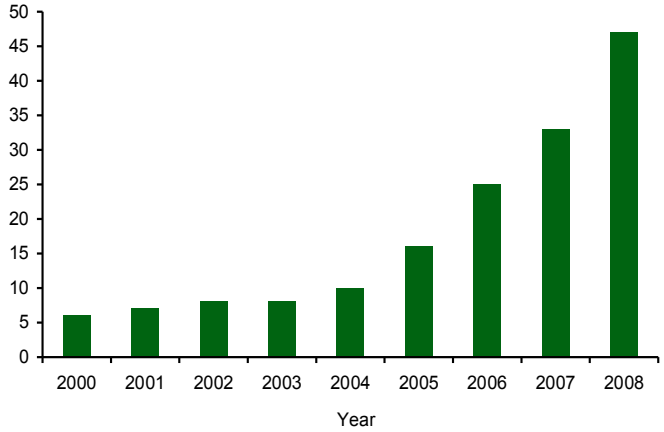
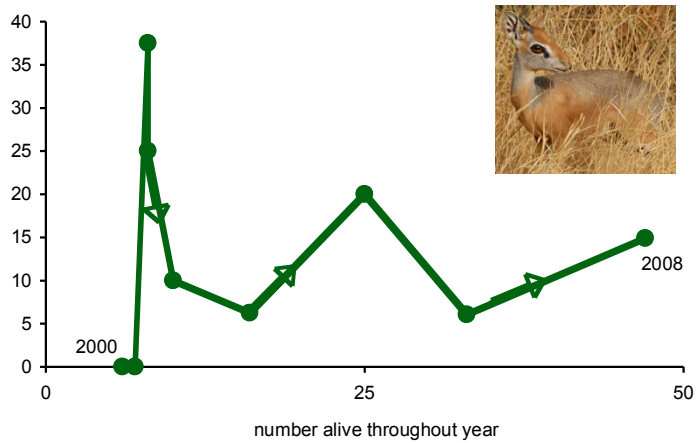


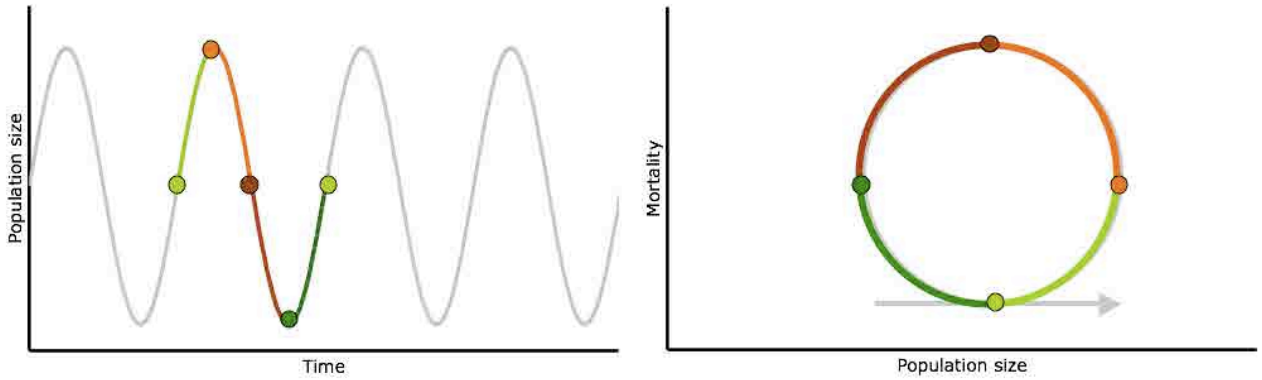






Discussion

- Principal population biology derived from free-ranging populations adequately describes the situation of closed captive situations ...



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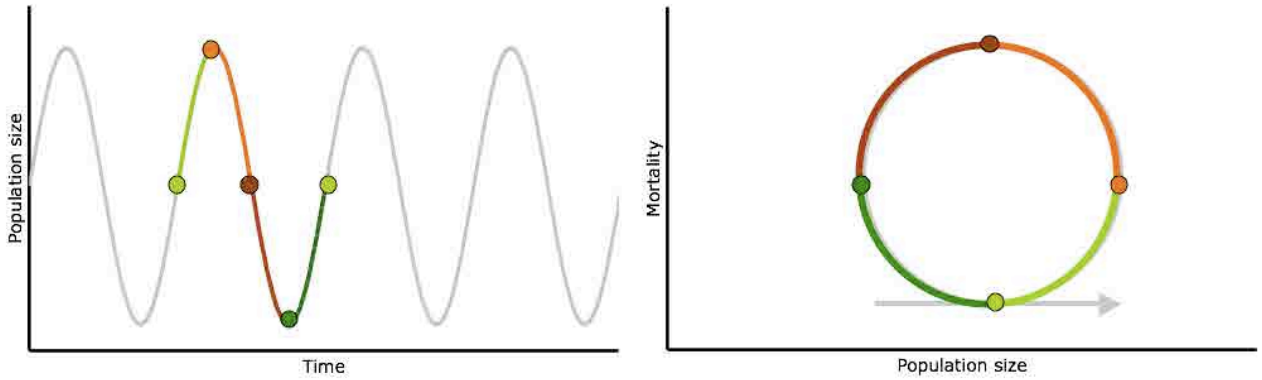

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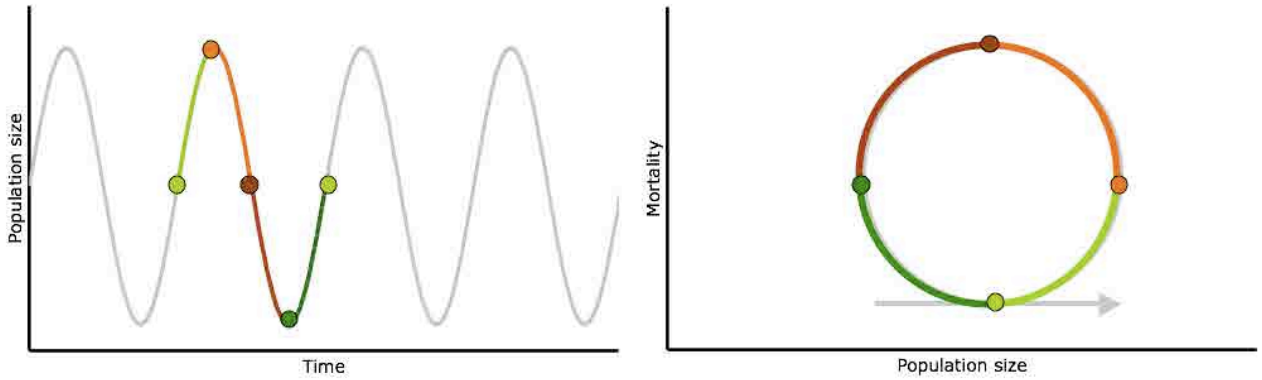

- ... in the absence of nutritional constraints and predation

  => crowding/social stress and infectious diseases

How to manage a captive population

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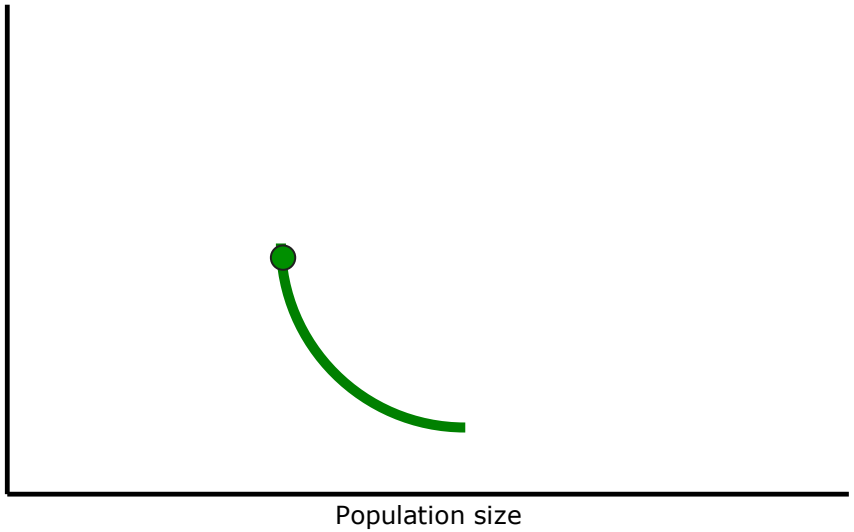

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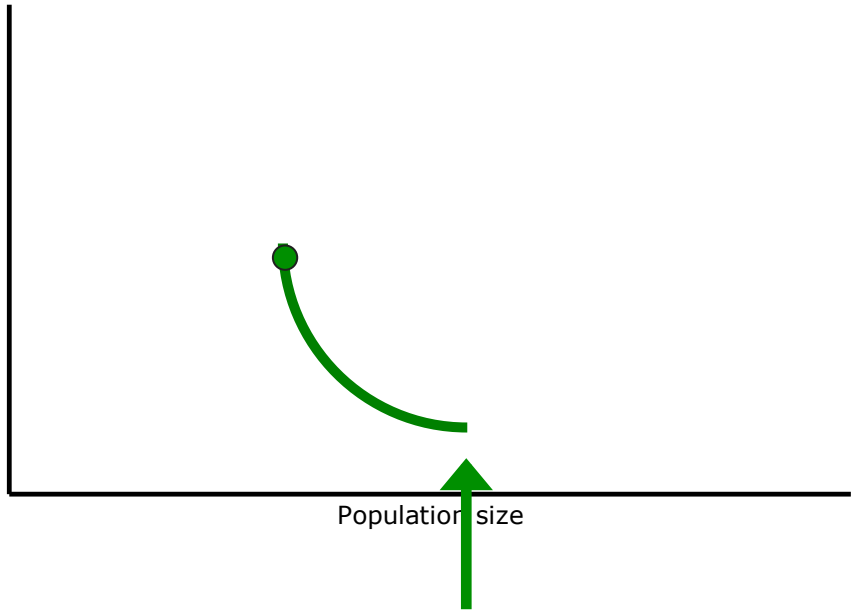

Remove surplus at this stage or expand enclosure for maximum productivity

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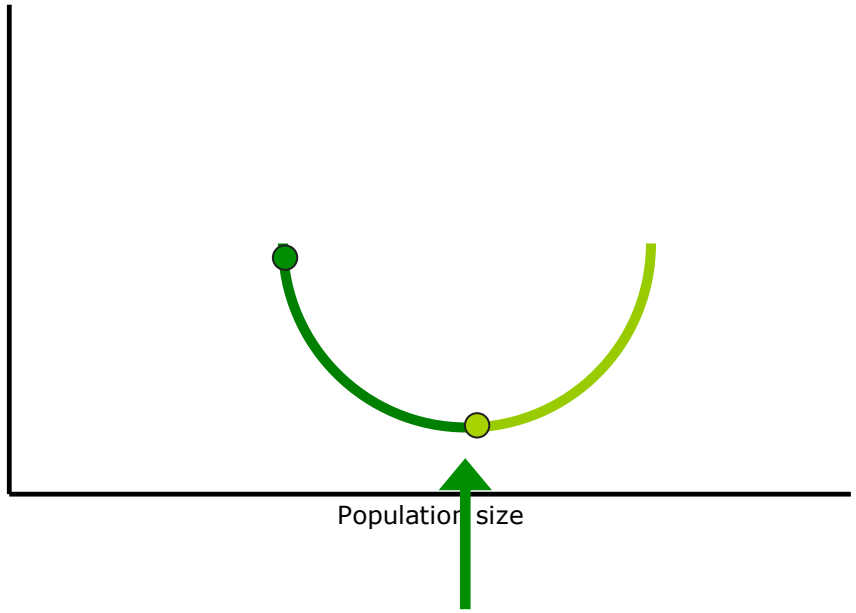

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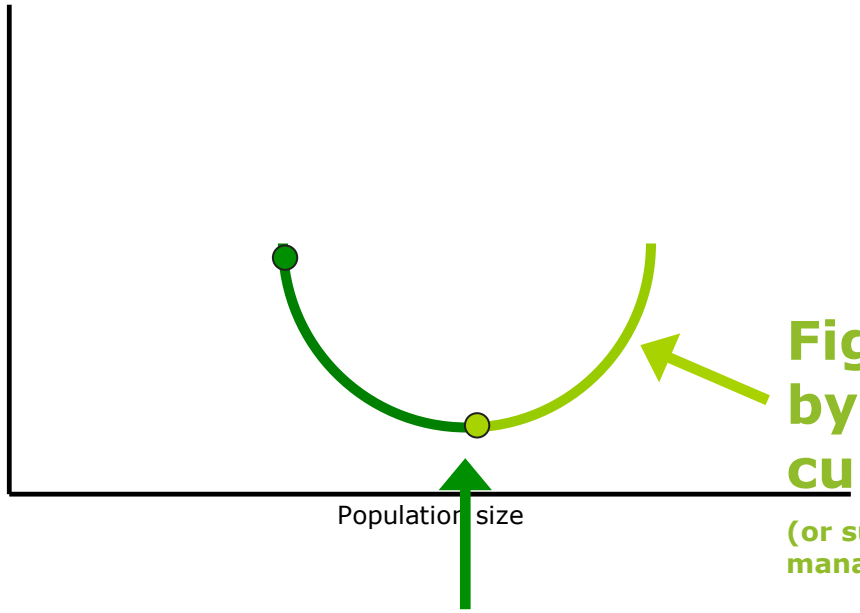

Fight crowding by removal or culling

(or surgical/ hormonal/ management birth control)

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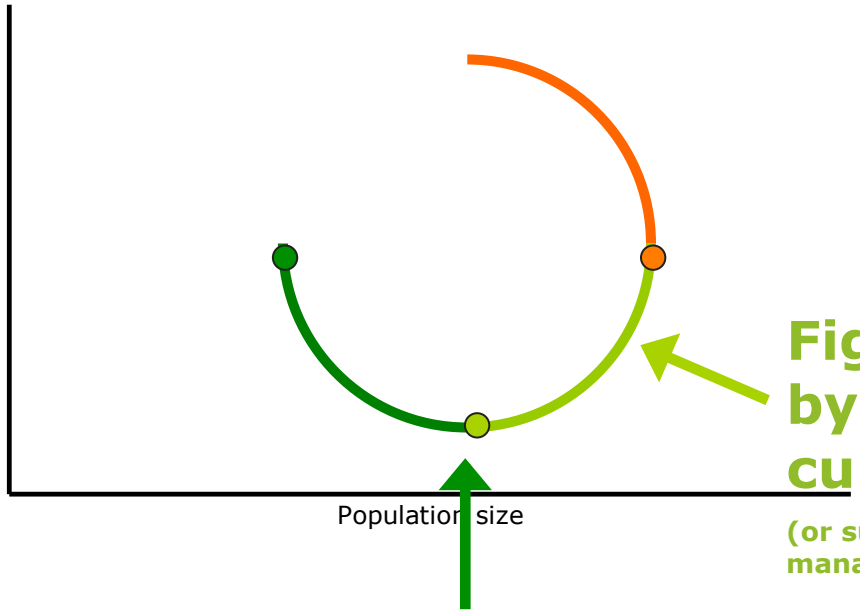

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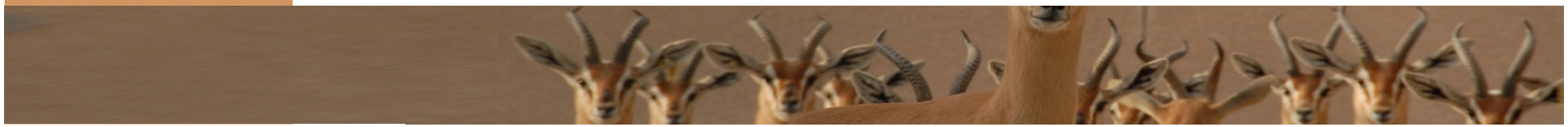

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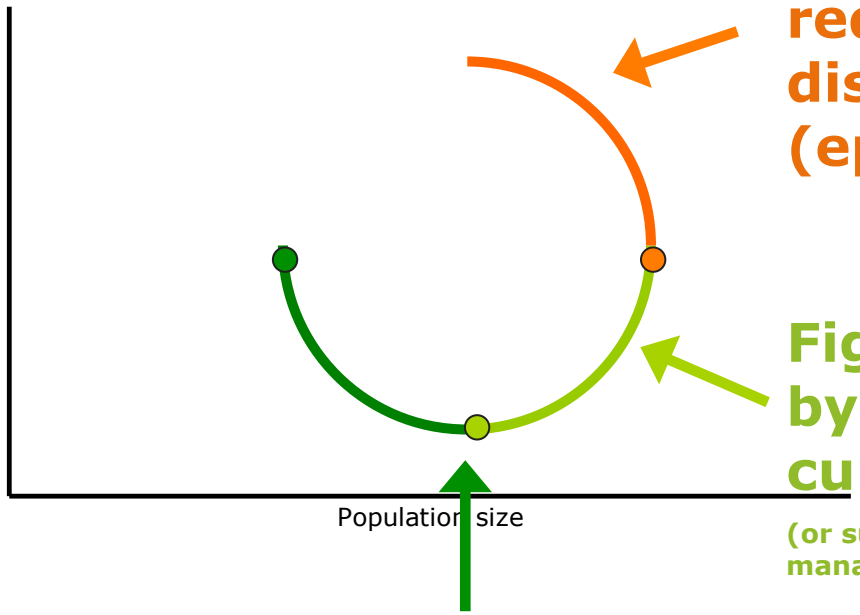

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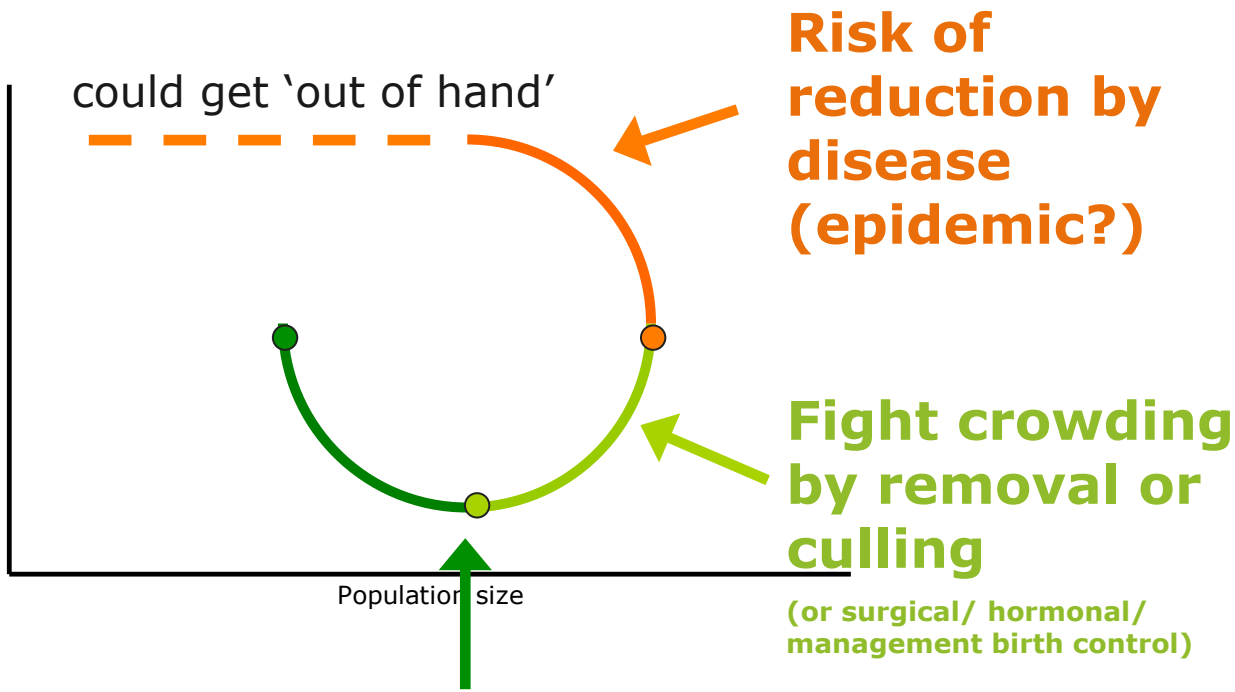

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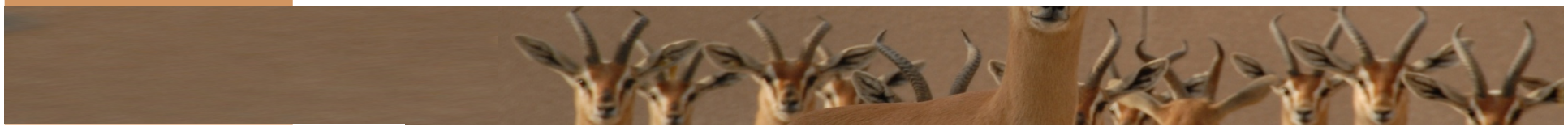

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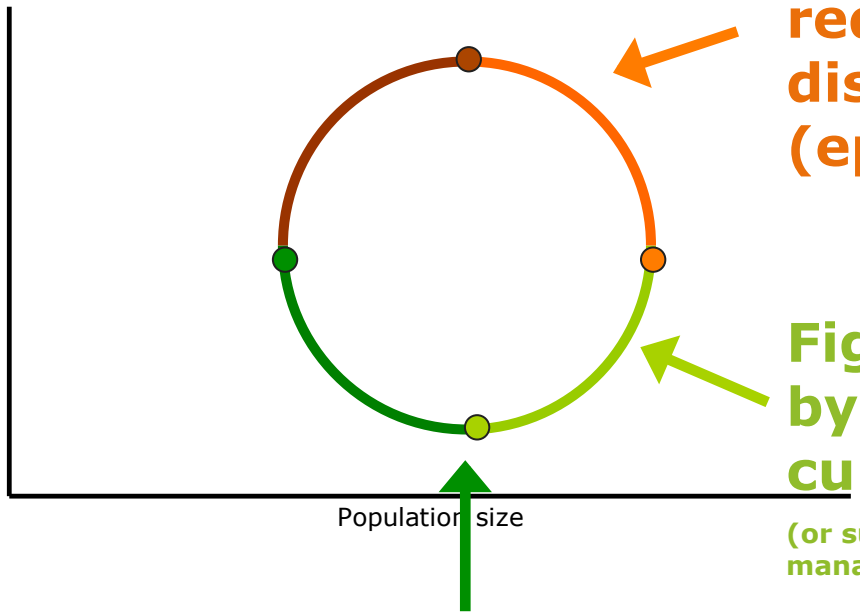

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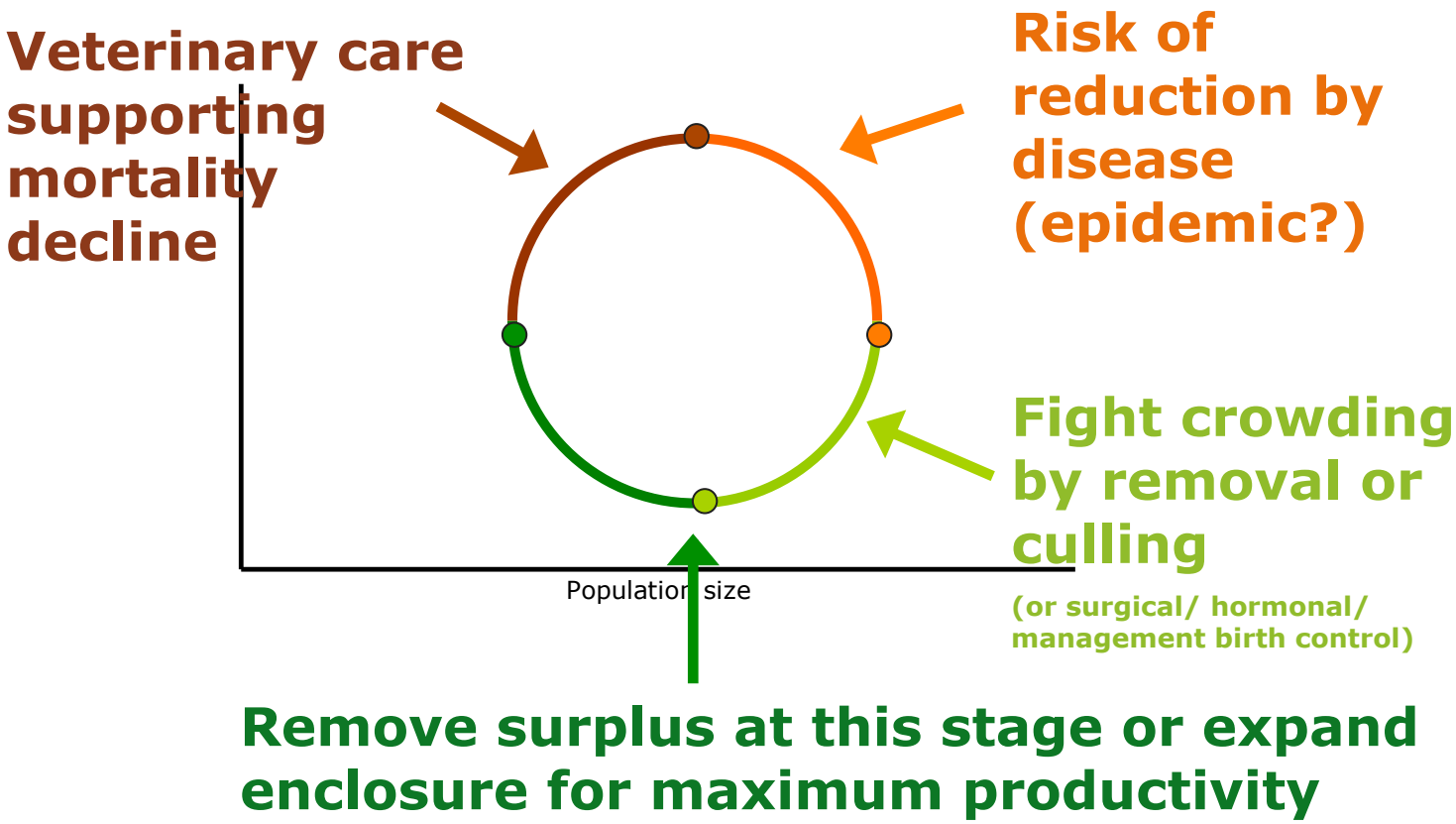

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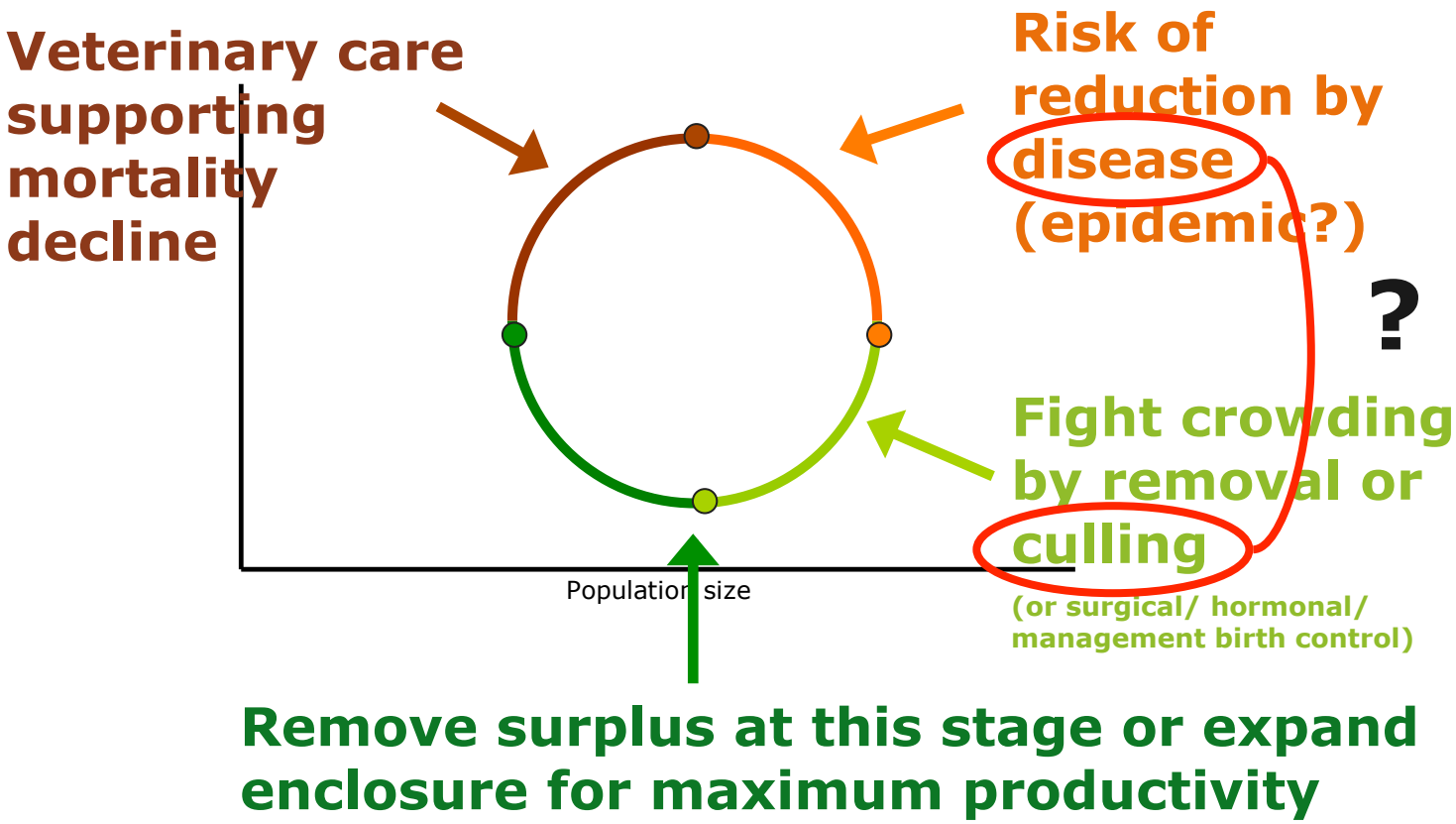

Alwabra
Al Wabra Wildlife Preservation

ZRC
ZOO RESEARCH CAMP
Al Wabra Wildlife Preservation
Vetsuisse Faculty

Thank you for your attention