AFRICAN RHINO CONSERVATION

Black rhino

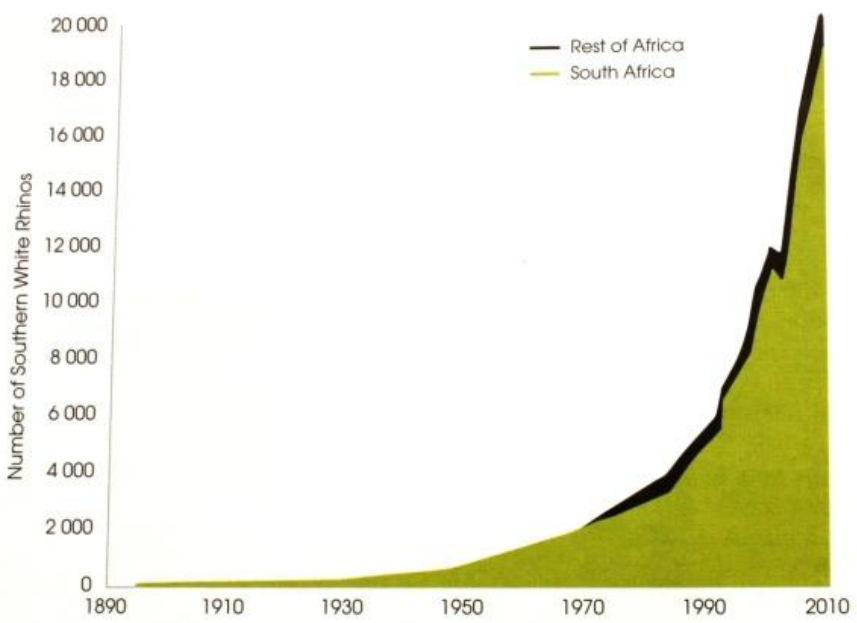
South Africa	1915
Rest of Africa	2965
Total	4880
(Private land	446)

White rhino

South Africa	18800
Rest of Africa	1360
Total	20160
(Private land	4580)

POPULATION TRENDS

SOUTH AFRICA



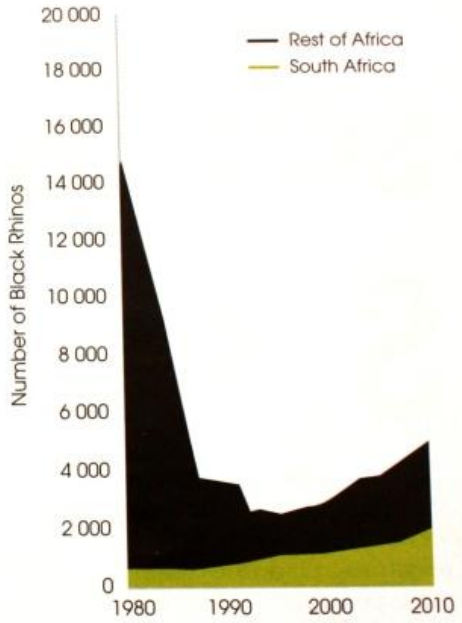


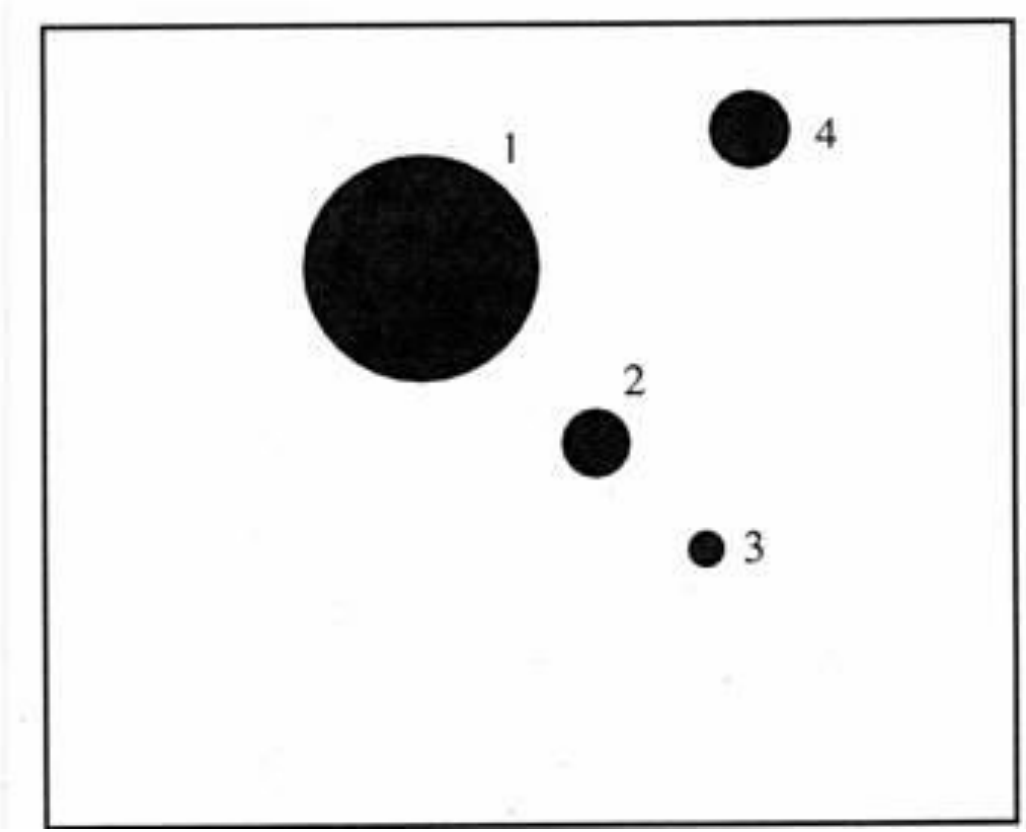
Figure 1 Numbers of Southern White (left) and Black Rhinos in South Africa and the rest of Africa to 31 December 2010 (data from R. Emslie)

incentives for wildlife conservation for a broad range of stakeholders.

The hunting industry and spin-off services directly

METAPOPULATION MANAGEMENT

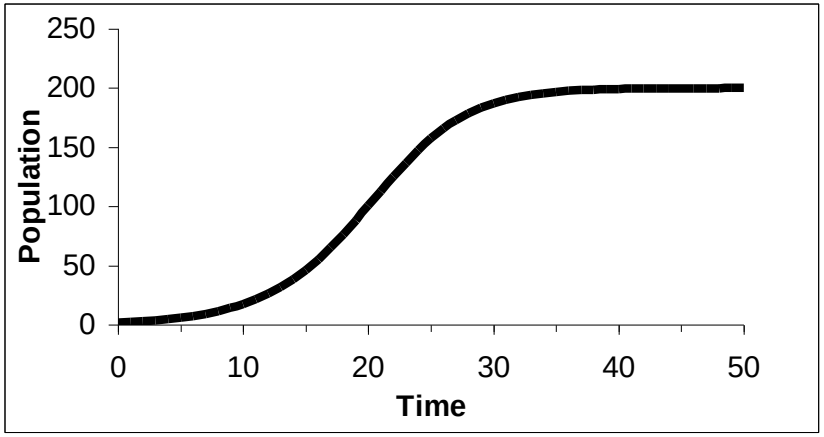
Kruger Park

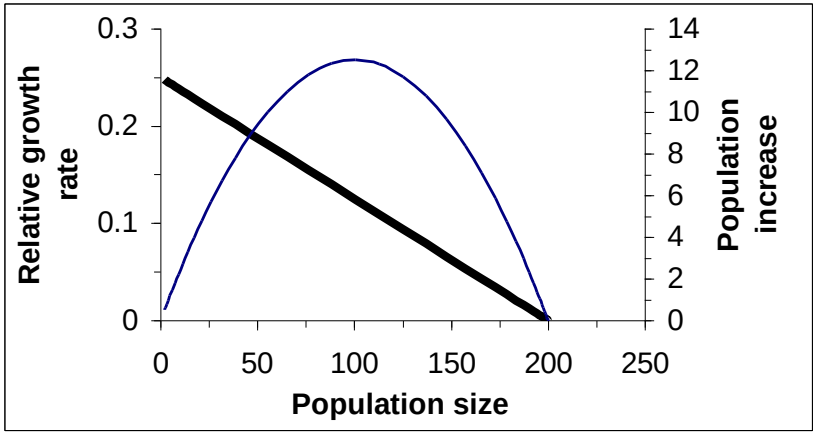


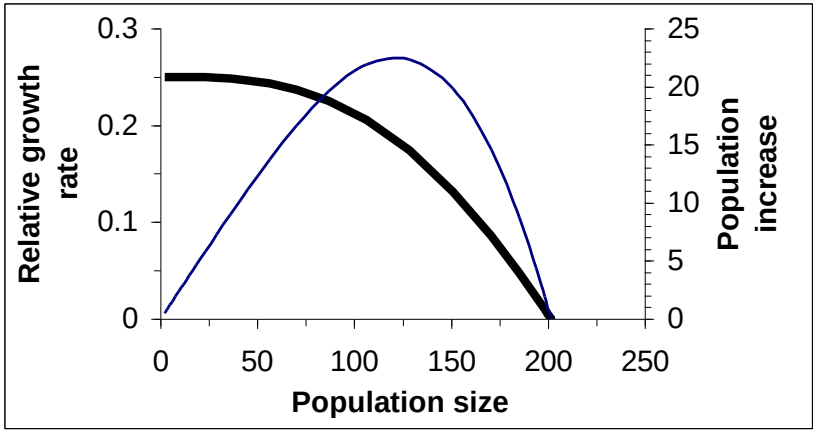
Hluhluwe-iMfolozi

LOGISTIC GROWTH MODEL

$$\frac{dN}{dT} = RN\left(1 - \frac{N}{K}\right)$$

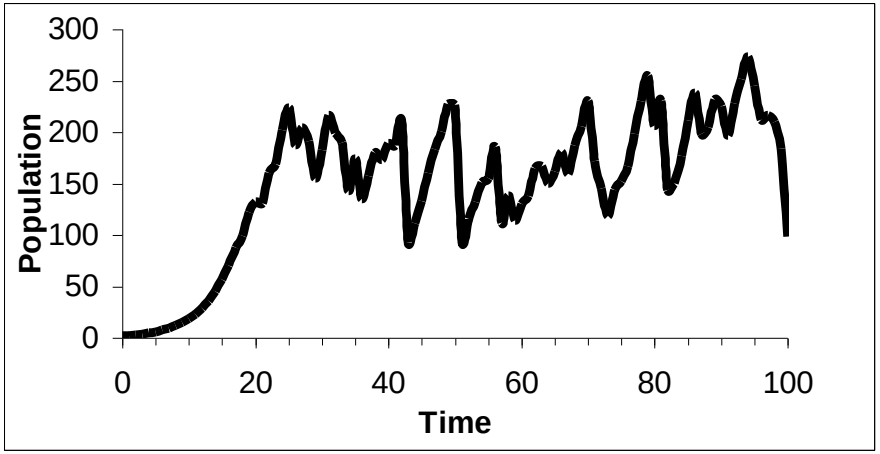


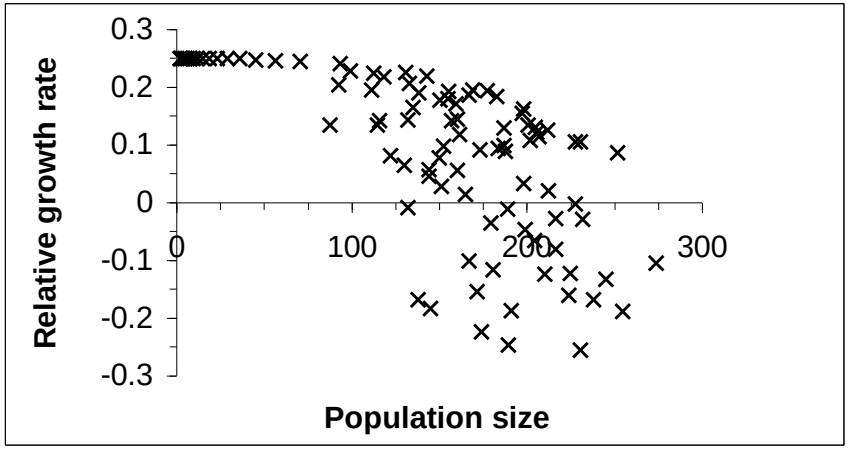




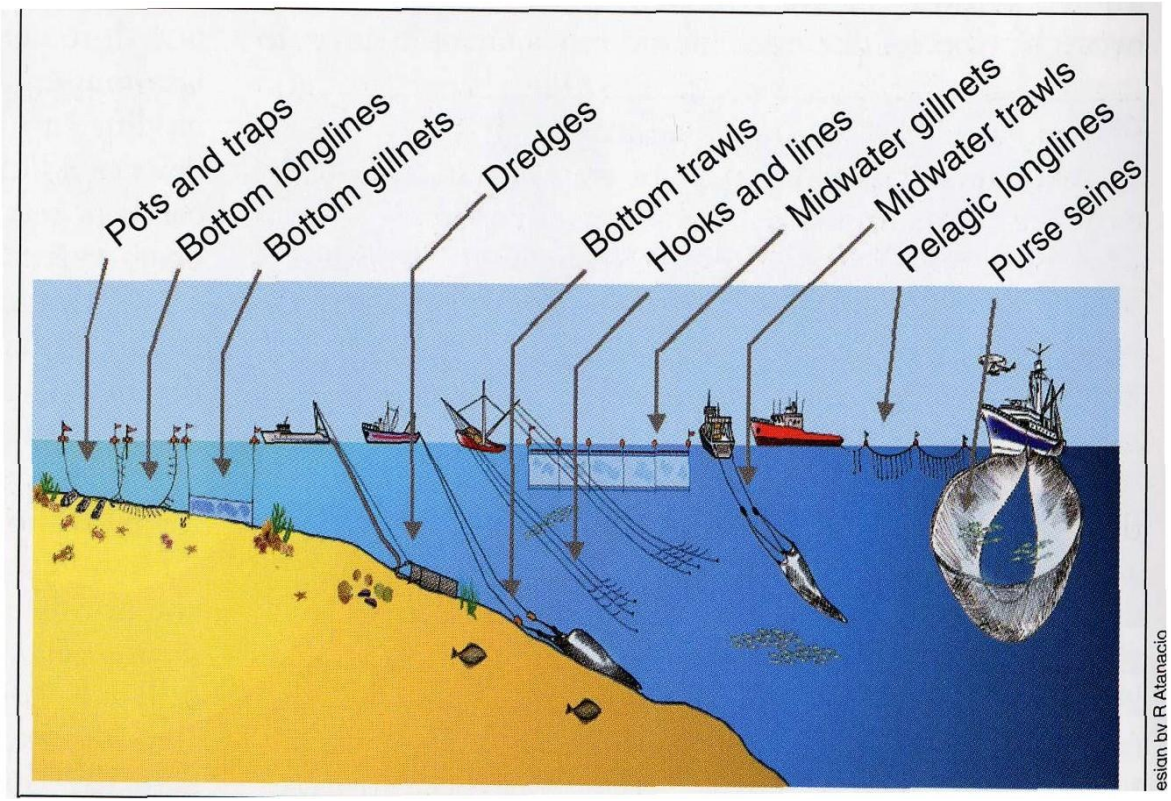
DENSITY REGULATED GROWTH IN VARIABLE ENVIRONMENT

$$dN/dT = R(T)N\,[1 - N/K(T)]$$

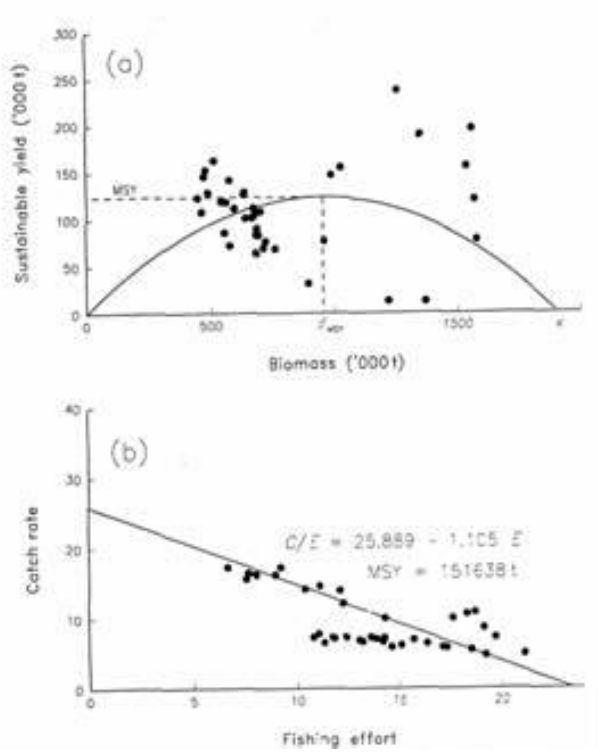




FISHERIES HARVESTING



esign by R Atanacio

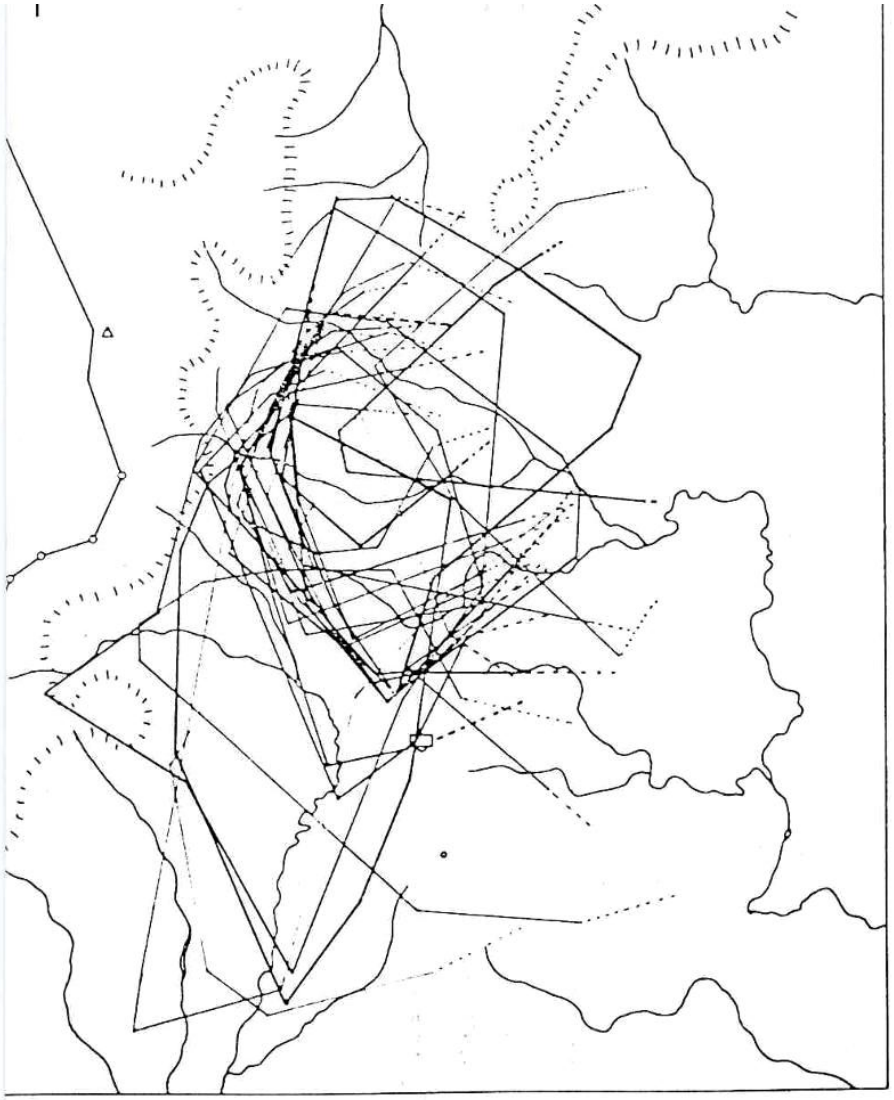


TERRESTRIAL HERBIVORES ARE EMBEDDED IN A SPATIAL MATRIX

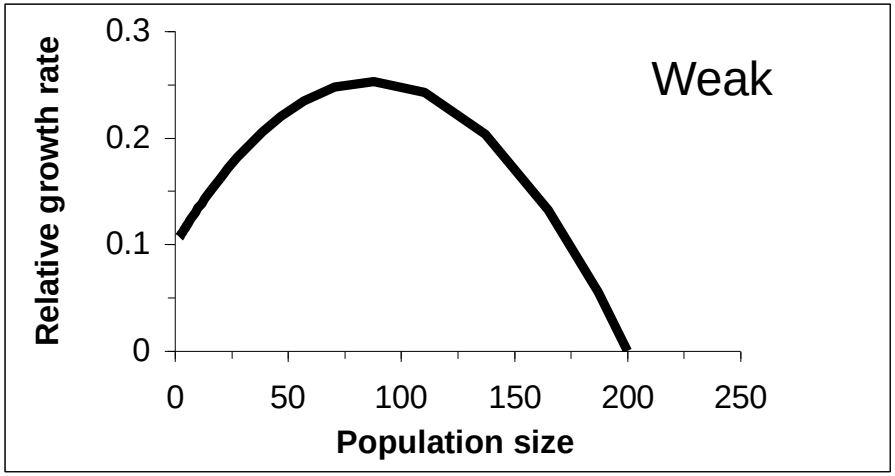
White rhino home ranges:

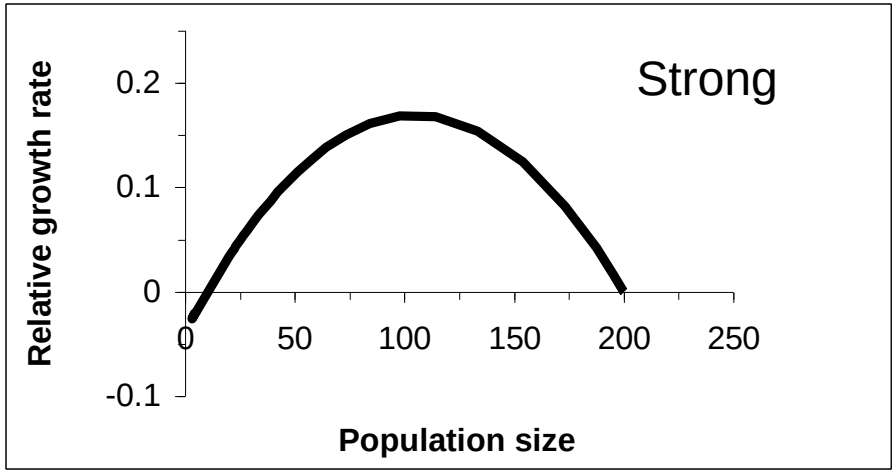
Adult females overlapping *ranges*

Adult males defend exclusive territories

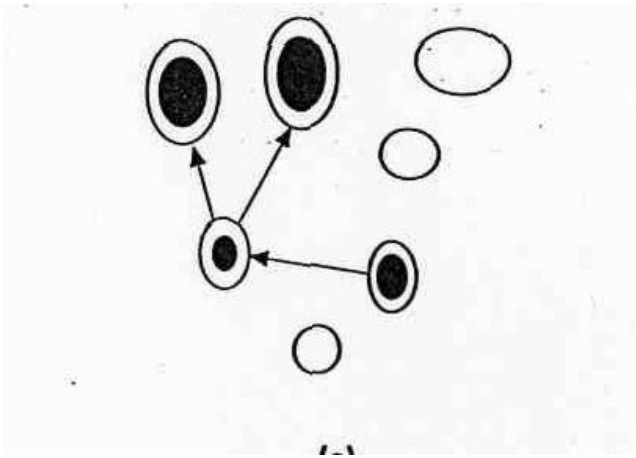


DEPENSATORY DENSITY DEPENDENCE (Allee effect)





Dispersal movements



THE PROBLEM

Devise a capture and relocation programme to maximize the numerical increase in the black rhino population in South Africa

- Where to undertake removals
- How many to remove
- Where to put the animals removed

How to maximize offtake from source population(s)

Kruger Park – 625 black rhinos in 20,000 km^2

Hluhluwe-iMfolozi Park – 325 black rhinos in 950 km^2

LITERATURE

Emslie (2001) suggests how the management objectives might be achieved by proportional removals

Reid et al (2007) outline how the HiP population has not responded as expected to removals

Linklater & Hutcheson (2010) describe how black rhinos are slow to colonize vacancies created by removals

Hrabar & du Toit (2005) document how the population founded in Pilanesberg GR has grown

Brodie et al (2012) document how the population in NW Namibia has recovered unusually slowly despite its low density