

The feasibility of reintroducing African wild dogs (*Lycaon pictus*) into the Great Fish River Nature Reserve.



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Introduction

- Wild dogs are the most endangered carnivore in South Africa
- <400 left in South Africa
- One viable population in RSA
- Conserved as a metapopulation



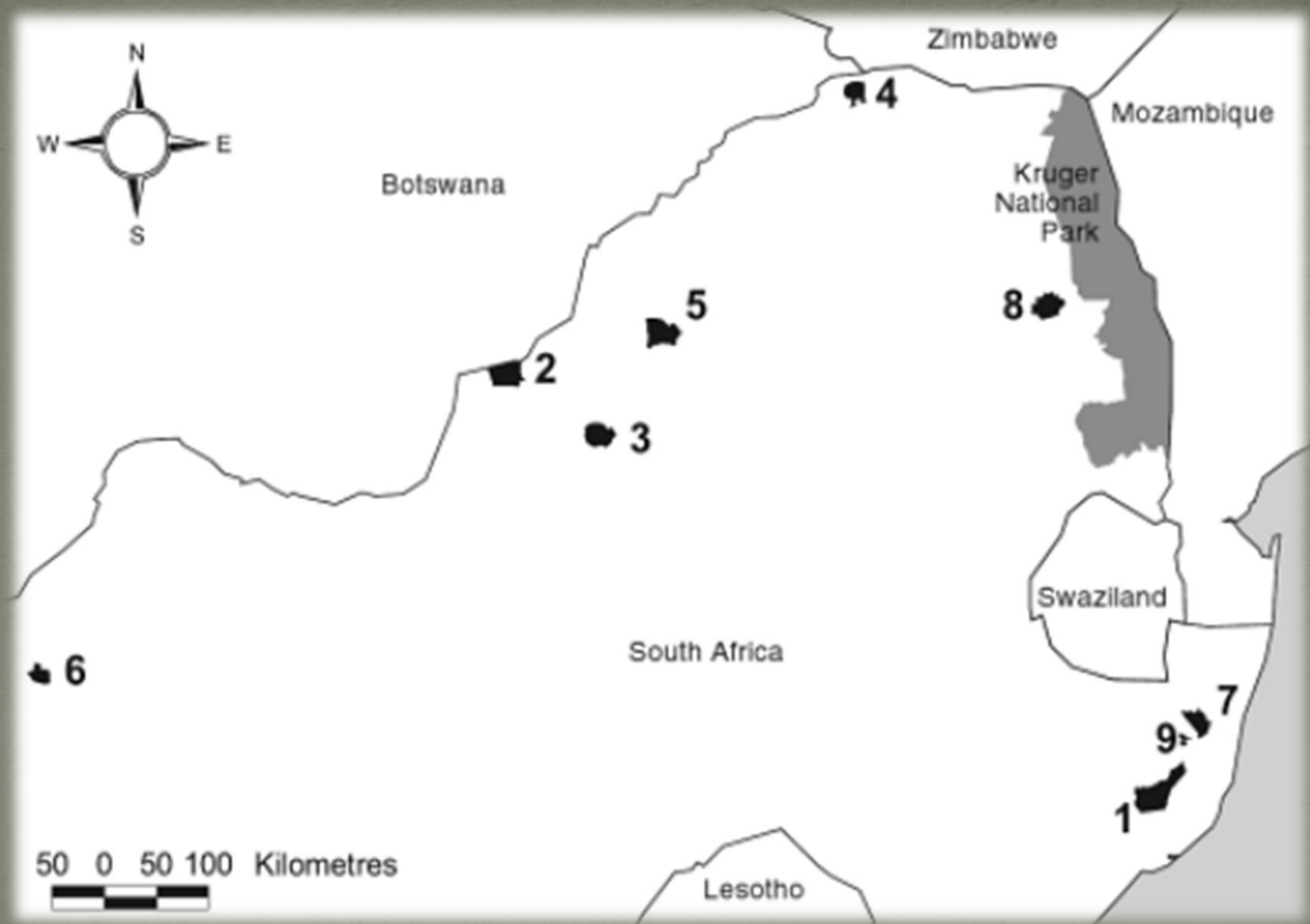


Figure 1: Nine wild dog holding reserves which are part of the metapopulation

Study Area

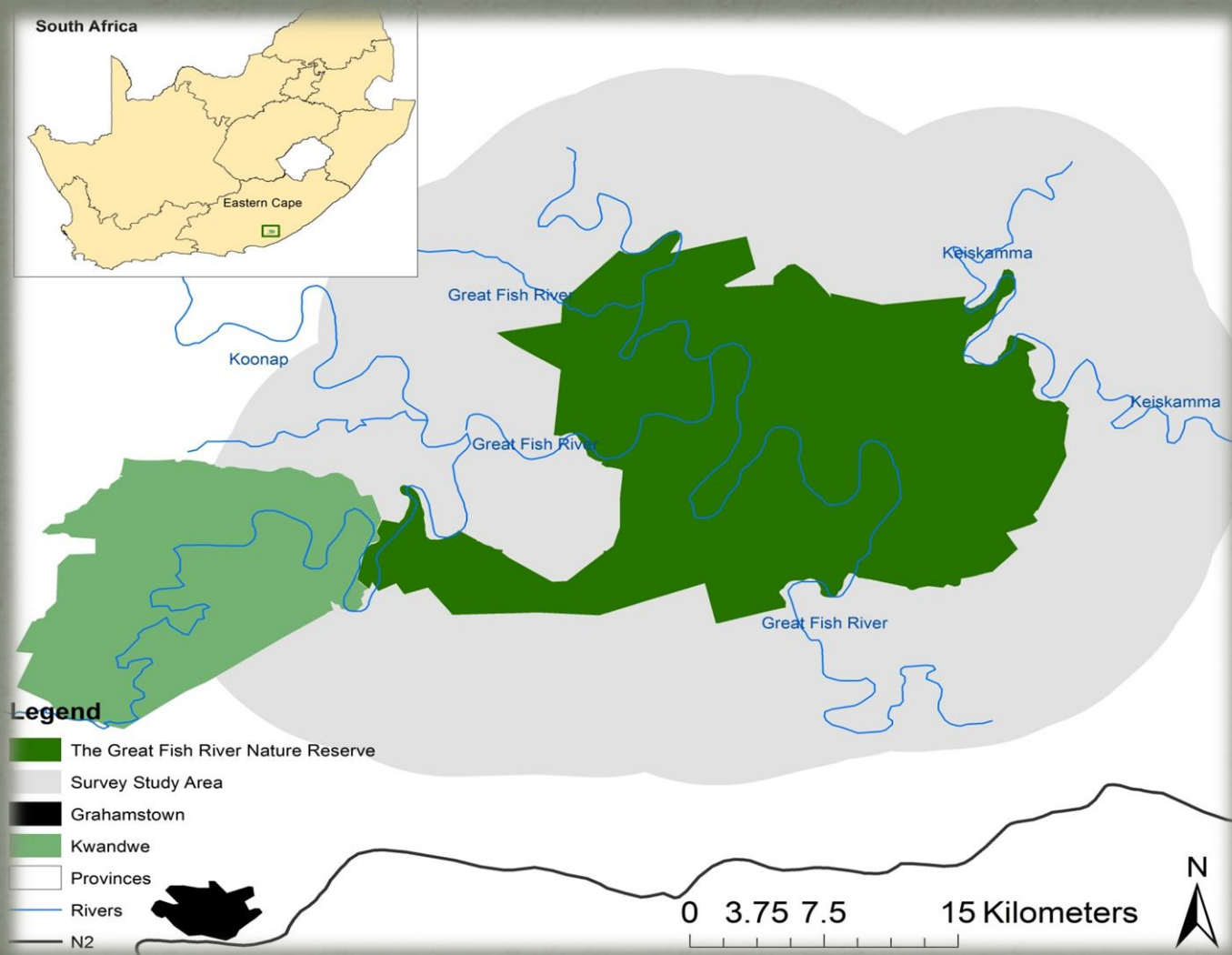


Figure 2: The Great Fish River Nature Reserve

A Brief Outline of Methods

1. Carrying Capacity
 - a) Hayward et al. (2007)
 - b) Carbone and Gittleman (2002)

2. Minimum Area Requirements
 - a) GFRNR
 - b) Kwandwe

3. Prey Density

4. Population Modelling
 - a) VORTEX 9.99



1. Carrying Capacity

a) Hayward et al. (2007)

$$Y = -3.012 + 0.494X$$

Table 1: The carrying capacity for African wild dogs (*Lycaon pictus*) in the Great Fish River Nature Reserve in 2012.

Total potential Wild Dog prey biomass available in GFRNR	328558 kg
Carrying Capacity	11

b) Carbone & Gittleman (2002)

$$y = (94.54(x)^{-1.03}) \times z/10000$$

Assumption that :

→ 10000 kg of prey supports
approximately 90 kg of a given
carnivore species

112 wild dogs

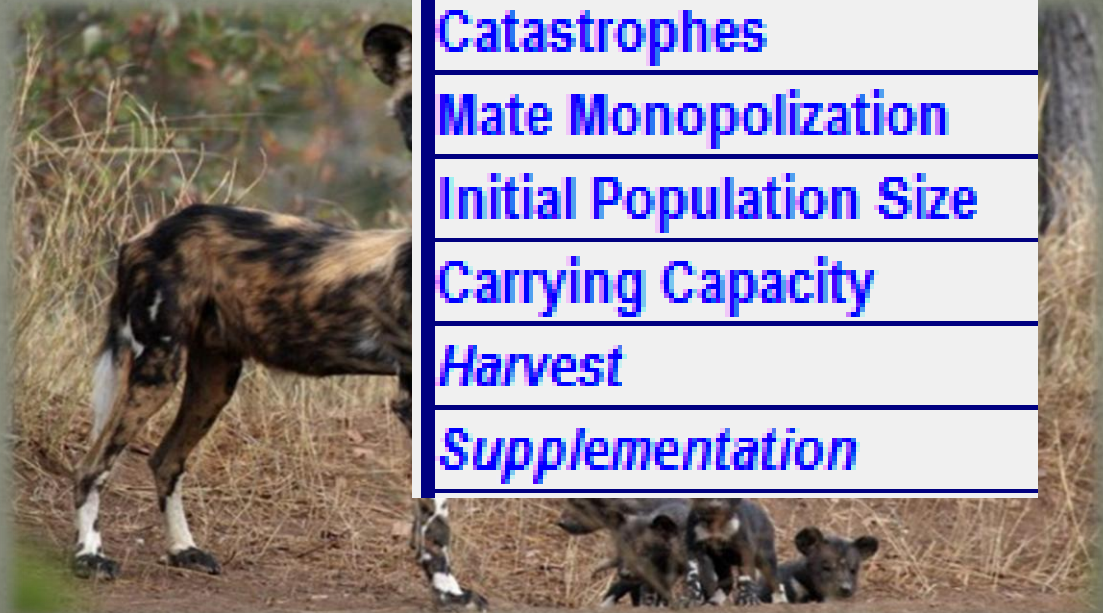
- high metabolic demands of
wild dogs relative to their size



VORTEX 9.99

- Conducts known-fate modeling
- Allows the user to:
 1. Estimate wild dog survival
 2. Suitable population size
 3. Initial population requirement

- Five models run in VORTEX



Scenario Settings

Species Description

Labels and State Vars.

Dispersal

Reproductive System

Reproductive Rates

Mortality Rates

Catastrophes

Mate Monopolization

Initial Population Size

Carrying Capacity

Harvest

Supplementation

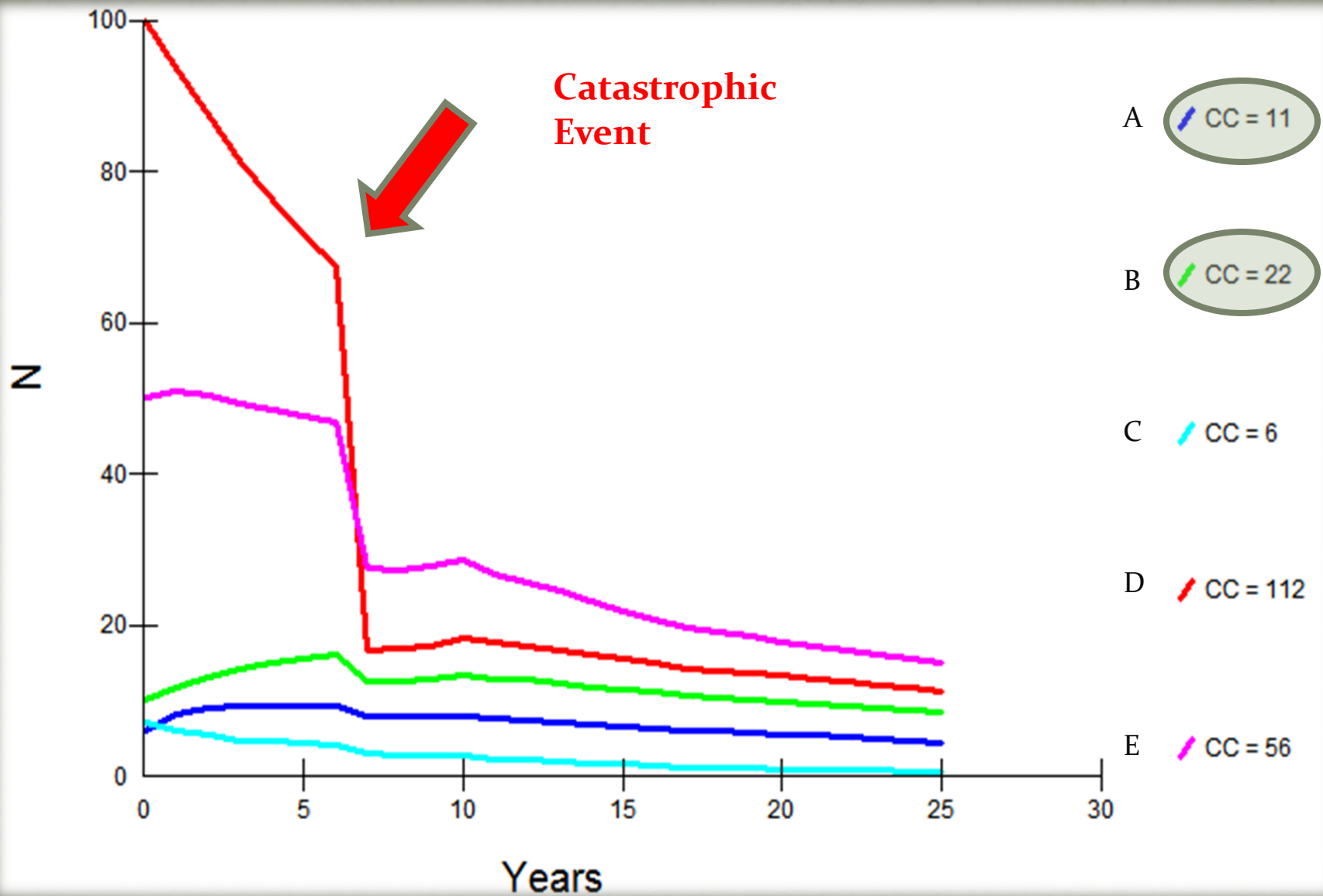


Figure 3: Population dynamics of wild dogs over 25 years when testing five different carrying capacities.

Model	K	Growth rate (mean(\pm SD))	PE	Final end population size (mean(\pm SD))	Genetic Diversity (mean(\pm SD))
A	k = 11	0.053(0.3)	0.37	5.14(4.18)	0.5350(0.1628)
B	k = 22	0.012(0.275)	0.35	7.13(5.98)	0.6177(0.1387)

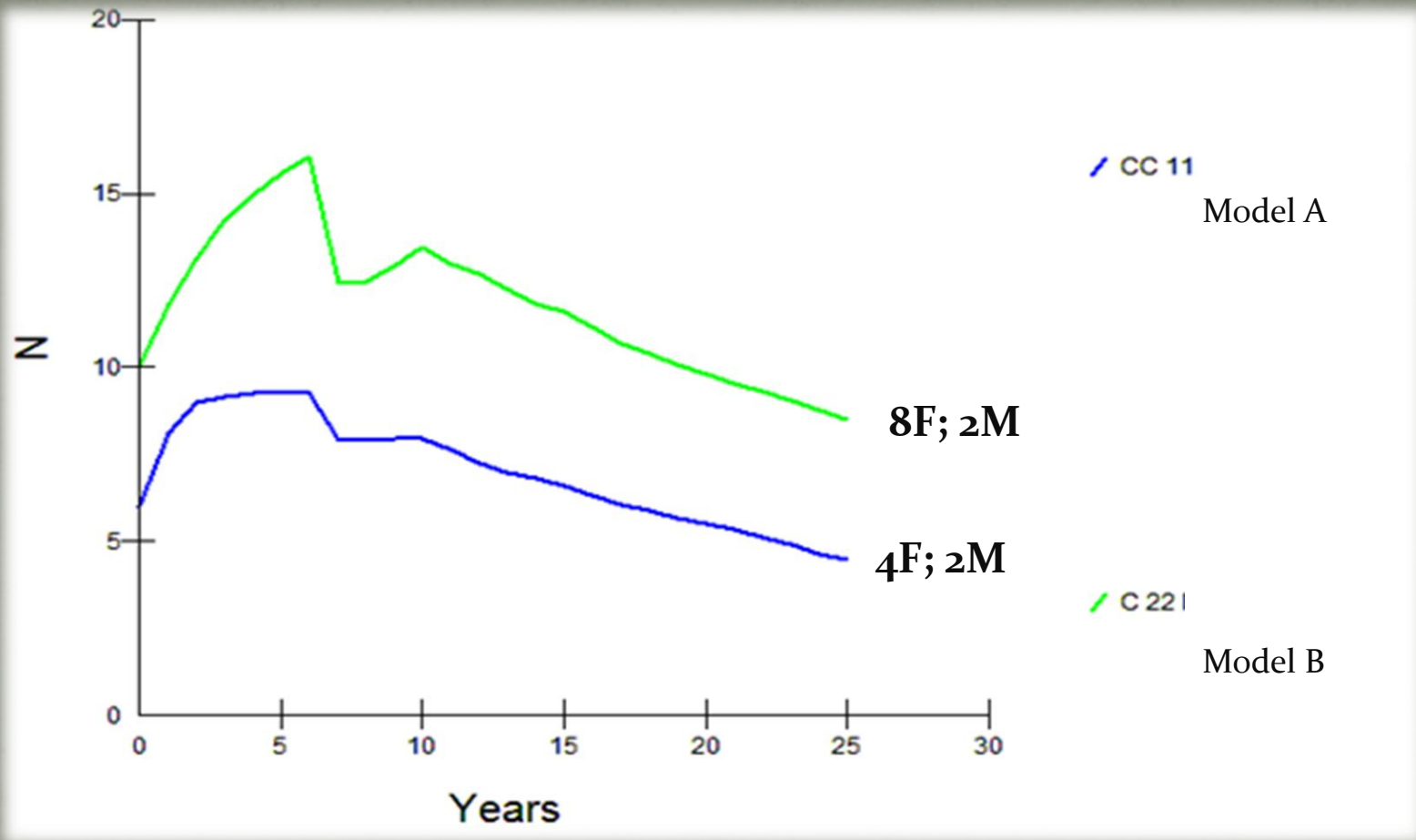


Figure 4: Model A (K = 22) and B (K = 11) without supplementation and harvesting

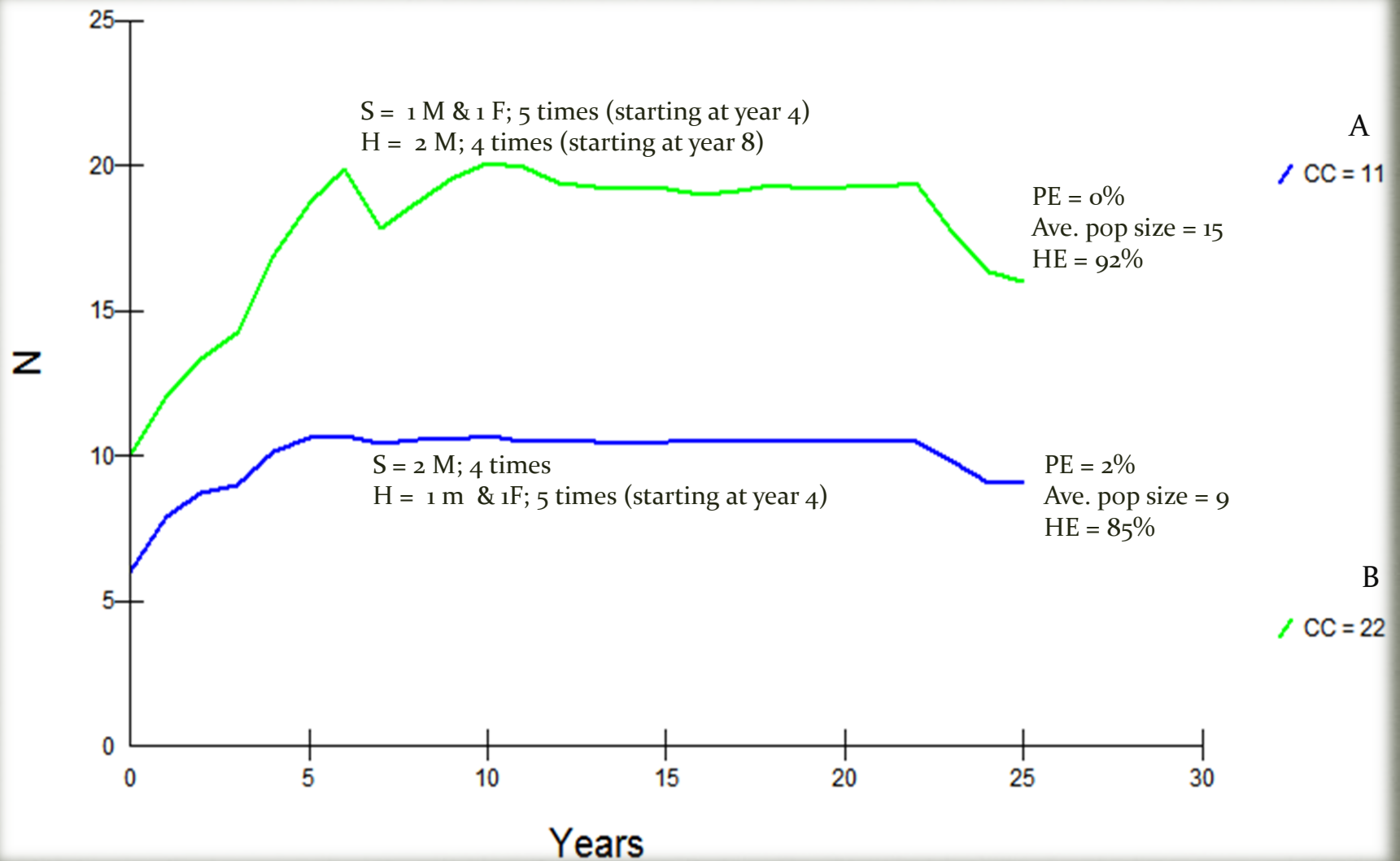


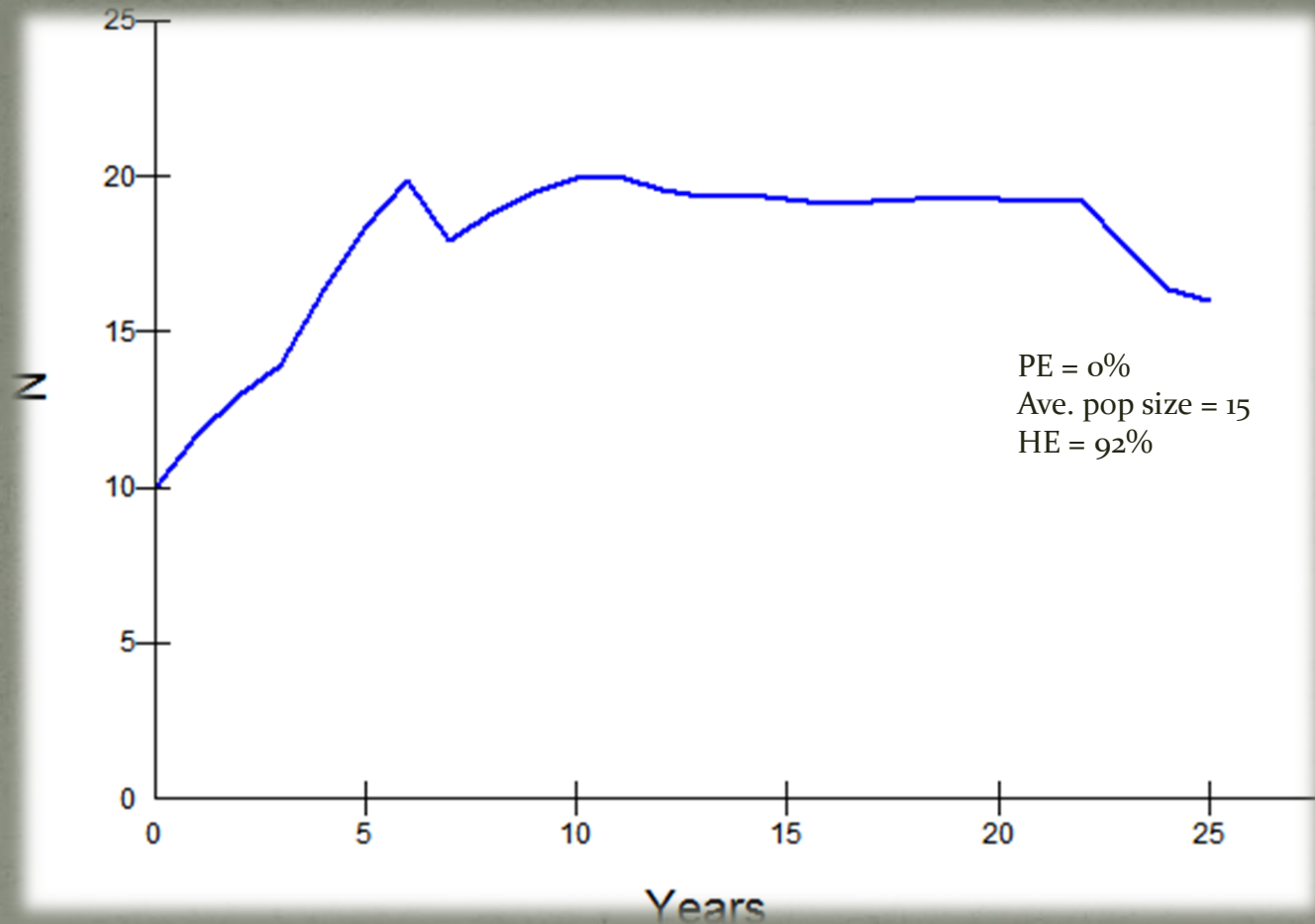
Figure 5: Wild dog population after harvesting and supplementation of the pack

Limitations of VORTEX

1. Monogamous setting – (no alpha only breeding)
2. Truncates population if it goes over K



Conclusion



Supplementation: 5 years; 1 adult male & one adult female

Harvesting: 4 years; 2 adult males and one sub-adult female

8 Females & 2 Males

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