



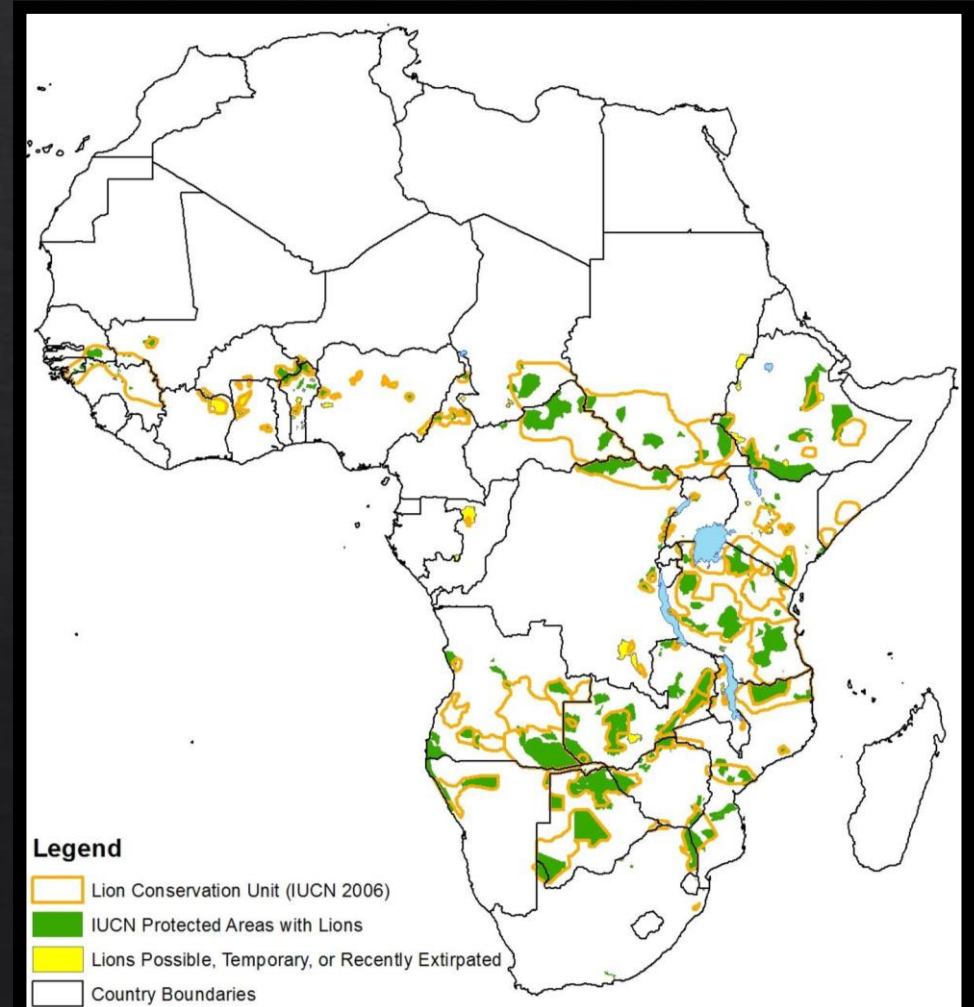
Is there a place for captive bred African lions (*Panthera leo*) in the South African Wildlife Model?

24 January 2023

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Are African lions really in trouble?

- ◇ 50% Decline in wild populations in last 4 decades
- ◇ SA one of only 4 countries with population growth
- ◇ Integrity of the wild populations, specifically SA
 - ◇ bTB Kruger National Park
 - ◇ Inbreeding Hluhluwe-iMfolozi
 - ◇ Non-viable population sizes Greater Mapungubwe Transfrontier Conservation Area and Kgalagadi Transfrontier Park
 - ◇ Moral high ground re. genetic diversity across Africa
- ◇ Why are wild lion numbers decreasing?



PRIMARY CAUSES FOR DECLINING LION NUMBERS ACROSS AFRICA

- ◊ DEPLETION OF NATURAL HABITAT – HUMAN ENCROACHMENT
- ◊ PREY BASE DEPLETION
- ◊ RETALIATORY KILLINGS
- ◊ UNREGULATED SPORT HUNTING



IMPORTANT DEFINITIONS



◊ CAPTIVE BREEDING VS. CANNED HUNTING



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- ◆ “Wild lions *completely fulfil their role in biodiversity processes and are largely unmanaged, and exist only in formally proclaimed national parks and game reserves.* Conservationists do not actively manipulate vital rates and lion demographics (Funston & Levendal, 2015).



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- ◆ Wild managed lion *include all lions that have been re-introduced into smaller fenced reserves (<1 000km²), and are managed to limit population growth and maintain genetic diversity. Managers actively manipulate some vital rates and demographics (Funston & Levendal, 2015).*



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- ◆ Captive bred lion are *bred exclusively to generate money. Managers actively manipulate all vital rates and demographics” (Funston & Levendal, 2015).*

WHY CAPTIVE BRED LIONS PRESUMABLY CANNOT BE USED FOR RE-/INTRODUCTION PROGRAMMES

- ◊ INABILITY TO ADAPT TO WILD ENVIRONMENT AND THEREFORE POSES A GREAT RISK TO HUMAN AND LIVESTOCK POPULATIONS
 - ◊ HUMANS AND LIVESTOCK HAVE BEEN, AND STILL ARE, TAURMENTED BY LIONS LONG BEFORE THE CBL INDUSTRY AND IN COUNTRIES WHERE ONLY WILD LIONS EXIST
- ◊ INFERIOR GENETIC DIVERSITY
 - ◊ RECENT STUDY (UNDER PEER REVIEW) SHOWS LOWER GENETIC DIVERSITY IN WILD LIONS TO THOSE FROM BREEDING FACILITIES IN SA
- ◊ INABILITY TO SELF-SUSTAIN & REPRODUCE
 - ◊ RECENT PhD STUDY (PUBLISHED 2021) CONCLUDES THE CONTRARY
- ◊ DAMAGING “BRAND SOUTH AFRICA”

THE INTRODUCTION OF CAPTIVE BRED AFRICAN LIONS (*Panthera leo*) TO A PRIVATE WILDLIFE RESERVE IN THE LIMPOPO PROVINCE, SOUTH AFRICA

Booyens, P.L. 2021. The introduction of captive bred African lions (*Panthera leo*) to a private wildlife reserve in the Limpopo Province, South Africa. Ph.D. thesis University of the Free State, South Africa.

RESERVE DEVELOPMENT

- ◇ INITIATED MID 2014
- ◇ CATTLE AND MIXED FARMS CONVERTED TO WILDLIFE
- ◇ APPROXIMATELY 22 000 HA
- ◇ APPROXIMATELY 5 500 UNGULATES
- ◇ EVENLY DISTRIBUTED PERMANENT WATER SOURCES
- ◇ TYPICAL DENSE WESTERN BUSHVELD (WATERBERG REGION)
- ◇ CURRENTLY ALL SPECIES OF AFRICAN BIG 5
- ◇ 5 CAPTIVE BRED LIONS RELEASED IN JANUARY 2017

The objective

The objective was to utilise, monitor, and explore the social and feeding behaviour, and the reproductive ability of captive bred, and reared African lions (*Panthera leo*) when reintroduced as a founder population on a large private wildlife reserve, and not to justify the captive breeding of lions.

The 5 hypotheses

(Booyens, 2021)

1. The ability to form social groups in a free-roaming wild habitat
2. The ability to become self-sustaining with no interference or supplementation by management
3. The ability to reproduce by raising offspring to maturity/female sexual maturity and/or the dispersal of males from natal prides
4. The ability to teach offspring to hunt effectively, interact socially, reproduce, and secure a healthy and viable F2-generation, characteristic of wild managed lions
5. Be regarded as suitable potential founders for reintroduction programmes where wild populations have disappeared or need to be augmented.

◇ So in other words....

What is expected of lions?

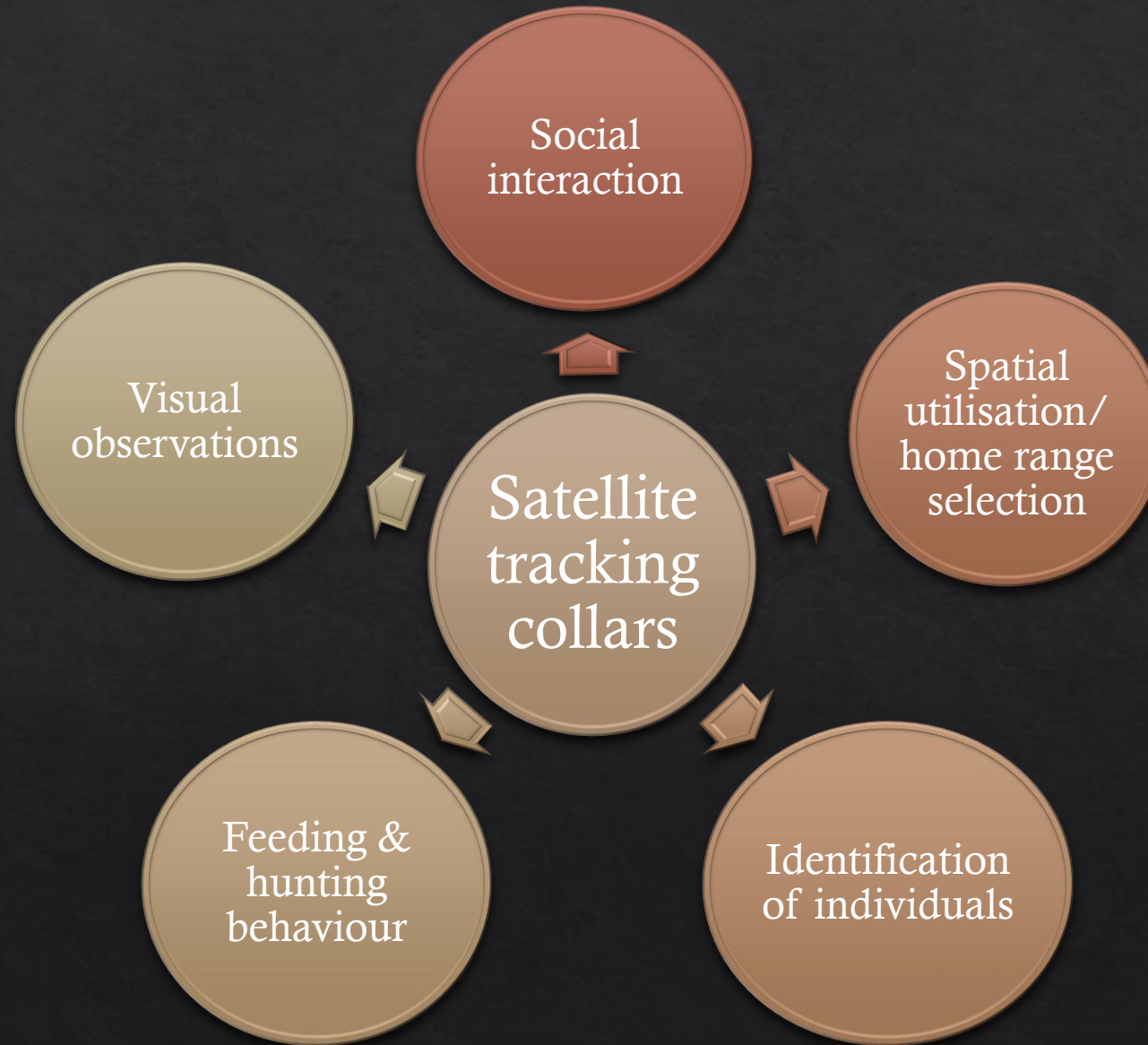


THE APPROACH

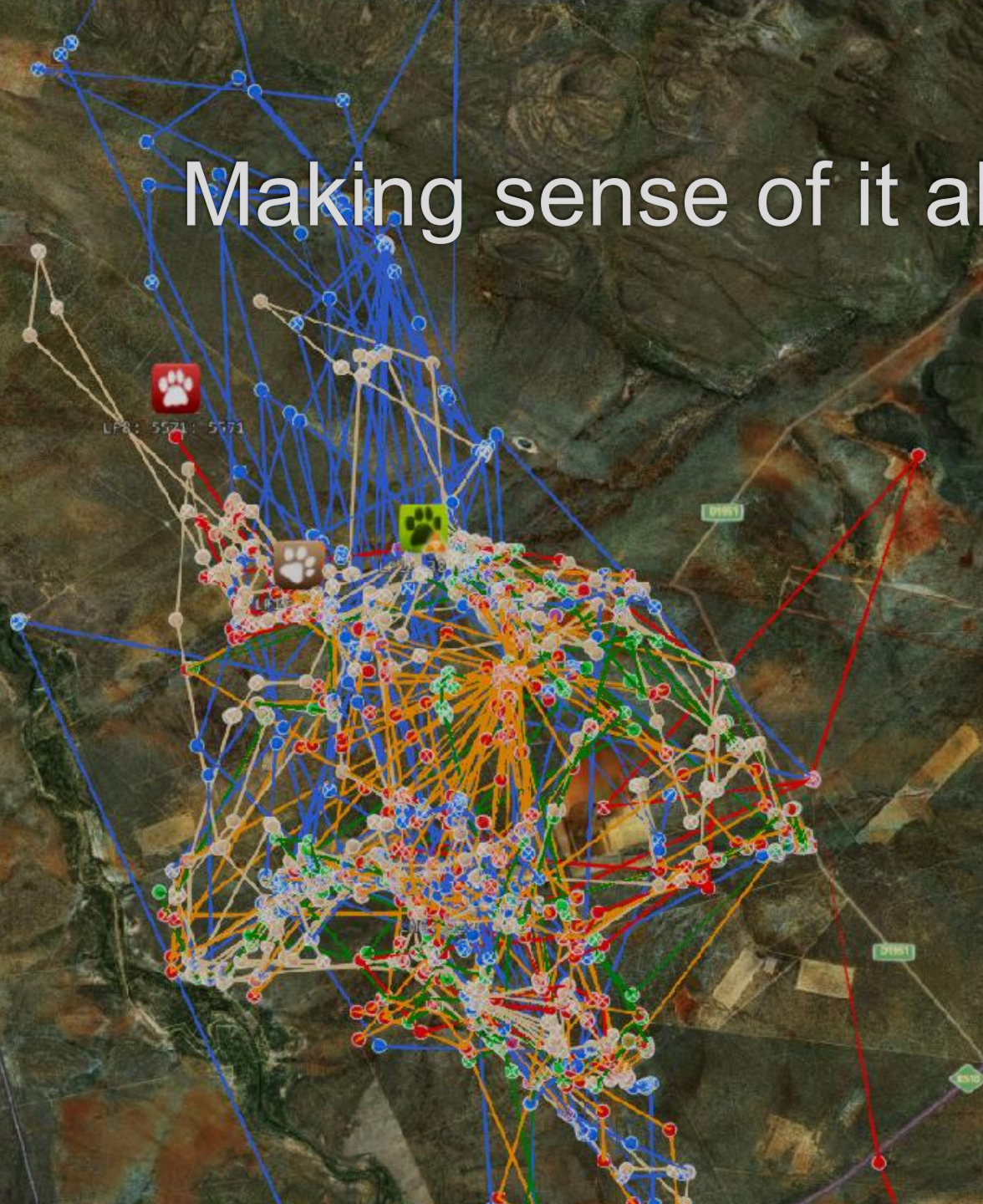
- ◇ Create habitat as close to natural as possible
- ◇ Release and monitor
- ◇ No interference AT ALL!
- ◇ Record, record, record....



Data collection

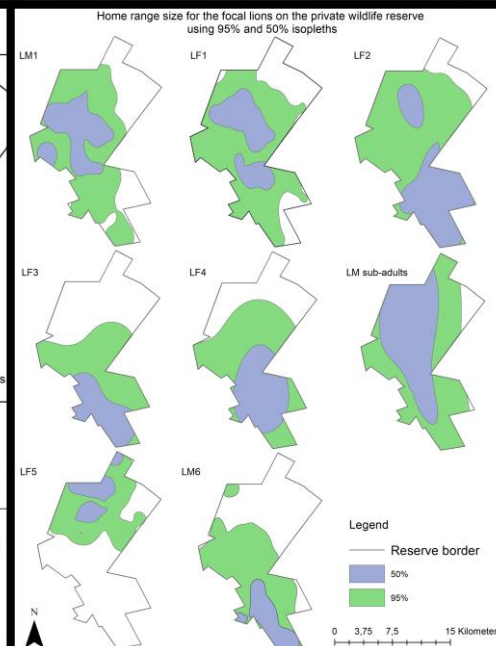
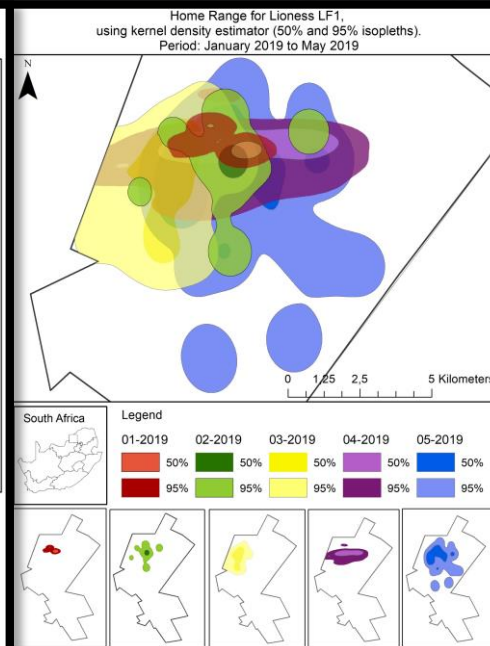
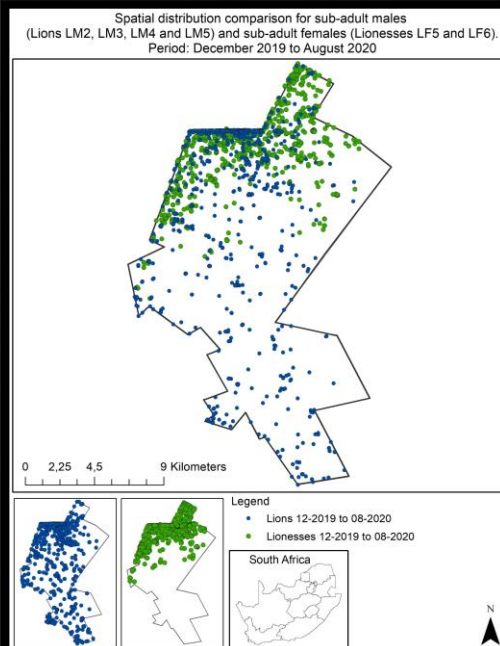


Making sense of it all



Making sense of it all

- ◇ Organizing data chronologically
- ◇ Create timelines for each individual
- ◇ Compare timelines to each other
- ◇ Create illustrations through Arc GIS



Results?

- ◆ No human imprinting
- ◆ First kill within 14 days of release
- ◆ More than 200 recorded kills
- ◆ Decline in certain ungulate species
- ◆ Comparative “prey selection”
- ◆ First litters of cubs within 150 days of release
- ◆ High cub survival rate – 93% (wild managed vs. wild)
- ◆ 31 Cubs survived since 2017 (controlled environment)
 - ◆ 12 were F2 generation cubs
 - ◆ Population control methods had to be implemented
- ◆ Early sexual maturity
- ◆ Normal dispersal of males from prides and cohort formation
- ◆ Normal home range sizes
- ◆ Groups (pride) of family members ranging from 2 – 14 lions



What did we learn?

- ◆ Lions don't like to read our manuals...



Back to the hypotheses

1. The ability to form social groups in an extensive wild habitat

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- Groups of 2 – 14 lions interacting intermittently – fission-fusion groups



Back to the hypotheses

2. The ability to become self-sustaining without interference or supplementation by management

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2. The ability to become self-sustaining with no interference or supplementation by management



- First kill recorded within 14 days of release
- More than 200 recorded kills (during study period)
- Marked decline in certain ungulate species
- Comparative prey “selection”



Back to the hypotheses

3. The ability to reproduce by raising offspring to maturity/female sexual maturity and/or the dispersal of males from natal prides

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- First litters of cubs within 150 days of release
- High cub survival rate – 93% (wild managed vs. wild)
- 31 Cubs survived since 2017
- Early sexual maturity (females)
- Expected dispersal of males from prides and cohort formation

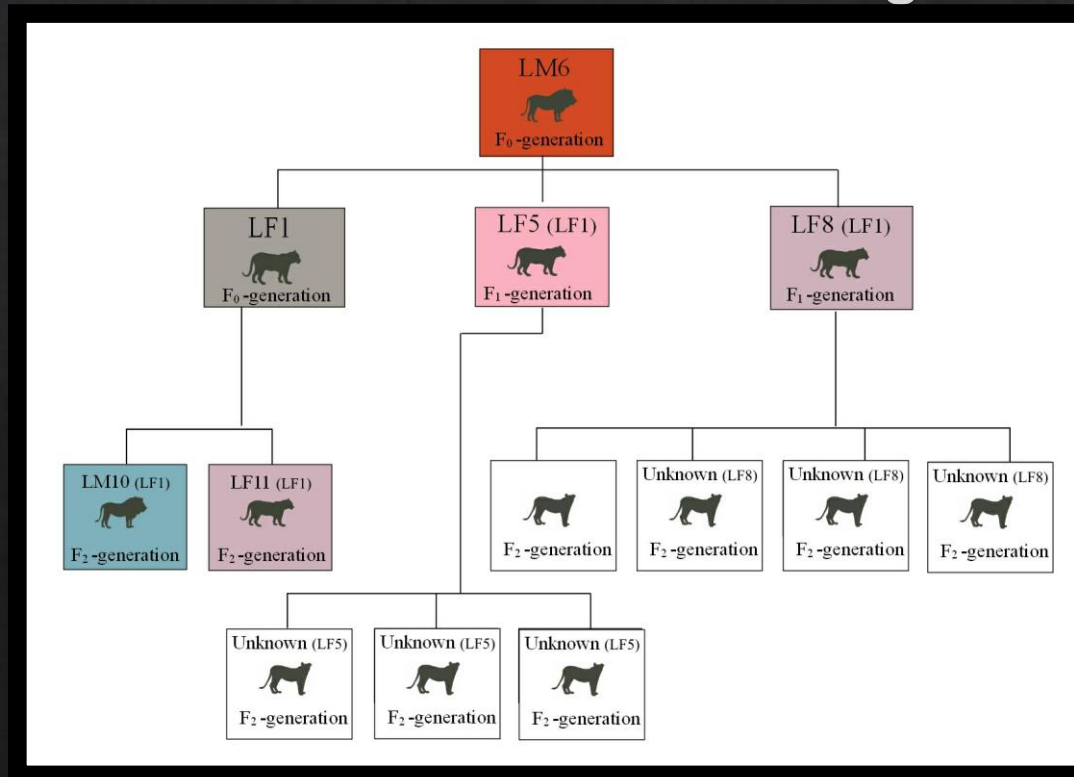


Back to the hypotheses

4. The ability to teach offspring to hunt effectively, interact socially, reproduce, and secure a healthy and viable F2-generation, characteristic of wild managed lions

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Back to the hypotheses

5. Be regarded as suitable potential founders for reintroduction programmes where wild populations have disappeared or need to be augmented

What is a successful reintroduction?

- Successful breeding by F1-generation of wild-born individuals ✓
- Population growth exceeding adult death rate within three years of breeding ✓
- A self-sustaining wild population exceeding 500 individuals **NOT POSSIBLE**
- A self-sustained wild population
 - Definition of a “wild population” ?

RECOMMENDATIONS FOR FUTURE REINTRODUCTIONS OR TO AUGMENT EXISTING POPULATIONS

- ◊ Suitable habitat
- ◊ Protection from persecution
- ◊ Safety of humans in close proximity of wildlife
- ◊ Demographics of any existing population in the area
- ◊ Founder population source and reproductive fitness
- ◊ Captive breeding cannot be a substitute for protection of natural habitat
- ◊ Financial viability
- ◊ Continuous scientific research

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PROFESSOR H.O. DE WAAL

“THE PRIVATE WILDLIFE RESERVE”