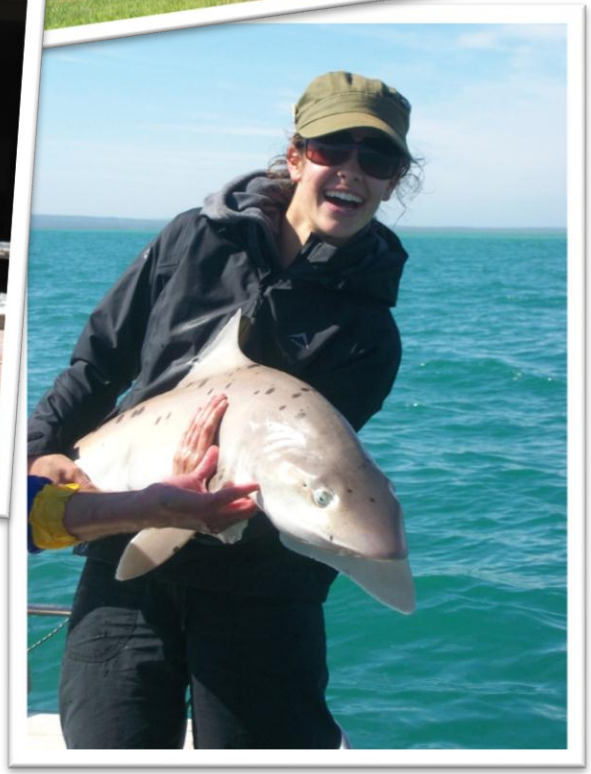
Producing game meat to meet international hygiene and food safety requirements in the bush

Louw Hoffman

16-19 June 2013
AMSA

UNIVERSITEIT STELLENBOSCH UNIVERSITY

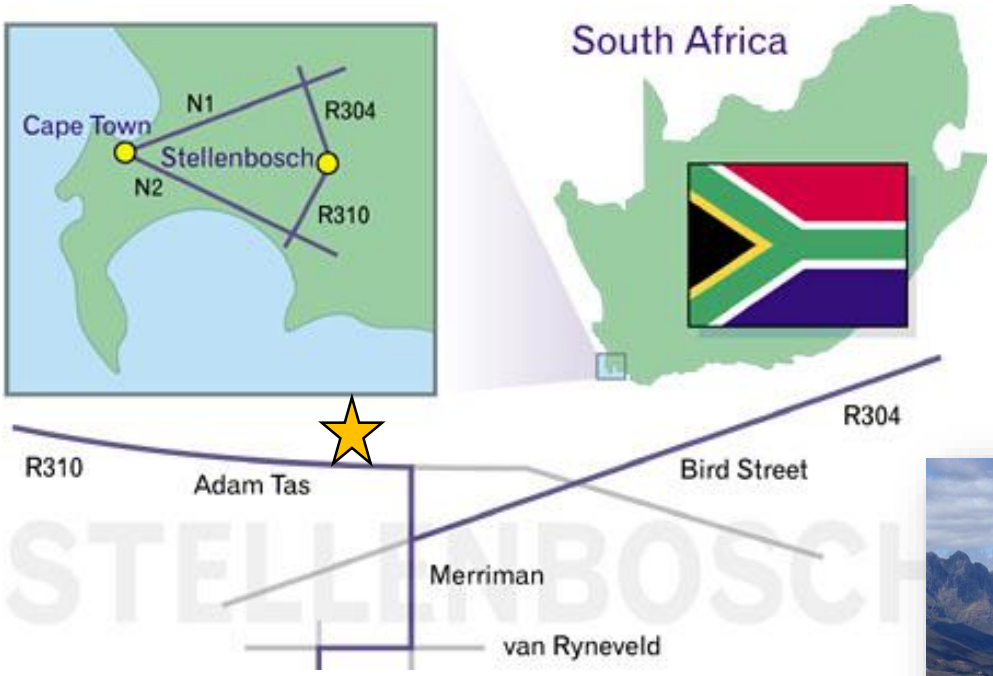
My clients

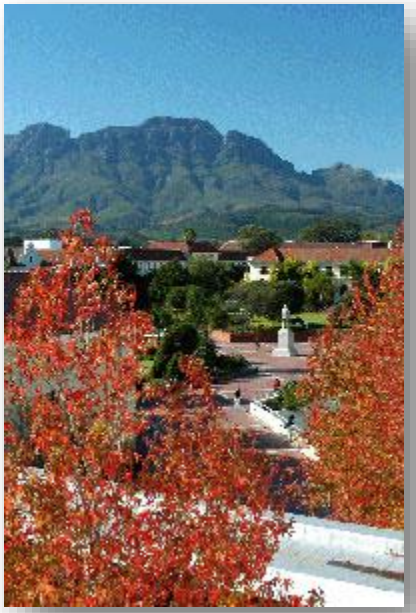


BRAKKEKUIL

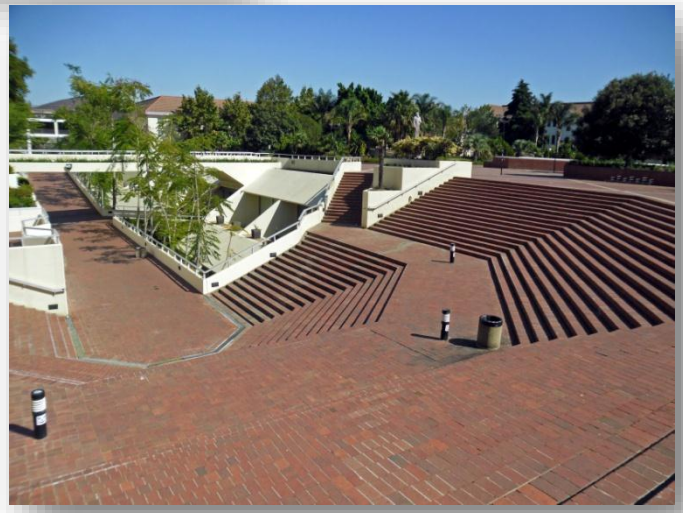
Friends visit

Stellenbosch University





Beauty surrounds me



Land of wine, sport(s), and…

WORLD-CLASS TRAINING OF PROFESSIONALS

A bit of history

- One of the oldest established departments of Animal Sciences in South Africa
  - 90th anniversary in 2011

∴ 92 years old

OUR VISION

Training of Animal Scientists of excellence in order to fulfill the research, extension and development needs of South Africa to improve the quality of life of all its inhabitants.

Veekundige Wetenskappe
Animal Sciences

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Acknowledgments

- AMSA International Lectureship Award
- All my post graduate students who have helped me in the past, I say to you all “*Carpe Diem*”

Outline

- Status of game meat industry today
  - South Africa & Namibia
- Formal supply chain
  - Process
- Informal supply chain
- Shortcomings
- The future…

Status of game farming

- **South Africa**
  - Has expanded but now more stable
  - Focus on high priced species
    - Buffalo, sable, colour variants
  - Exports to the EU

- **Namibia**
  - Stable
  - Very positive attitude
  - Exports into the EU (mainly springbok)
  - Exports into South Africa & SADC

Status of game farming industry today

	ha	%
Government protected areas	7 500 000	6.1
Private wildlife ranches	20 500 000	16.8
Total under “industry conservation management”	28 000 000	22.9
Total agricultural land	100 600 000	82.2
Total area of South Africa	122 340 100	100.0

Number	9 600+
Exempted	6 000
Mixed use	3 000

Limpopo	50,0%
Northern Cape	19,5%
Eastern Cape	12,3%

Wildlife Ranches	100 000+
Reward systems vs. Agri in general	3 to 4 times more
Generally 3 times more staff employed on Wildlife Ranches than livestock farmers.	

Namibia: Numbers of harvestable species

Where is South Africa's data?

Areas					sbok	Springbok
Total wildlife					464	749 090
Total south of veteri cordon fence					264	726 090
Freehold					3 764	684 353
Communal	0 0%	2 800 4.00%	2 600 0.70%	5 500 1.40%	42 350 5.80%	
Total north of veterinary cordon fence	- 0%	2 700 3.70%	340 0%	10 200 2.50%	23 000 3.10%	

Consumers expectations of game meat

- Most probably a tourist
  - High level of education
  - Successful business man
  - Willing to try new things
  - “Africa experience”
- Perception of Game meat
  - Harvested in an ethically manner
  - Harvested sustainably & eco-friendly
  - Perception of a low carbon footprint
- But expects:
  - Harvested and processed – first world technology
  - Meat safe
  - Wholesome
  - Contains no residues
  - Nutritious

Formal supply chain

- Both South Africa & Namibia well defined
- Fixed regulations
  - Game farms registered
  - Harvesting teams registered
  - SOP
- Designated authority (functional)
- Species suitable for harvesting

Legislation …

Extensive regulations

- Export of meat, including meat safety
- Packaging regulations
- Hygiene inspection regulations
- Harvesting methods, etc
- Summed up: South African Standard for the Export of Game Meat (National Department of Agriculture, 2001)

Process of harvesting

- Game species requirements
- Terrain
- Harvesting procedures …
  - Field abattoir
  - Formal meat breaking plant
- Final product

Harvesting of game

- Humanity
- Economy
- Efficiency
- Low wounding percentages
- Low disturbance & scattering
- Form large herds
- Terrain

- Selectivity of correct ages & sexes
- Minimal damage to meat
- Ability to bleed carcasses
- No association with humans

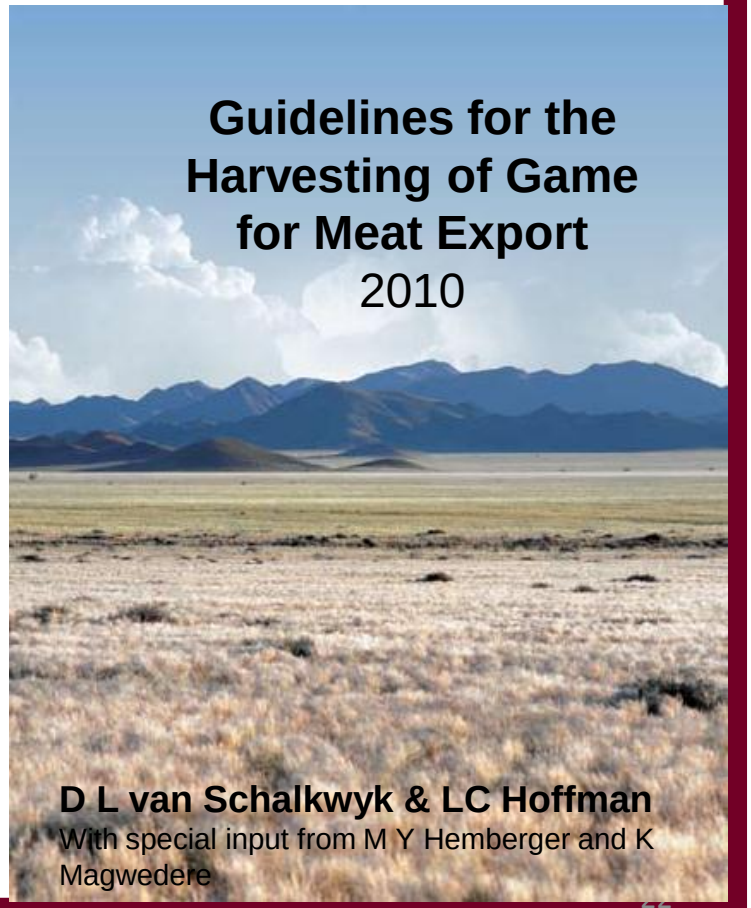
Harvesting of game

Other Requirements

- Numbers – population dynamics
- Reproductive efficiency
- Habitat
- Suitability to night cropping
- Kudu / springbok / impala
- Yield
  - Consistent
  - Quality

Commercial harvesting

- 3 major game meat exporters in South Africa
  - Also export ostrich
- 3 major game meat
- exporters in Namibia
- Very well established export
- procedures
  - Farms registered
  - Culling teams registered
  - HACCP
- Price (dressed carcass):
  - U$2.3/kg Springbok
  - U$2.9/kg other



Consumer expects ethically acceptable harvesting procedures

Terrain determines harvesting procedure

- Open veld
  - Night
- Mountain
  - Day
  - Helicopter
- Bush
  - Night
  - Boma

Karoo / grassveld

- Day shooting from a vehicle?
  - Distance
  - Firing rate?
  - Meat quality
- Helicopter (day)?
  - Expensive
  - Meat quality
- Night shooting?
  - Efficient
  - Meat quality maintained
  - Veld depot required
    - Lights
    - Warm water
- Some work being published on day and night cropping

How does it work?

- Game harvesting team
  - An approved vehicle, methods, etc.

Game depot

- Approved specifications

Game depot

- Approved specifications

Game depot

- Health inspection

Game depot

Carcasses sealed in cold truck

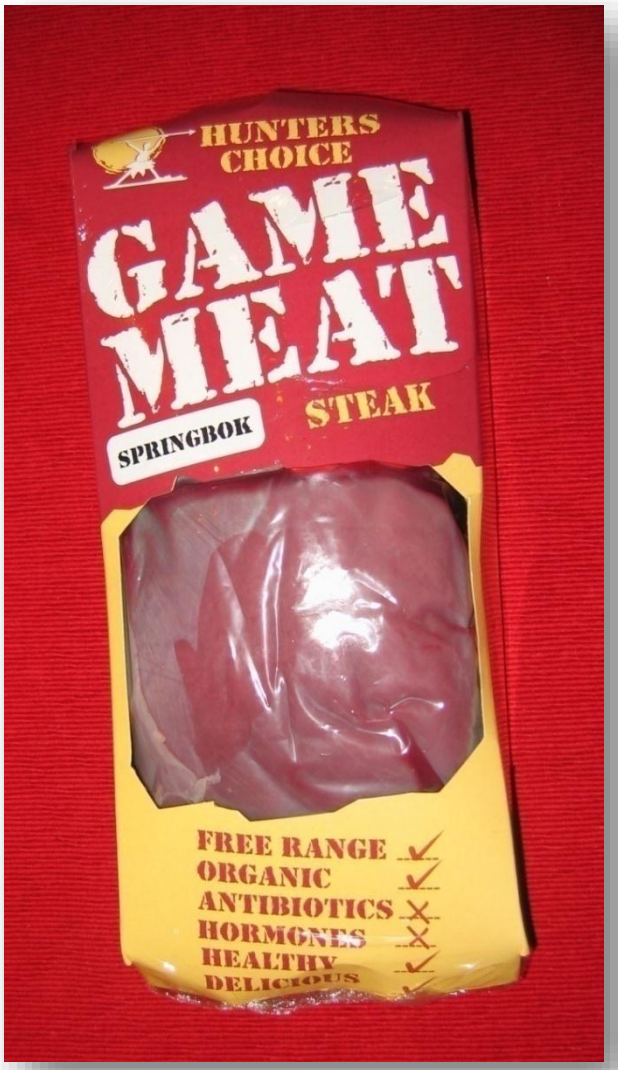
Moving to breaking plant

- Transported to the deboning facility
- Normal legislation applicable

Game processing

Marketing of game

- Exported
- Up market
- Healthy



Cropping of game

Mountainous terrain

- Difficult to access
- Helicopter
  - Expensive
  - Meat quality

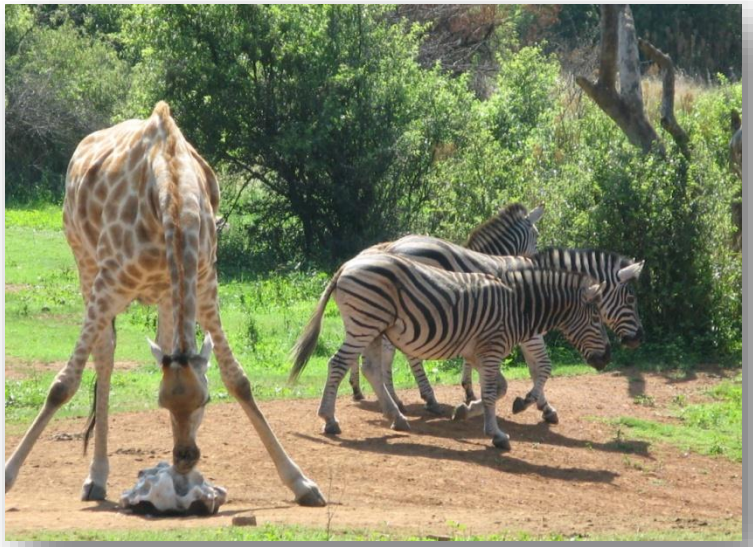
Damage to carcasses

Bushveld

- Larger species
  - From vehicle if terrain allows
  - Number per time unit important

Bushveld

- Drive at night with spotlight
- Game animal blinded
  - Shot
- Bush too dense
  - Only animals along path / road
  - Slow rate of off-take
- Boma



Bushveld boma

(information supplied by Dr T Bergh)

- How does it work?
  - <07h00: Helicopter chases game into the Boma: 10-30 min
  - Game kept
    - Overnight
    - 30 min
    - Boma full: start culling immediately

Bushveld

- How does it work?
  - Groups of ± 10 animals into death acre (10x5 m)
  - .22 with silencer shot from above
  - Firing: 60-90 secs
  - Animals removed – hooked onto truck
  - Truck moves 30 m and then animals exsanguinated
  - Process completed within 10 min

Bushveld

- Carcasses transported to veld depot

Bushveld

- Carcasses are degutted and inspected

Bushveld

- Field depot fully compliant with regulations

Bushveld

- Carcasses loaded into cool trucks

Informal Supply chain

- Hunter – age old tradition

Informal Supply chain

- Hunter
  - Local + 1 000 000 animal per season
  - International – trophy hunter

Informal Supply chain

- Problems
  - Bullet placement
  - No health inspection
  - No inspection of facilities
  - Research being conducted

Informal Supply chain

- Products
  - Mainly own consumption
  - Traditional products
    - Biltong

Shortcomings

- Insufficient data on animal numbers
- Distances from processing plants
- Diseases
- Image –
  - Organic but
  - Farming activities

Common sight....

Supplement feeds fed to free roaming wild and semi-extensive farmed game

Data from Bekker

Type of supplement feed	Feeds fed to free roaming wild game (n=110)		Feeds fed to semi-extensive farmed game (n=44)	
	Farm with game animals only	Farm with game and domestic animals	Farm with game animals only	Farm with game and domestic animals
Licks (Mineral blocks)	70 (63.6%)	19 (17.2%)	22 (50.0%)	8 (18.1%)
	c^2 - 0.000, df 1, p<0.05		c^2 - 0.050, df 1, p=0.05	
Natural feeds e.g. Lucerne / grass	55 (50.0%)	23 (20.9%)	23 (52.2%)	12 (27.2%)
	c^2 - 0.614, df 1, p>0.05		c^2 - 0.702, df 1, p>0.05	
Compound manufactured / commercial feed	32 (29.0%)	11 (10.0%)	16 (36.3%)	6 (13.6%)
	c^2 - 0.333, df 1, p>0.05		c^2 - 0.210, df 1, p>0.05	
Own mix feeds	12 (10.9%)	8 (7.2%)	10 (22.7%)	3 (6.8%)
	c^2 - 0.347, df 1, p>0.05		Fishers exact test = 0.314, p>0.05	

The future …

- Potential markets
  - Expanding local consumption
- Developing markets in Africa and Far East
- Value adding
- Threats
  - Bush meat
  - NGO’s

Source: DeGeorges & Reilly, 2009

So we have fun!
Any questions?

DANKIE / THANK YOU / ENKOSI KAHKULU

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Final Sessions

Hot Topics Session– Ballroom A

Global Meat Market - Auditorium