The impact of predation on a sheep enterprise in the Free State region

- Andries Strauss[1],
- Prof. H.O. de Waal[2] & Dr. N.L. Avenant[3]

- [1] Agricultural Research Institute, Private Bag X01, Glen 9301, South Africa, andries@glen.agric.za
- [2] Department of Animal, Wildlife and Grassland Sciences, University of the Free State, Bloemfontein, 9300, South Africa.
- [3] Department of Mammalogy, National Museum, POBox 266, Bloemfontein, 9300, South Africa.

African Large Predator Research Unit ALPRU

agriculture & rural development
Department of Agriculture and Rural Development FREE STATE PROVINCE

Introduction

Canis mesomelas | *Caracal caracal* | *Canis familiaris*

Most livestock Losses in SA

(Avenant *et al*., 2006; De Waal *et al*., 2006).

Glen Agricultural Institute (Glen AI)

Private sheep farms,SA

Introduction

Free State Wool Sheep Project

Started in 1998

A total of 280 Merino Ewes

Allocated to four (4) system treatments

Treatment SL-V(C)	Treatment SL-V&S	Treatment SL-R&V	Treatment AL-O&V
Spring **L**ambing season on **V**eld with a salt (NaCl) lick only (**c**ontrol)	**S**pring **L**ambing season on **V**eld with **S**upplementary feeding	**S**pring **L**ambing season on irrigated **R**ye-grass (*Lolium multiflorum* and *L. perenne*) and **V**eld	**A**utumn **L**ambing season on **O**ats (*Avena sativa*) pasture in winter and **V**eld in summer and spring

Aim of FS Wool Sheep project

1998

To

Develop

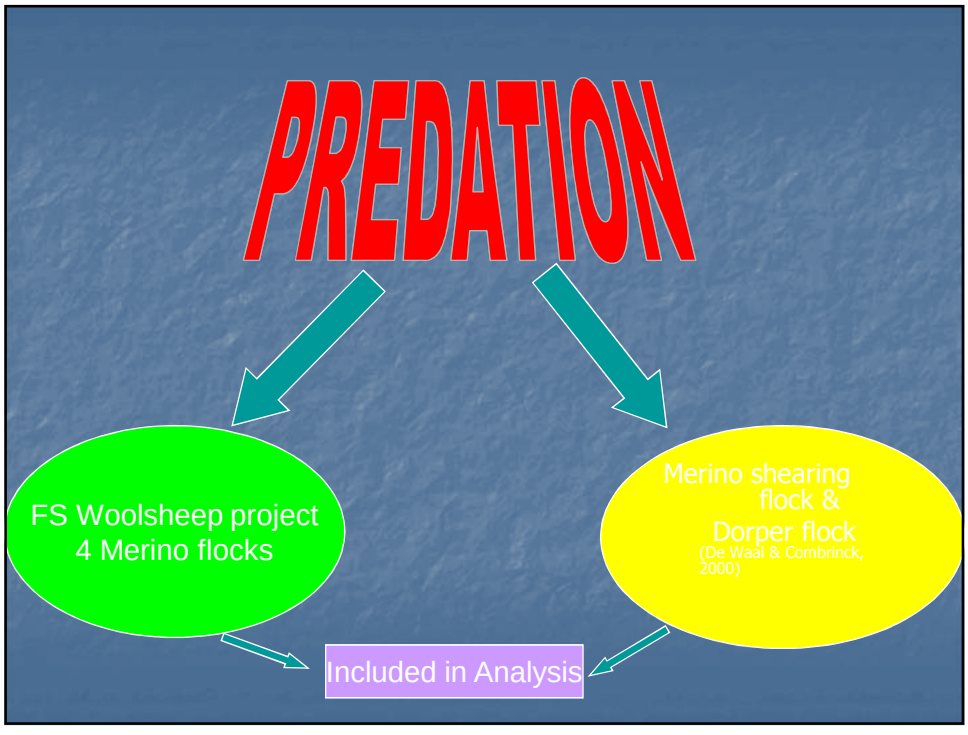
profitable and **sustainable**

wool farming systems

on the resource (veld & pastures) combination

of Glen AI

PROBLEM


PREDATION
FS Woolsheep project
4 Merino flocks
Merino shearing flock &
Dorper flock
(De Waal & Combrinck, 2000)
Included in Analysis

New study developed:

Aim:

To determine the impact of

Predation →
- Reproduction
- Production
- Economy

Of the Merino and Dorper flocks
over a 9 year period
from 1999 – 2007
at Glen AI

Test population

Started in 1998 with 1130 sheep

- Four(4) treatment flocks of FS Wool Sheep project
- Merino shearing flock
- Dorper flock

→ 552 Sheep in 2007

Research process

Comparison between **four** categories of losses:

1. Predation
2. Diseases
3. Metabolic disorders / accidents
4. Theft

Calculations included:

1. Direct financial costs
2. Veterinary and shearing costs
3. Lick and labour
4. Pastures

Data Collection

- Analysis of small stock death certificates

MORTALITY CERTIFICATE: FARM ANIMALS

DATE : 18/09/2008

ANIMAL NUMBER : No tag

ANIMAL AGE : Ewe over 1 year (Merino) Shearing flock

CAMP NUMBER : S1B
LOCATION IN CAMP : (S28 56.121 E 26 20.881)
(Provide sketch)
REASON FOR DEATH: Caught by Jackals

OFFICIAL RESPONSIBLE :
NAME: D.Kgomo
(Animal Science official reporting the death)
SIGNATURE: _____

RANK : Senior Foreman

APPROVAL TO DISPOSE OF:
NAME: Shane van Rooi
(Animal Scientist/Technician)
SIGNATURE: _____

RANK : A.D.T.

DATE : 2008/09/18

OFFICIAL VERIFIED : _____
(Provisioning) :

RANK : _____

DATE : _____

Sketch

Annual post-weaning losses and mortalities (Merino flocks & Dorper flock) over a period of nine years at the Glen AI

	Five Merino flocks and the Dorper flock								
	Predation		Disease		Metabolic disorder & Accident		Theft		Total
Year	n	%	n	%	n	%	n	%	n
1999	76	55.1	31	22.5	11	8.0	20	14.5	138
2000	154	75.5	6	2.9	31	15.2	13	6.4	204
2001	208	93.3	1	0.5	9	4.0	5	2.2	223
2002	254	92.7	1	0.4	11	4.0	8	2.9	274
2003	174	78.7	3	1.4	39	17.7	5	2.3	221
2004	166	65.1	21	8.2	48	18.8	20	7.8	255
2005	155	73.1	6	2.8	29	13.7	22	10.4	212
2006	93	73.8	4	3.2	25	19.8	4	3.2	126
2007	142	85.5	3	1.8	17	10.2	4	2.4	166
Total	1422	78.2	76	4.2	220	12.1	101	5.6	1819

Annual post-weaning losses as a percentage of all sheep (Merino and Dorper) flocks over a period of nine years at the Glen AI

	Five Merino flocks and the Dorper flock Losses					
	Flock size	Predation	Disease	Metabolic disorder & Accident	Theft	Total
Year	n	%	%	%	%	%
1999	1130	6.7	2.7	1.0	1.8	12.2
2000	1165	13.2	0.5	2.7	1.1	17.5
2001	1062	19.6	0.1	0.9	0.5	21.1
2002	963	26.3	0.1	1.1	0.8	28.3
2003	854	20.4	0.4	4.6	0.6	26.0
2004	823	20.2	2.6	5.8	2.4	31.0
2005	789	19.7	0.8	3.7	2.8	26.9
2006	586	15.9	0.7	4.3	0.7	21.5
2007	552	25.8	0.5	3.1	0.7	30.1
Average		18.6	0.9	3.0	1.3	23.8

Direct financial implications of losses and mortalities (Merino & Dorper flocks) over a period of five years at the Glen AI

	Rand				
Year	Predation	Disease	Metabolic disorder & Accident	Theft	Total
2003	59 900	1 050	22 700	1 450	85 100
2004	108 100	7 700	33 300	11 800	160 900
2005	165 400	5 000	41 400	29 000	240 800
2006	98 700	2 700	25 400	2 600	129 400
2007	147 950	1 700	31 850	2 200	183 700
Total	580 050	18 150	154 650	47 050	799 900

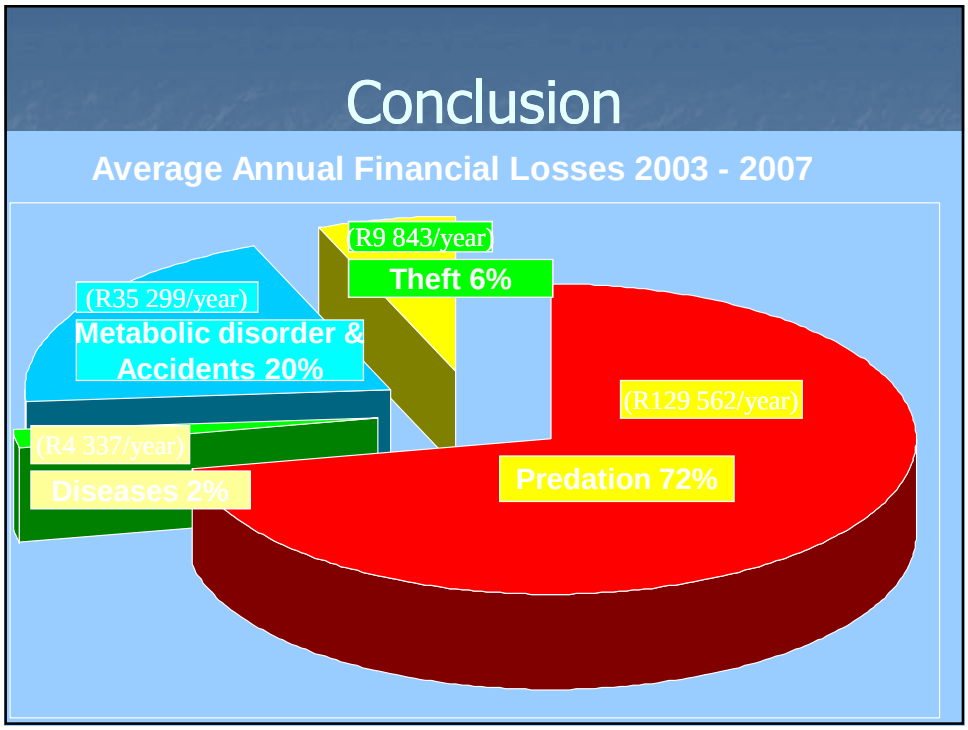
Total financial expenditure due to **fruitless expenses** (Merino & Dorper flocks) at the Glen AI

Year	Rand				
	Predation	Disease	Metabolic disorder & Accident	Theft	Total
2003	12 929	233	3 927	242	17 331
2004	15 292	1 727	5 255	763	23 037
2005	14 568	468	3 056	900	18 992
2006	9 888	823	5 653	153	16 517
2007	15 087	285	3 948	108	19 428
Total	67 764	3 536	21 839	2 166	95 305

Annual financial losses for the Merino flocks and the Dorper flock at the Glen AI

Year	Rand				
	Predation	Disease	Metabolic disorder & Accident	Theft	Total
2003	72 829	1 283	26 627	1 692	102 431
2004	123 392	9 427	38 555	12 563	183 937
2005	179 968	5 468	44 456	29 900	259 792
2006	108 588	3 523	31 053	2 753	145 917
2007	163 037	1 985	35 798	2 308	203 128
Total	647 814	21 686	176 489	49 216	895 205

Conclusion



Total Merino and Dorper flock size

Due to Predation some of the ewes in the Merino flocks and Dorper flock at the Glen AI could not raise one lamb in a six year production cycle









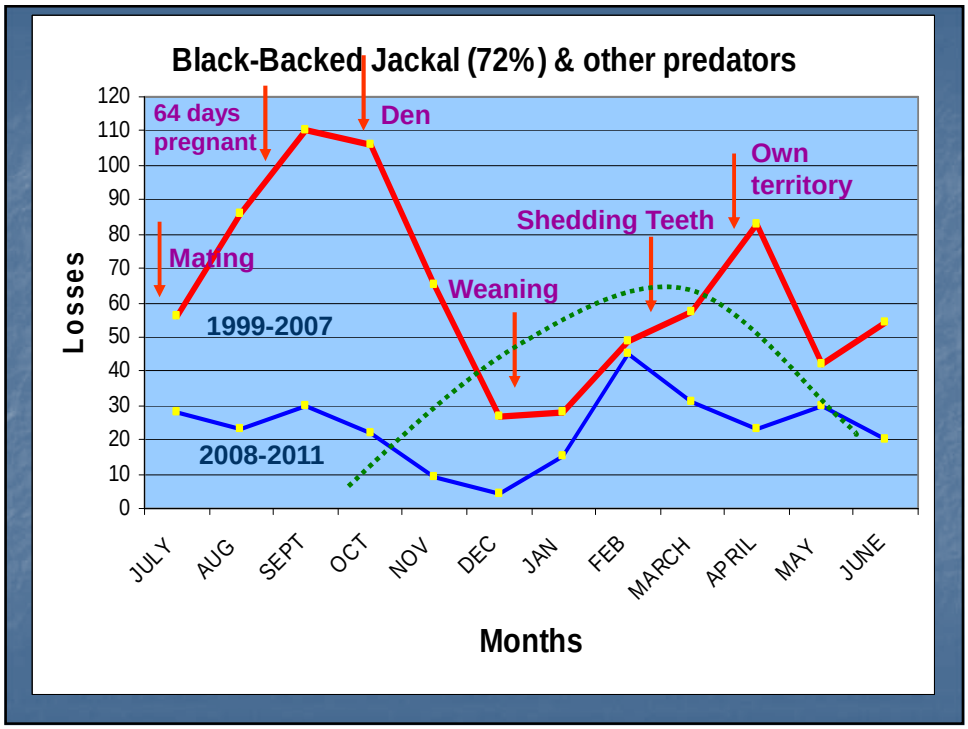
Aim of FS Wool Sheep project
1998
To
Develop

and

profitable sustainable

wool farming systems
on the resource (veld & pastures)
combination
of Glen AI

- The R647 814 lost due to predation is very high if considered that the data was collected on a relative small number of sheep in the Merino and Dorper flocks at the Glen AI.
- The genetic losses due to predation are estimated as considerably more than the direct financial losses.



References

- Avenant, N.L., De Waal, H.O. & Combrinck, W.J., 2006. The Canis-Caracal Programme: A holistic approach. *In*: Proceedings of a workshop on Holistic Management of Human-Wildlife Conflict in the Agricultural Sector of South-Africa. Ganzekraal Conference Centre, Western Cape, South Africa. pp. 23-25.
- De Waal, H.O. & Combrinck, W.J., 2000. The Dorper - its nutrition and a perspective of the grazing ruminant on veld. *Small Ruminant Research* 36, 103-117.