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The use of contraceptive techniques in managed wild African lion (*Panthera leo*) populations to mimic open system cub recruitment

Orla K. McEvoy[A,*], *Susan M. Miller*[B,P,*], *Warren Beets*[C], *Tarik Bodasing*[D], *Natalia Borrego*[E,F,G], *André Burger*[H], *Brian Courtenay*[I], *Sam Ferreira*[J], *Cathariné Hanekom*[K], *Markus Hofmeyr*[L], *Craig Packer*[F], *Dave Robertson*[M], *Ken Stratford*[N], *Rob Slotow*[E] *and Dan M. Parker*[A,O]

[A]Wildlife and Reserve Management Research Group, Department of Zoology and Entomology, Rhodes University, Grahamstown 6140, South Africa.

[B]FitzPatrick Institute of African Ornithology, DST-NRF Centre of Excellence, University of Cape Town, Rondebosch 7701, South Africa.

[C]Thanda Safari, Hluhluwe, KwaZulu-Natal 3960, South Africa.

[D]North Wales Wildlife Trust, Llys Garth, Garth Road, Bangor, Gwynedd LL57, United Kingdom.

[E]School of Life Sciences, University of KwaZulu-Natal, Pietermaritzburg 3209, South Africa.

[F]Department of Ecology, Evolution, and Behavior, University of Minnesota, St Paul, Minnesota 55455, USA.

[G]American University Cairo, School of Science and Engineering, AUC Avenue, New Cairo 11835, Egypt.

[H]Welgevonden Game Reserve, Vaalwater 0530, South Africa.

[I]Southern African Conservation Trust Wildlife and Communities (SACT), Umhlanga Rocks 4320, South Africa.

[J]South African National Parks, Scientific Services, Skukuza 1350, South Africa.

[K]Ezemvelo KwaZulu-Natal Wildlife, Cascades 3202, South Africa.

[L]Great Plains Conservation Foundation, Plot 526, Mophane Avenue, Maun, Botswana.

[M]African Parks, Nkhotakota Wildlife Reserve, Malawi.

[N]Ongava Research Centre, PO Box 640, Outjo 21005, Namibia.

[O]School of Biology and Environmental Sciences, Faculty of Agriculture and Natural Sciences, University of Mpumalanga, Nelspruit 1200, South Africa.

[P]Corresponding author. Email: dangerousfrizbee@gmail.com

*These authors contributed equally to this manuscript.

Appendix S1.

The following is the questionnaire distributed in this study. It was distributed as an excel spreadsheet, however it has been reformatted here as a PDF document.

Fertility-Control Programmes:

The Lion Management Forum (LiMF) is developing guidelines to assist with lion reproductive management. The goal of this survey is to accumulate knowledge on current fertility-control programmes in use across the country. The long term goal is to combine our collective knowledge to develop comprehensive guidelines for all managers to use. Participation in this process is completely voluntary. Please see separate sheets for each treatment type relative to your reserve: 1. Chemical-Deslorelin (this sheet), 2. Unilateral tube-tying (2nd sheet)

The information collected in this survey will only be accessible to LiMF members and will be used for LiMF planning and research purposes only. Any other use will only be approved with consent from individual participants.

Please fill in one column for each lioness on your reserve that has been treated - see example

Note that highlighted cells are automatically filled in by sheet and such cells have been formatted for relative data.

1. Chemical - Deslorelin implants	**Example**	Your data here - Lioness 1
Reserve	AENP	
Lioness ID	Aardlam	
Date of birth	Jan-02	
Age at first contraception	8.52	
How many litters prior to contraception?	?	
Date of last known litter (mmm-yy)	Feb-09	
Size of last known litter	?	
Date of implant (mmm-yy)	Jul-10	
Effective period	2.07	
How many times has this female been contracepted?	2	
Date of first implantation	Jul-10	
Date of follow up implantation (if applicable)	Nov-12	
Date of follow up implantation (if applicable)	N/A	
Date of first mating post-contraception (if applicable)	N/A	
Date of first litter after contraception (if applicable)	Aug-12	
How many litters post-contraception? (if applicable)	0	
Size of first litter post-contraception (if applicable)	N/A	
What was cub survival post-contraception? i.e. the % that survived to 1 year (if applicable)	N/A	
Any behavioural changes (e.g. lack of receptiveness to males) observed post-contraception?	None	

Any physiological changes (e.g. weight gain) observed post-contraception?	Weight gain
What was the average cost per treatment? (ZAR)	
Any additional comments	First Lioness to be contracepted at Addo

2. Unilateral Tube-tying

Please fill in one column for each lioness on your reserve that has been treated.

	Example	Your data here - Lioness 1
Reserve	AENP	
Lioness ID	Carem	
Date of Birth (mmm-yy)	Aug-06	
How many times was this female contracepted prior to surgery?	0	
Age at time of surgery	6.5	0
How many litters prior to surgery?	1	
Date of last known litter	Mar-10	
Size of last known litter	3	
Date of surgery	Feb-13	
How many uterine horns removed?	2	
Date of first mating post-surgery (if applicable)	?	
How many litters post-surgery? (if applicable)	none	
Date of first litter after surgery (if applicable)	N/A	
Size of first litter post-surgery (if applicable)	N/A	
Size of subsequent litters post-surgery (if applicable)	N/A	
What was cub survival post-surgery? i.e. the % that survived to 1 year (if applicable)	N/A	
Any behavioural changes (e.g. lack of receptiveness to males) observed post-surgery?	increased time spent further from pride	
Any physiological changes (e.g. weight gain) observed post-surgery?	none	
Average cost of treatment? (ZAR)		
Any additional comments		

Table S1. Duration of efficacy of deslorelin with increasing number of implants.

Number of consecutive deslorelin implants	All lionesses			Lionesses with litter post-treatment			Lionesses without litter post-treatment (ongoing)			Lionesses deceased post-treatment			Lionesses lost to follow-up post-treatment		
	n	mean	range	n	mean	range	n	mean	range	n	mean	range	n	mean	range
1	50	3.92 ± 1.77	1.42 – 9.34	21	3.71 ± 1.43	1.67 – 7.17	19	4.18 ± 2.05	2.25 – 9.34	10	3.88 ± 1.98	1.42 – 7.67			
2	11	6.19 ± 2.32	2.42 – 10.09	3	5.59 ± 0.67	4.92 – 6.26	4	7.47 ± 3.10	3.42 – 10 .09	4	5.38 ± 2.16	2.42 – 7.26			
3	7	6.58 ± 1.61	4.92 – 9.34	1			1	9.34		2	4.92 ± 0.01	4.92 – 4.93	3	6.95 ± 0.90	5.92 – 7.59
4	1[a]	7.59											1	7.59	
5	1[b]	7.34					1	7.34							

n: number of lionesses; mean: mean time in years between treatment and either a litter or the last available data with standard deviation; range: range of time in years between treatment and either a litter or the last available data.

[a]Treated at 6.34, 7.60, 8.91 and 10.93 years. Translocated 3 years after her last treatment and lost to follow-up.

[b]Treated at 1.75, 2.84, 4.00, 5.25 and 7.17 years. Still alive at age 14.51 years with no cubs.