

Mpumalanga Provincial Legislature

Building 1 Government Blvd Government Complex Riverside 1201 Mbombela South Africa

22 February 2021

Dear Ms Charlotte Chiloane,

Public Hearing on the Draft Norms and Standards (2020) for Trophy Hunting of Leopards in South Africa

Please find below (at Appendix 1) written submission (via e-mail: <u>CharlotteC@mpuleg.gov.za</u>) as invited via Mpumalanga Provincial Legislature's facebook post, dated 4 February 2021 (with the submission deadline <u>reportedly extended until 24 February 2021</u>) to the proposed "*Draft norms and standards for the trophy hunting of leopard in South Africa*" - (the "*draft norms and standards*"), as given in Government Notice, Department of Environmental Affairs (DEA), dated 2020, signed by Barbara Dallas Creecy, Minister of Forestry, Fisheries and the Environment.

It is duly noted, that these draft norms and standards are an evolution of the "*Draft norms and standards for the management and monitoring of the hunting of leopard in South Africa for trophy hunting purposes*" given in Government Notice, Gazette, Vol. 620, No. 40601, Notice 75, Department of Environmental Affairs (DEA), dated 2017.

Yours sincerely,

Stephen Alan Wiggins

Founder of International Wildlife Bond (IWB)



Appendix 1 – "Submission of comments" to the proposed "Draft norms and standards" as notified in Government Notice, Department of Environmental Affairs (DEA), dated 2020, signed by Barbara Dallas Creecy, Minister of Forestry, Fisheries and the Environment.

1 Introduction

In January 2016 the Republic of South Africa, Department of Environmental Affairs (DEA) set a zero-leopard hunting quota across all provinces (then extended the zero quota through 2017). The DEA accepted the negative non-detrimental finding (NDF) (meaning it found hunting to have a detrimental effect) to hunt leopards from 2016.

But since 2018, a <u>leopard hunting quota</u> has been re-established within South Africa, though in reality the <u>leopard trophy hunting persecution (Friedmann et al. 2008)</u> never stops even when there is a moratorium on trophy hunting, with many leopards designated as 'problem animals' so a permit could be obtained (and sold on) for trophy hunting purposes.

<u>Williams, S.T. et al. 2017</u> study "<u>Population dynamics and threats to an apex predator outside</u> <u>protected areas: implications for carnivore management</u>":

".....calls into question the sustainability of additive off take through legal mechanisms of leopard removals such as trophy hunting and damage-causing animal destruction permits."

Furthermore, the report continues "trophy hunting of large carnivores can be associated with elevated levels of human–wildlife conflict and increased mortality from persecution." This persecution is "often in retaliation to perceived [...leopards cause less livestock damage than farmers perceive (Grey et al., 2017)....] livestock predation or for bushmeat, and this may be driving steep declines in the leopard population"

"It is estimated that as many as 1500 – 2500 leopards are illegally harvested annually to meet the demand for skins by the Nazareth Baptist 'Shembe' Church; The illegal killing of putative DCAs [Damage Causing Animals, as self-determined by livestock/game farmers in their illegal 'shoot, shovel and shut up' approach to



leopards] is typically indiscriminate, the scale of which is currently unknown since illegal off-take of leopards is poorly monitored, if at all" – <u>"Leopard Quota Review:</u> <u>South Africa" (AC30 Doc 15. Annex 3)</u>, Para 3.e. "Illegal Off-take," September 2018

There is clearly bias towards commercial endeavours and the pro-hunting fraternity when it comes to fixed, and/or adaptive leopard hunting quota setting, in the past using old, extrapolated data (reference Appendix 1), or unsubstantiated hunting quotas:

- South Africa has an indicated 8% leopard population decline per year <u>Panthera 2018</u> and there is no evidence that a trophy hunting quota does anything to reverse that decline;
- Extrapolated data South Africa's 2017 proposals for reintroducing leopard hunting quotas were based upon '<u>leopard densities' extrapolated from data first established</u> in 1972 (that has no realistic correlation with any current scientific certainty);
- Assessments of the influence of hunting on leopard populations have produced uncertain and often conflicting results (Stein et al., 2016):

"Poorly managed trophy hunting adds to pressure on local Leopard populations. Balme et al. (2009) showed that trophy hunting was a key driver of Leopard population decline prior to intervention in northern KwaZulu-Natal. Similarly, Pitman et al. (2015) demonstrated that Leopards are over-harvested across much of their range in Limpopo Province, South Africa. The concern about unsustainable trophy hunting has lately increased, e.g. South Africa has banned trophy hunting for 2016.....trophy hunting can be detrimental to the population, especially when permits are focused in one geographic area and targeted individuals are in their prime, territorial, reproductively active (Balme et al. 2010). Leopard trophy hunting has been reviewed or closed in Namibia, Botswana, and Zambia within the last five years" - (Stein et al. 2016)

Safari Club International (SCI), have responded to the challenges given in the "<u>Roadmap for</u> <u>the Conservation of the Leopard in Africa</u>" (IUCN, 2019) and are reportedly seeking to now help establish reliable leopard population numbers across the leopard's range throughout southern and eastern Africa (despite years of happily encouraging the killing of leopards in the acknowledged absence of the credible science now sought). SCI's motivation is not altruistic, but to perpetuate the attrition – however, trophy hunting's contribution to leopard conservation remains opaque with, or without reliable leopard populations estimates:



"......research has shown that hunting almost always constitutes additive rather than compensatory mortality (Robinson et al. 2014, Creel et al. 2015, Wolfe et al. 2015). There is also little evidence that trophy hunting fosters increased tolerance of leopards (Balme et al. 2009, Pitman et al. 2015) or other large carnivores (Peebles et al. 2013, Chapron & Treves 2016). Hence, offtake by trophy hunting likely compounds, rather than relaxes, pressures on local leopard populations" - <u>AC30 Inf 23, 2018</u>



2 Leopard "Off-take" Quota

At para. 2. (2) of the draft norms and standards, it is stated that "a leopard hunting quota refers to an off-take quota and does not refer to the export quota applicable in terms of CITES for the export of a hunting client's leopard hunting trophy."

Note: South Africa's quota of 150 leopards was set in 2005 from the Population and Habitat Viability Analysis (PHVA) and has never been reviewed. But this quota clearly lacks any substantive basis in the absence of credible leopard populations data within South Africa.

Referencing para 3. of the draft norms and standards, proposes that the "off-take" quota is to be set by the "Scientific Authority" based upon established Leopard Hunting Zones ("LHZ").

However, there has been no publicly available data given by the South African National Biodiversity Institute (SANBI) (or any other "Scientific Authority") that categorically establishes credible, current leopard population data for South Africa and/or the distribution of targeted male leopards greater than, or equal to (" \geq ") 7 years old for hunting trophies within South Africa and/or any demarcated LHZ:

".....quotas should be managed adaptively based on robust estimates of population trend" - <u>AC30 Inf 23, 2018, "A SCIENTIFIC OVERVIEW OF THE CONSERVATION STATUS</u> <u>OF AFRICAN LEOPARDS (PANTHERA PARDUS PARDUS) WITH A SPECIFIC FOCUS ON</u> <u>TROPHY HUNTING"</u>

Robust estimates of population trends are clearly absent, at national and proposed LHZ level (or at least, such data has not been made public for scrutiny).

How are the LHZs to be demarcated? Para 3. "Quota and Permit Allocation for the Hunting of Leopard," (3) states that the "issuing authority" may allocate "a quota for the hunting of one leopard only per LHZ that qualifies for the hunting of leopard, per hunting season." Depending on the method used to demarcate any given LHZ, even this quota may be excessive – ie. if there are numerous LHZs targeting the same leopard sub-population, or indeed in the absence of accurate, current leopard population data, even targeting 'one' male leopard \geq 7 years old could remove vital leopard reproductivity potential. Of course, some pro-hunting advocates will want to pursue all male leopards \geq 7 years old as legitimate trophies under the assumption they are 'surplus to requirements' – this is a dangerous assumption, as male leopard redundancy at \geq 7 years old is only based upon modelled simulations (Balme et al. (2012)), where actual leopard population data remains absent (reference para. 3 "The Leopard Population in Africa and South Africa"):



<u>Guy Balme</u> also reportedly said at the time in 2016 "We just don't know how leopards are faring in South Africa. They're secretive, mainly nocturnal, solitary and range over huge areas. Counting them requires intensive research using expensive technology such as camera traps, which can only be deployed over small areas, far smaller than the areas in which hunting quotas are determined"

2.1 Male Leopards ≥7 years old

It is implied within the draft norms and standards (para 4. "*Management of Leopard Hunts*," (4)) that only male leopards over 7 years of age are to be targeted for hunting trophies, based upon (<u>Balme et al. (2012)</u>):

"....excessive trophy hunting can artificially elevate male turnover and increase infanticide, potentially to unsustainable levels. Simulation models show that the likelihood of safe harvests can be improved by restricting offtakes to males old enough to have reared their first cohort of offspring to independence; in the case of African leopards, males were \geq 7 years old."

However, there is no credible, current data on leopard populations across Africa (and South Africa), and/or the distribution and abundance (or otherwise) of male leopards \geq 7 years old.

There is also an assumption that killing some/all male leopards \geq 7 years will not have an impact on leopard behaviour, population health and therefore, conservation – does the removal of older males encourage younger male leopards not to disperse? A recent study (<u>Naude et al. 2020</u>) explored the long-term genetic costs of exploitation-driven changes in targeted leopard populations (poaching, retaliatory conflict killings of 'problem animals' and poorly regulated trophy hunting) in the behaviour of leopards. The study found long term detrimental impacts in exploited leopard populations through in-breeding:

"in the historically over-exploited population, many young males did not disperse. Instead, their newly established home ranges overlapped with those of their sisters, mothers and aunts. Here, territory "gaps", created by the killing of large males, allowed sons to escape competition and establish territories alongside their mothers.

The problem? Males in the exploited population stopped dispersing and, as a result, destabilised the out-breeding mechanism for this population. This increased the likelihood of young males fathering cubs with closely related females.

We found evidence of this with a father-daughter and two half-sibling mating events. Known breeding pairs in this population were also highly related, the equivalent of at least half-siblings. While the overall population was growing, it retained signatures of



inbreeding despite over 10 years of recovery" – "*Exploited leopards pay long-term inbreeding costs*," University of Cape Town, 11 May 2020

The "Draft norms and standards for the management and monitoring of the hunting of leopard in South Africa for trophy hunting purposes" given in Government Notice, Gazette, Vol. 620, No. 40601, Notice 75, Department of Environmental Affairs (DEA), dated 2017, proposed a "maximum sustainable harvest rate of 3.6%" of male leopards.

Does the SANIB (or any other "Scientific Authority") 'know' what the % of male leopards \geq 7 years old is per province and/or proposed LHZ? If so, why have <u>the figures not been released</u> in full with the 2020 draft norms and standards with the actual, current science and backing behind it? The only exception being an SANBI claim from a 2013 study in the Sabi Sand GR (Balme et al., 2013) had "a male leopards \geq 7 years old comprised 10-16% of the study population" – the cited report remains elusive for further examination:

What is the actual scientifically proven split within any South African province's leopard population where "60% of the population is mature, (30% males, 30% females) (Swanepeol et al (2014))" - how many of the "30%" of mature adult males are ≥ 7 years old? Does the SANBI just assume that "30%" of mature adult male leopards sub-set encompasses ≥ "3.6%" male leopards ≥ 7 years old in all provinces and/or LHZs?

It would seem that the adaptive "off-take" hunting permits are to be issued based upon the assumption that there is an abundance of male leopards \geq 7 years of age per LHZ. What happens if the availability of male leopards \geq 7 years of age does not exist in reality? The risk being, that under age leopards will be targeted instead (regardless of any potential 'penalties' for doing so, trophy hunted leopards will still be dead and the leopard gene pool will still be depleted regardless).



3 The Leopard Population in Africa and South Africa

Concerns were raised in 2009 over the sustainability of leopard trophy hunting in South Africa by <u>Balme et al. 2009</u>. According to scientists, high rates of trophy hunting have caused population declines in many sepecies, including African leopards (*Panthera pardus*) (<u>Packer et al. 2009</u>).

The <u>Panthera 2018</u> report to CITES readily acknowledged the lack of reliable leopard population data within South Africa and across the leopard's range:

"Although our knowledge on leopard distribution, and the extent of leopard range loss, has improved markedly (Jacobson et al. 2016, Stein et al. 2016), our understanding of leopard population trends (i.e., how numbers have changed over time) remains limited. Indeed, in their recent assessment of leopard status for the IUCN Red List, Stein et al. (2016) commented that longitudinal data was only available for a single leopard population (in KwaZulu-Natal, South Africa; Balme et al. 2009) from the ~75 countries considered extant leopard range. Accordingly, there is an urgent need to collect rigorous data on leopard population trends, and at scales that can meaningfully inform conservation policy (including CITES Non-Detriment Findings; NDFs). To address this need, Panthera, in collaboration with the South African National Biodiversity Institute and other partners, developed a national leopard monitoring programme to determine how leopard populations were faring in South Africa. From 2013 to 2017, 94 cameratrap surveys were undertaken at 31 sites across the country" - <u>Panthera 2018</u>

The 94 camera-trap surveys undertaken across 31 sites in South Africa (2013 - 2017) indicated an 8% leopard population decline per year:

"[South African] Sites comprised a combination of state and province-run protected areas, privately-owned wildlife conservancies and commercial game ranches, and community-run nature reserves. Leopard densities were estimated using spatial capture-recapture models (Royle et al. 2009) and ranged from 0–12 leopards/100 km2. Annual population growth (lambda) averaged across all sites with longitudinal data (n = 23), and weighted by baseline population size, was 0.92 ± 0.05 (or an 8% population decline per year; Mann et al. 2018). While this represents the status of leopards in only a single country, it is still cause for major concern. It is the only robust data currently available on leopard population trends, and there is no scientific evidence to suggest that leopard populations elsewhere, and specifically in the 11 other countries that permit trophy hunting, are faring any better" - <u>Panthera 2018</u>



The "<u>LEOPARDS (PANTHERA PARDUS) IN AFRICA (AC31 Doc. 29.1</u>)," review of the "Roadmap for the Conservation of the Leopard in Africa" (<u>IUCN - Version 1, Annex 4, September 2019</u>) concurred that leopard population data is scant at best:

"Only few reliable data on leopard population trends are available and no recent population estimate over its whole range exists (Stein et al. 2016)"

Concluding that "One aspect that I found missing though is a specific reference to sources of funding for assessing and monitoring populations of leopards in range states, the majority of which are cash-strapped. Perhaps it is implied in statements such as cooperation but funding is likely to be a challenge to implementation of the road map" - AC31 Doc. 29.1 - p. 3

The main challenges summarised in the "<u>Roadmap for the Conservation of the Leopard in</u> <u>Africa</u>" (IUCN, 2019) for implementing leopard conservation activities and management measures include a lack of:

- 1. Information on current leopard population size, status and trends across its African range;
- 2. Knowledge on the relative importance and impact of different direct and indirect threats on the leopard;
- 3. Awareness of the critical situation for the species and its importance in the ecosystem;
- 4. Capacity and resources (including financial means) on multiple levels, e.g. enforcement officers lack training to recognise protected species or parts of them; and
- 5. Law enforcement and implementation of protection measures.





Figure 1 - *Reported Leopard Trade 1975 – 2016 – "<u>Roadmap for the Conservation of the</u> <u>Leopard in Africa</u>," IUCN - Version 1, Annex 4, September 2019*

It is estimated that between 2004 and 2014, more than 10,000 leopard trophies have been exported from Africa – <u>CBTH 2019</u>, despite the species' population data being 'unreliable.'

This <u>IUCN report</u> also highlighted the imports and exports of leopard trophies and derivates for the period 1975 – 2016, with one of the threats identified to the species as poorly managed trophy hunting:

"Where trophy hunting is poorly managed, it can have negative impacts on the viability of the population through altered age/sex structures, social disruption, deleterious genetic effects (IUCN SSC 2012a). There were a number of concerns raised with regard to the impact of trophy hunting on leopard populations (e.g. Balme et al. 2010b, Pitman 2012, Braczkowski et al. 2015). Inadequate trophy hunting can reduce the genetic diversity by targeting always the fittest (e.g. the largest) individuals (Balme et al. 2010b, Braczkowski et al. 2015). Moreover, if not well managed, hunting can impact demographic patterns and the social organisation of leopard populations (Balme et al. 2010b, Pitman 2012, Kerth et al. 2013, Stein et al. 2016). Repeated removal of resident male leopards can lead to a high turnover of males and result in increased infanticide



(Balme et al. 2009, Packer et al. 2009, Balme 2010, Strampelli 2015)" - "<u>Roadmap for</u> <u>the Conservation of the Leopard in Africa</u>," IUCN - Version 1, Annex 4, September 2019

The trophy hunting threat is also identified by Jacobson et al. 2016:

"....unsustainable legal trophy hunting, is localized to those countries that allow leopard hunting, and where hunting regulations are not sufficient to ensure off-take is sustainable. However, it is possible, current levels of off-take are not set sustainably in any country that allows leopard hunting (Balme et al., 2010). Balme et al. (2010) argued that no country has comprehensive and detailed leopard population information combined with an understanding of the impact of hunting on leopards within a proper regulatory framework. Despite the popularity and importance of the leopard to the trophy hunting industry, there is scant research on the impacts of hunting (Balme et al., 2010; Lindsey et al., 2011). However, there is evidence that trophy hunting can negatively impact leopard populations, particularly as hunting can disrupt the social structure and spatial dynamics of leopards and contribute to infanticide (Balme, Slotow & Hunter, 2009; Balme, Hunter & Braczkowski, 2012; Packer et al., 2010)"

The 2019 IUCN report also reiterated the clear leopard population decline:

"The current range-wide population trend is assessed to be decreasing (Stein et al. 2016; Chapter 2.4). Based on high inferred and suspected levels of leopard population declines of over 30% over large parts of its range in the last three generations, the leopard was globally up-listed from Near Threatened (2008) to Vulnerable in 2016 under Criterion A2cd in the IUCN Red List (Henschel et al. 2008, Stein et al. 2016). The population decline is based on habitat loss, prey decrease and actual and potential levels of exploitation. The negative trend is thought to go on in the future unless appropriate conservation measures are taken (Stein et al. 2016)" - "Roadmap for the Conservation of the Leopard in Africa," IUCN - Version 1, Annex 4, September 2019

So, where is the accurate, current leopard population data to establish any credible, sustainable, adaptive "off-take" as proposed within the draft norms and standards?



3.1 South Africa's Leopard Population

When the "Draft norms and standards for the management and monitoring of the hunting of leopard in South Africa for trophy hunting purposes" given in Government Notice, Gazette, Vol. 620, No. 40601, Notice 75, Department of Environmental Affairs (DEA), dated 2017, the only possible way to infer any SANBI estimated leopard population size from the data supplied within the Notice 75 draft norms and standards was to work back from the hunting quota proposed based on a "maximum sustainable harvest rate of 3.6%" (given at Figure 2 below).

Province	Year of "population density" - Swanepeol et al (2014)	SANBI Proposed Male ≥7 years Hunting Quota 2017	Inferred Male Leopard Population ¹	Inferred Leopard Population ²	Trophy Hunting Swanepeol et al (2014) 2010	Damage Control Animal Swanepeol et al (2014) 2010
Eastern Cape	2007	3	83	276		
Free State	?	0	?			
Gauteng	?	0	?			
KwaZulu- Natal	2005/2006	9	250	833	5 (male)	8
Limpopo	1972 – 2010	59	1,638	5,460	50 (10 male, 5 female, 1 sub-adult female, 34 unknown)	63
Mpumalanga	1972	11	305	1,016		
North West	2003 -2007	2	55	183	7 (4 male, 3 unknown)	
Northern Cape	1984	0	?			
Western Cape	1985 — 2007	4	111	370		
TOTAL		88	2,442	8,138	62	71

Notes: 1 - Based on a "maximum sustainable harvest rate of 3.6%" as recommended by Caro et al (2009)

2- Inferred male leopard population based on "30%" of male leopards in any population and an assumed maximum of 3.6% males leopards \geq 7 years old - "60% of the population is mature, (**30% males**, 30% females), 15% sub-adult males and females and 10% juveniles" - <u>Swanepeol et al (2014)</u>

Figure 2 - "Proposed annual leopard hunting quota for each province" and inferred leopard population – South Africa



The 2,442 male leopards \geq 7 years old inferred at Figure 2, suggests a leopard population (mature males and females, sub-adults, and juveniles) of 8,138.

<u>Swanepeol et al (2014)</u> (Figure 3) has a population range of the total South African leopard population of 2,813 to 11,632. However, the <u>IUCN Red List Data</u> study, "Panthera pardus – Leopard - The Red List of Mammals of South Africa, Lesotho and Swaziland" suggests caution:

"Such large variance makes quantitative interpretation difficult and thus these data can only be used as a rough guideline of the South African Leopard population. Caution should therefore be applied when using these data quantitatively (for example, to set hunting quotas)" - <u>IUCN Red List Data</u>

 Table 1. The range of leopard population sizes and maximum levels of trophy harvest and retaliatory killing used for the simulations for each South African province.

Province	Populat	ion size ^a	Trophy harvest	Retaliatory mortality		
	Minimum Maximum M		Maximum ^b	Maximum ^c		
Limpopo	1682	7168	204	348		
Mpumalanga	338	1851	32	169		
North West	174	255	40	54		
Gauteng	25	31	4	8		
Northern Cape	68	262	14	27		
Free State	8	26	4	8		
KwaZulu-Natal	247	1120	20	118		
Western Cape	200	619	32	65		
Eastern Cape	71	299	16	33		
South Africa	2813	11632	366	826		

^aMinimum and maximum population sizes were calculated by multiplying the lowest and highest recorded density in each major biome by spatially derived explicit probabilities of leopard occurrence derived from a habitat suitability model (Appendix 2, Appendix 3).

^bRepresents four times the maximum recorded trophy harvest per year over the period 2002–2010 (Appendix 4), or for provinces without existing harvest the average proportional harvest based on the provinces with existing harvest. Minimum levels were set to zero for each province.

^oRepresents the maximum number of damage-causing leopards killed or translocated per year over the period 2002–2010 (Appendix 4) and an estimated number of illegally killed leopards. Minimum levels were set to zero for each province.

Figure 3 - from <u>Swanepeol et al (2014)</u>, "The range of leopard population sizes and maximum levels of trophy harvest and retaliatory killing used for the simulations for each South African province."

In 2008, (<u>Leopard (Panthera Pardus) Case Study (2008</u>)) the following (negative) assessments were made regarding South Africa's leopard population (the question is, what has improved since?):

"The Leopard population size in South Africa is unknown, but it has however, become apparent that Leopard populations are smaller and more fragmented than previously appreciated."



"There is generally poor information on Leopard population because of censusing difficulties. As a solitary and nocturnal animal Leopards are not easily seen. The more successful methods of determining Leopard numbers are spoor counts and camera traps. The spoor count technique is used to determine presence/absence as well as the assessment of numbers using indices. This technique is only effective with high "detectability" of tracks e.g. sandy environments and special tracking skills are needed. Camera traps are also used to determine presence/absence data and monitoring trends."

The leopard population estimated within <u>Leopard (Panthera Pardus) Case Study (2008)</u> (given at Figure 4 below), suggests a leopard population within South Africa across the core areas assessed as between 2,185 – 6,780 (best estimate of 4,987).

Population Area	Est	. Population S	Sat. Level	Est. K _{Best}	
	Min.	Best.	Max.		
Great Kruger	750	1200	1500	100%	1200
Northern Limpopo	500	1250	2000	80%	1563
Waterberg &	400	850	1600	80%	1063
Mpumalanga					
Northern	200	400	600	90%	444
KwaZuku-Natal					
Kalahari	30	50	70	90%	56
Orange River	20	30	60	50%	60
Western Cape	200	350	600	80%	438
Eastern Cape	35	40	80	65%	62
Mountain					
Eastern Cape	30	50	150	70%	71
Valley					
Wild Coast	20	30	120	100%	30
TOTAL	2185	4250	6780	86%	4987

Figure 4 – "Population and carrying capacity estimates for each of the 10 identified core Leopard habitats in South Africa" - Leopard (Panthera Pardus) Case Study (2008)

So, in order to set adaptive hunting quotas, what quantitative leopard population data will the SANBI (or other *"Scientific Authority"*) actually use and apply with the draft norms and standards for any given province/LHZ *"off-take"* quota?

The SANBI (or any other "*Scientific Authority*") has not published its own quantitative estimates of South Africa's leopard population and/or specific LHZ population/age distribution data on which to base adaptive "*off-take*" quotas.



3.2 Mpumalang a's Leopard Population Data

Mpumalanga's leopard population data was given in the "*Draft norms and standards for the management and monitoring of the hunting of leopard in South Africa for trophy hunting purposes*" given in Government Notice, Gazette, Vol. 620, No. 40601, Notice 75, Department of Environmental Affairs (DEA), dated 2017.

Study no.	Province	Biome/bioregion	Study site	Density	Method	Year	Source
1	Mpumalanga	Lowveld	Southern Kruger National Park	15.63	1ª	1972	Bailey (2005)
2	Mpumalanga	Lowveld	Central Kruger National Park	15.4	1	1972	Bailey (2005)
3	Mpumalanga	Lowveld	Central Kruger National Park	4.25	1	1972	Bailey (2005)
4	Mpumalanga	Lowveld	Southern Kruger National Park	3.01	1.	1972	Bailey (2005)
5	Limpopo (Botswana)	Lowveld	Tuli Game Reserve	8	2 ^b	2005-2006	Steyn (2008)
6	Limpopo	Lowveld	Northern Kruger National Park	6.33	1	1972	Bailey (2005)
7	Limpopo	Bushveld	Soutpansberg	19.97	2	2008	Chase-Grey (2011)
8	Limpopo	Bushveld	Welgevonden Game Reserve	4.33	2	2008-2010	L. H Swanepoel, unpubl.
9	Limpopo	Bushveld	Waterberg Biosphere farms	3.18	2	2009	L. H Swanepoel, unpubl.
10	Limpopo	Bushveld	Lapalala Wilderness	3.05	2	2008-2010	L. H Swanepoel, unpubl.
11	KwaZulu-Natal	Lowveld	Mkuze National Park	11.11	2	2005	Balme et al. (2010)
12	KwaZulu-Natall	Lowveld	Phinda Private Game Reserve	7.51	2	2005	Balme et al. (2010)
13	KwaZulu-Natal	Lowveld	Zululand Rhino Reserve	4.2	2	2006	Chapman & Balme (2010)
14	KwaZulu-Natal	Lowveld	Game farm area in KZN-Natal	2.49	2	2005	Balme et al. (2010)
15	North West	Bushveld	Madikwe Nature Reserve	3.86	3	2003	H.L.P. Kelly, unpubl.
16	North West	Bushveld	Pilansberg Nature Reserve	3.45	40	2007	Hayward et al. (2007)
17	Western Cape	Fynbos	Cederberg Mountains	2.3	5*	2004-2007	Martins (2010)
18	Western Cape	Fynbos	Cederberg Mountains	1.8	5	2004-2007	Martins (2010)
19	Western Cape	Fynbos	Cederberg Mountains	0.8	3	1985	Norton & Lawson (1985)
20	Western Cape	Karoo	Cederberg Mountains	0.9	5	2004-2007	Martins (2010)
21	Western Cape	Karoo	Cederberg Mountains	0.25	5	2004-2007	Martins (2010)
22	Eastern Cape	Fynbos	Baviaanskicof	1.3	5	2007	McManus (2009)
23	Eastern Cape	Fynbos	Baviaanskicot	0.3	5	2007	McManus (2009)
24	Eastern Cape	Lowveld	Baviaanskioof	1.3	D D	2007	McManus (2009)
25	Eastern Cape	Lowveid	Baviaanskicot	0.3	D	2007	McManus (2009)
26	Northern Cape	Kalanari	Kgalagadi National park	0.62	D C	1984	Bothma & Le Riche (1984)
27	Northern Cape	Karoo	Orange River Basin	0.35	6	1988	C. Stuart & T. Stuart, unpubl
Method 1; li Method 2, li Method 3, li Method 3, li Method 5, li Method 6, lie Additional 1 IOTHMA, J. HAPMAN, Res.40: 114 AYWARD, MARTINS, C MARTINS, C M.Sc. thesi	sopard density was estimates sopard density was estimates sopard density was estimates sopard density was estimates sopard density was estimates terences for Appendixes 1 D.P. & LE RICHE, E.A.N. 198 S. & BALME, G. 2010. An est +120. M.W., O' BRIEN, J. & KERLE' E. 2010. The ecology of the S.J. 2000. Spatial ecology an s. Rhodes University, Grahard	Iby using home range of by applying mark recay, by using home range a iby making predictors : with GPS collar home is by using sign survey de and 2 4. Aspects of the ecolog imate of leopart popula (, G.I.H. 2007. Carrying leopart Parthers pardu d activity patterns of leo	verlap and prey density. Dure frame work to camera trapping data. nalysis and overlap. on prey density and prey preferences. tata. It a. It a. It a. It a. It a. It a. It a. It a. It a. It a. It a. It a. It	a pardus in the Natal, South Af ons and tests. B University of Bri of and Greater A	Kalahari Desert, rica, using came <i>iol. Conserr.</i> 136 stol, Bristol, U.K Addo Elephant N	Koedoe 27: 259–279. sra-traps and capture- 2:219–229. allional Park (GAENP)	recapture models. <i>S. Afr. J. Wildl.</i> , Eastern Cape Province, South Africa.
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Figure 5 - from <u>Swanepeol et al (2014)</u>, Appendix 2 "Leopard densities (no./km²) in each provincial biome that was used to estimate leopard population size in South Africa"

The SANBI's base estimated leopard populations sizes have been derived from <u>Swanepeol et</u> <u>al (2014)</u>, Appendix 2 "*Leopard densities (no./km*²) *in each provincial biome that was used to estimate leopard population size in South Africa*" – Given at Figure 5:



 However, the estimated population size (Figure 5) is based upon an estimated leopard density using various methods dated from 1972 – 2010. The 'source' is given (where published) as between 1984 – 2011;

Which begs the question, if the <u>Swanepeol et al (2014)</u> estimated leopard densities are outdated (for example, Mpumalanga (Kruger National Park), 1972, employing "*Method 1: leopard density was estimated by using home range overlap and prey density*") and there is no publicly available "*province-wide camera trapping*" data to say how, or indeed if any efforts has been made to update data, for densities and estimates, what credibility can there be that the SANBI (other "*Scientific Authority*"), or DEA has any real idea of current leopard populations and the male age distribution within any sub-population?

		Adults		Subadults and Older Cubs		
Area	Year	Marked	Unmarked	Marked	Unmarked	Total
Sabie River study area	1973	2	3	2	2	9
	1974	3	2	4	1	10
	1975	4	0	4	0	8
Nwaswitshaka River study area	1973	1	8	1	2	12
	1974	7	2	3	0	12
	1975	8	1	2	0	11
South side of Sabie River, west						
of Skukuza	1973	1	3	1	?	5+
	1974	0	3	1	?	4+
	1975	0	3	0	?	3+
South side of Sabie River, east						
of Skukuza	1973	0	4	?	?	4+
	1974	2	2	?	?	4+
	1975	10	2	?	?	3+
North side of Sand River	1973	1	1	?	?	2+
	1974	1	1	?	?	2+
	1975	1 100	10101	?	?	2+

TABLE 5.3 Estimate of Leopard Populations

Figure 6 – from <u>Bailey, T.N. (2005)</u>, page 86,"*The African leopard: ecology and behaviour* of a solitary felid - Table 5.3"

The 2005 source given for the Mpumalanga (Kruger National Park) leopard density used by the <u>Swanepeol et al (2014)</u> (given Figure 5) is <u>Bailey, T.N. (2005)</u>, "*The African leopard: ecology and behaviour of a solitary felid.*" However, at Table 5.3, page 86; <u>Bailey, T.N. (2005)</u>, the observed data used for modelling is again taken from 1973 – 1975 – given at Figure 6.

So, it would appear that the SANBI was using estimated leopard population densities to extrapolate leopard populations estimates via <u>Swanepeol et al (2014)</u> that in some cases, the



observed base data used from <u>Bailey, T.N. (2005)</u> is over 42 years old (Mpumalanga (Kruger National Park)), itself based on a method using *"home range overlap and prey density."* Surely, the *"prey density"* has changed over the past 42 years, along with many other variables?

Or perhaps the source data has been overlaid by <u>Swanepoel et al. (2013)</u> ("Extent and fragmentation of suitable leopard habitat in South Africa") and/or by "province-wide camera-trapping efforts" (SANBI "unpub. Data")?

However, the plausibility of using such old 1972 data as valid in any adaptive "*off-take*" based upon outdated leopard population assessment seems dubious, regardless of its use in 2014 by <u>Swanepeol et al (2014)</u> (and <u>Swanepoel et al. (2013)</u> referencing <u>Bailey, T.N. (2005)</u>).

The bottom line is, is there any credible, current leopard population data for Mpumalanga, or any other province/LHZ in South Africa?



4 Hunter Examination

At para 3.(4) the proposal is that the "local hunter" or "professional hunter" must pass a "once-off" examination to "demonstrate his or her competence to assess the age of a male leopard, and to confirm that he or she is familiar with the applicable biodiversity legislation."

4.1 The Dewlap Ageing Technique

The ageing method applicable in the field, pre-kill assessment of a target leopard's age is not clearly stated within the draft norms and standards – but, it is assumed that the previous dewlap ageing technique remains the proposed method, as envisaged in the "Draft norms and standards for the management and monitoring of the hunting of leopard in South Africa for trophy hunting purposes," Government Notice, Gazette, Vol. 620, No. 40601, Notice 75, Department of Environmental Affairs (DEA), dated 2017.

<u>Balme et al. (2012)</u> states a high confidence level for "discerning males \geq 7 years old were high (83–100%)" by dewlap assessment, but clearly this method is not guaranteed to be 100% accurate. Hence, it is inevitable that under-age male leopard mortality will result from sanctioning the trophy hunting of leopards.



5 Penalty for Wrong-doing

At para 5 "Monitoring of Leopard Hunts," (7).(a) of the draft norms and standards, the penalty for non-compliance (for a given hunt not "harvesting" a male leopard (Panthera pardus) \geq 7 years old) is that the relevant "local hunter" or "professional hunter" must provide a detailed report. This is not much of a deterrent against wrong-doing. The implied implication being (para 5.(7).(b)) that the relevant "issuing authority" must then conduct a "thorough evaluation" and "decide on the most appropriate course of action." This is an evasive and weak disciplinary disincentive to the taking of under-age male or female leopards, with perhaps no course of action being taken whatsoever to penalise wrong-doing. How likely is it that an "issuing authority" will impose penalties such as:

- (a) the hunter being punished; and/or
- (b) meaningful restrictions on the hunting outfitter; and/or
- (c) meaningful restrictions on the professional hunter; and/or
- (d) trophy export permit withdrawn; and/or
- (e) seizure of the hunting trophy; and/or
- (f) criminal charges being pursued.

If an under-age leopard trophy is detected as envisaged at Para 5. "*Monitoring of Leopard Hunts*" of the draft norms and standards what happens to the trophy? Will the trophy hunter still be able to take/export their trophy without penalty? If so, how does this disincentivise the harvesting of female, or under-age male leopards?

Para 4. "*Management of Leopard Hunts*," (3) of the draft norms and standards provides the "*issuing authority*" with a passive threat that it "*may*" not allocate a leopard hunting quota in respect of the affected LHZ in the following hunting season for the harvesting of a female leopard or an under-aged male leopard.

Therefore, the disincentives for non-compliance to the draft norms and standards, para 4.(3) and (4), for not harvesting a "male leopard of the age of seven years or older" are not specific, but are passively left to the relevant "issuing authority" to devise, or not. How likely is it that the "issuing authority" has the motivation to impose any such threatened penalty for a single offence, or repeated offences?



The deterrents for wrong-doing as currently written in the draft norms and standards are passive and weak - the "*may*" should be removed and the withdrawal of an affected LHZ's hunting quota instilled with immediate effect upon any instance of wrong-doing.

Para 4. "Management of Leopard Hunts" (2) states that "Any person who hunts a leopard has a duty of care to ensure that he or she hunts such leopard in a manner that would not lead to the disruption of the affected leopard population." How will the impact of "disruption" be scientifically assessed by the "issuing authority" (by definition, the killing of any leopard is bound to disrupt the affected leopard population)?

The obvious concern is that without mandated repercussions in the draft norms and standards, there will be only limited incentive for adherence to para 4.(4) "male leopard of the age of seven years or older" restriction and any wrong-doing either covered-up, and/or any repercussions waived.



No hunting 7 yrs 6 yrs 5 yrs 4 yrs 3.5 yrs 3 yrs 2 yrs

Figure 7 – "Average number of adult females in population simulations where all eligible males are removed during a 6-mo hunting season each year for 100 yrs. Colors indicate outcomes for different age minima for trophy males; each line indicates average from 20 runs. C. Population changes for leopards based on long-term data from Phinda Private Game Reserve and other sources" - <u>Packer et al. (2009)</u>



The "Draft norms and standards for the management and monitoring of the hunting of leopard in South Africa for trophy hunting purposes" given in Government Notice, Gazette, Vol. 620, No. 40601, Notice 75, Department of Environmental Affairs (DEA), dated 2017, stated "<u>Packer et al. (2009)</u> showed that harvesting male leopards \geq 7 years old had little impact on population persistence" (Figure 7).

However, within the same reference, <u>Packer et al. (2009)</u> it also stated how sensitive leopard sustainability is to the male age harvested for a trophy:

"Sport hunting is an inherently risky strategy for controlling predators as carnivore populations are difficult to monitor and some species show a propensity for infanticide that is exacerbated by removing adult males......Leopards (Panthera pardus) may be more sensitive to sport hunting than solitary lions (with a safe minimum age of 6–7 yrs of age)"

Therefore, disincentivising the taking of under-age male leopards and the inevitable disruption to affected populations is vital to leopard conservation. The draft norms and standards only offer passive disincentives.

5.1 Monitoring of Leopards

At Para 5.(2)(a) and (b) of the draft norms and standards it is proposed that photographs will be taken as some sort of verification via a *'hunting report'* of each leopard kill *"harvested."* What systems will be in place to stop the fraudulent reuse of photographs from other kills to cover-up wrong doing? For example, previously taken male leopard kill pictures reused to cover-up the killing of a sub-adult male, or female?



6 Conclusions

The "Draft norms and standards for the trophy hunting of leopard in South Africa," as notified in Government Notice, Department of Environmental Affairs (DEA), dated 2020, do not provide any indication of the acknowledge absence (reference 3. "The Leopard Population in Africa and South Africa") of credible, current leopard population, or age distribution data (reference 2.1 "Male Leopards \geq 7 years old") on which to base any adaptive or otherwise hunting trophy "off-take" in Mpumalanga, or any other province/LHZ within South Africa. There is still no reliable ('robust') estimate of the South African leopard population, or subpopulations, which is vital even for adaptive quota setting:

".....quotas should be managed adaptively based on robust estimates of population trend" - <u>AC30 Inf 23, 2018</u>

What happens if the availability of male leopards \geq 7 years of age does not exist in reality? The risk being, that under age leopards will be targeted instead, unintentionally or otherwise (regardless of any potential 'penalties').

The implied assumption that sanctioning the killing of male leopards \geq 7 years old (and/or the accidental, or otherwise killing of "*under-aged male leopards*" in the quest for a permitted leopard trophy) does not have any negative conservation impacts is not supported by recent science (<u>Naude et al. 2020</u>). The removal of resident adult male leopards (for trophies or otherwise) could discourage sub-adult male leopards from dispersing, thus leading to inbreeding, which can profoundly impact population health and viability.

The disincentive provisions within the "Draft norms and standards for the trophy hunting of *leopard in South Africa*" for non-compliance by "*local hunters*" and/or "*professional hunters*" (intentionally, or otherwise) targeting female leopards and/or under-age male leopards, are passive and weak (reference para 5., "*Penalty for Wrong-doing*").

In reality the <u>leopard trophy hunting persecution (Friedmann et al. 2008)</u> never stops even when there is a moratorium on trophy hunting, with many leopards designated as 'problem animals.' Adding to the leopard's attrition with trophy hunting *"off-take"* (when leopard persecution is so poorly policed and disincentivised) is a perverse mission that fails to serve any recognisable species conservation imperative:

"...... offtake by trophy hunting likely compounds, rather than relaxes, pressures on local leopard populations" - <u>AC30 Inf 23, 2018</u>



The implied intent to perpetuate the ongoing killing of leopards for trophies regardless of the absence of supporting scientific foundation remains abhorrent.

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