

EXPERT OPINION ON THE 2019 LION SKELETON EXPORT QUOTA

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Introduction

This opinion contributes to the evidence base to be considered in establishing a lion export skeleton quota for South Africa in 2019. It is structured as follows. First, I evaluate the economic arguments in favour of a controlled legal trade in big cat parts and find them to be inadequate conservation management solutions. Second, I evaluate the latest paper which the Department of Environment, Forestry and Fisheries (DEFF) has cited as part of its scientific contribution to informing the quota determination. I also evaluate the expert opinion offered by one of the authors of that paper. I conclude that a non-zero quota cannot reasonably be defended on the grounds of ‘sustainable use’ or ‘adaptive management’ and should therefore be reconsidered. In my opinion as a natural resource economist, the annual quota should be permanently set to zero.

Economic Arguments

It is well known that bones from captive-bred lions in South Africa are sold as tiger bones in Asian markets.¹ As noted in a recent paper, produced as part of the Scientific Authority’s research into the lion bone trade, past research has ‘questioned whether measures implemented between 1993 and 2007 to curb the Asia-driven tiger parts trade provoked the start of South Africa’s lion bone trade in 2008’.² The fact that lion bones substitute as tiger bones creates three difficulties as far as international regulation is concerned.

First, it is a look-alike product – tiger bones are indistinguishable from lion bones, and tigers are at serious risk of extinction in the wild. CITES Appendix II allows the listing of lookalike species

¹ Vivienne L. Williams and Michael J. ‘t Sas-Rolfes, “Born Captive: A Survey of the Lion Breeding, Keeping and Hunting Industries in South Africa,” *PLOS ONE* 14, no. 5 (2019): e0217409, <https://doi.org/10.1371/journal.pone.0217409>; Vivienne L Williams et al., “Bones of Contention: An Assessment of the South African Trade in African Lion Panthera Leo Bones and Other Body Parts,” 2015, https://www.wildcru.org/wp-content/uploads/2015/07/Bones_of_contention.pdf; EMS Foundation and Ban Animal Trading, “The Extinction Business: South Africa’s Lion Bone Trade,” 2018, <http://emsfoundation.org.za/wp-content/uploads/THE-EXTINCTION-BUSINESS-South-Africas-lion-bone-trade.pdf>; Environmental Investigation Agency, “The Lion’s Share: South Africa’s Trade Exacerbates Demand for Tiger Parts and Derivatives” (London, 2017), <https://eia-international.org/wp-content/uploads/The-Lions-Share-FINAL.pdf>.

² Williams and ‘t Sas-Rolfes, “Born Captive: A Survey of the Lion Breeding, Keeping and Hunting Industries in South Africa,” 2.

provided that trade does not undermine efforts to protect species that do require protection, such as wild tigers.

Second, the legally allowable trade in lion bones effectively creates an incomplete ban on tiger products. Incomplete bans are defined as those that apply to species threatened by international trade while simultaneously allowing exceptions to that ban. In other words, a ban is rendered incomplete through exceptions to its application.

Third, the annotation at CITES CoP17 that allowed South Africa to establish an annual quota for captive-bred lion parts has effectively created a split-listing problem, which is tantamount to an incomplete ban on lion products – captive lion parts can be traded but not Appendix-I-listed lion parts. Split-listing is normally based on geographical boundaries and not on the particular part or specimen of the species in demand. In other words, the bones from captive-bred lions and the bones or parts from wild lions are not distinguished in consumer markets. Moreover, ‘distinguishing between farmed and wild tiger parts is impossible’,³ despite efforts at certification. Therefore, the risk of laundering illegal parts (wild-poached tiger and lion parts) to feed into the legal lion bone export market (and then sold as illegal tiger parts) is high⁴ and creates considerable governance complexity for managing the captive-bred lion industry in South Africa. As Wiersema notes: “To address the possibility of laundering, a strong enforcement infrastructure is required.”⁵ Given the lack of capacity among South Africa’s law enforcement fraternity to check consignments at border posts, ports and airports, there is sufficient reason to expect that laundering will become a problem. This view is further supported by clear evidence of the criminality that is already prevalent in the captive lion industry, especially among traders.⁶

Exceptions to bans through split-listing or captive-breeding are confusing because species are listed on Appendix I precisely because trade has been determined as a significant threat to their survival due to excessive demand. Yet, the argument is that having a market will help these species at the same time.⁷ As Wiersema notes, the arguments in favour of trade from supply-side economics can appear logically compelling – increased supply reduces prices and therefore

³ Brian Gratwicke et al., “The World Can’t Have Wild Tigers and Eat Them, Too,” *Conservation Biology* 22, no. 1 (2008): 222, <https://doi.org/10.1111/j.1523-1739.2007.00802.x>.

⁴ Gratwicke et al., “The World Can’t Have Wild Tigers and Eat Them, Too.”

⁵ Annecoos Wiersema, “Incomplete Bans and Uncertain Markets in Wildlife Trade,” *University of Pennsylvania Asian Law Review* 12, no. 1 (2016): 82, <https://doi.org/10.1525/sp.2007.54.1.23>.

⁶ EMS Foundation and Ban Animal Trading, “The Extinction Business: South Africa’s Lion Bone Trade.”

⁷ Wiersema, “Incomplete Bans and Uncertain Markets in Wildlife Trade,” 74.

poaching incentives. However, they tend to be based on a number of assumptions that are unlikely to hold in reality. This is especially the case for species subject to incomplete bans where the market structure is oligopolistic. Legal supply (of lion bones) may not always crowd out illegal traders (of tiger and lion bones).⁸ Tiger farming itself may also create serious risks for wild tiger survival.⁹ When an oligopolistic market structure dominates the trade, there is also a risk of ‘banking on extinction’ – syndicates are likely to stockpile bones or ivory or horn in the expectation of being able to earn monopoly rents in the future, which would increase the marginal rates of extraction from wild stock at present. In other words, poaching can increase in the presence of an incomplete ban or an expectation that a ban will be rescinded in the future. Thus, I concur with Wiersema’s point that it is inaccurate to argue that current bans have not worked – the argument is ‘undermined by the fact that we do not have complete bans.’¹⁰ Complete bans – without exceptions on the supply side – have not been tried. It is therefore disingenuous to argue that bans fail. Bans could be highly effective if the loopholes that create laundering opportunities were closed and the possibility of a ban becoming incomplete or being rescinded in the future did not lead to stockpiling – ‘banking on extinction’ – in the present.¹¹

It is further critical to note that supply-side arguments often assume substitutability, that – for instance – wild products can be substituted by captive-bred products. If the demand for wild-sourced bones is price-inelastic at the higher end of the demand curve (those consumers willing and able to pay higher prices), then supply-side interventions may have little positive impact on reducing poaching. ‘Conversely, legalizing trade may fuel illegal poaching if the wild-caught specimens will be cheaper to obtain and therefore can be sold at a reduced price’,¹² undercutting the legal market. On the specific relationship between captive-bred lions and the impact on wild lion survival, South Africa’s 2018 non-detriment finding speculates that captive-bred stock may serve as a buffer against threats to wild lion poaching¹³, as the reduction of legal supply could

⁸ Richard Damania and Erwin H. Bulte, “The Economics of Wildlife Farming and Endangered Species Conservation,” *Ecological Economics* 62, no. 3–4 (2007): 461–72, <https://doi.org/10.1016/j.ecolecon.2006.07.007>.

⁹ R. Craig Kirkpatrick and Lucy Emerton, “Killing Tigers to Save Them: Fallacies of the Farming Argument,” *Conservation Biology* 24, no. 3 (2010): 655–59, <https://doi.org/10.1111/j.1523-1739.2010.01468.x>.

¹⁰ Wiersema, “Incomplete Bans and Uncertain Markets in Wildlife Trade,” 80.

¹¹ Ross Harvey, Chris Alden, and Yu Shan Wu, “Speculating a Fire Sale: Options for Chinese Authorities in Implementing a Domestic Ivory Trade Ban,” *Ecological Economics* 141 (2017): 22–31, <https://doi.org/10.1016/j.ecolecon.2017.05.017>.

¹² Wiersema, “Incomplete Bans and Uncertain Markets in Wildlife Trade,” 81.

¹³ Scientific Authority of South Africa, “Non-Detriment Finding Assessment for Panthera Leo (African Lion),” Pub. L. No. 1682–5843, 631 Government Gazette 1 (2018), https://www.environment.gov.za/sites/default/files/gazetted_notices/nemba10of2004_nondetrimentfindingsGN41393.pdf.

increase the demand for wild products. But this ignores the warning in the same paper¹⁴ from which it is drawn: ‘From a conservation perspective, trade in lion bones from captive institutions in South Africa to Asia would be cause for concern if it were to stimulate harvest of wild lions or other felids to supply the bone trade.’¹⁵ It is highly unscientific to cherry-pick the speculation that adheres to the predisposition of ‘sustainable use’. For ecological sustainability and survival of the species, management authorities need to have a more robust idea of how the demand curve is likely to respond to supply-side signals. That demand might increase in response to the suppression of legal supply is an untested hypothesis, not borne out by any robust econometric evidence. Simply asserting it because it was a point raised in a scientific journal is confirmation bias, not science.

The point is that significant uncertainty¹⁶ abounds pertaining to demand-side effects of supply-side interventions in this space¹⁷, and it is highly plausible that legal supply channels that effectively create incomplete bans further complicate matters. Perhaps most concerning in the short run is the potential negative impact on wild tiger survival, and wild lion survival in the longer run, especially if the demand curve shifts out (instead of in) in response to continuing legal supply. We cannot trade our way out of a trade-induced problem. Incomplete bans implicitly acknowledge demand for the product in question (lion bones) and feed that demand *of necessity* – there would be no rationale for continuing a breeding industry if there was no demand and if that demand was not growing. It therefore seems that South Africa wants to have its cake and eat it too. We appear to want “just enough” demand and to supply a “just right” quantity while at the same time talking about complex social ecological systems (SES). It is precisely because we operate in a complex social ecological system that this type of wishful ‘adaptive management’ is not going to cut it. Illegal traders, unable to enter the legal market – have every incentive to continue to provide an illegal supply. Given that it is difficult for law enforcement officials to distinguish between legal and illegal supply, laundering is easy. Therefore, allowing legal trade on the premise that it will prevent the proliferation of a parallel illegal market is naïve at best.

¹⁴ Paul Lindsey et al., “Possible Relationships between the South African Captive-Bred Lion Hunting Industry and the Hunting and Conservation of Lions Elsewhere in Africa,” *South African Journal of Wildlife Research* 42, no. 1 (2012): 11–22, <https://doi.org/10.3957/056.042.0103>.

¹⁵ *Ibid.*, 20.

¹⁶ Brant Abbott and G. Cornelis van Kooten, “Can Domestication of Wildlife Lead to Conservation? The Economics of Tiger Farming in China,” *Ecological Economics* 70, no. 4 (February 2011): 721–28, <https://doi.org/10.1016/j.ecolecon.2010.11.006>.

¹⁷ Douglas J Crookes and James N Blignaut, “Debunking the Myth That a Legal Trade Will Solve the Rhino Horn Crisis: A System Dynamics Model for Market Demand,” *Journal for Nature Conservation* 28 (November 2015): 11–18, <https://doi.org/10.1016/j.jnc.2015.08.001>.

Finally, the rationale for supply-side interventions such as quotas fundamentally misunderstand demand dynamics. The argument is normally that demand for products such as tiger bones and ivory is culturally rooted and historically significant, and that it is therefore naïve to expect that it will change¹⁸ in response to stigmatisation effects created through demand reduction efforts. But this ignores both the differential responses to norms in different countries and the fact that cultural preferences are dynamic rather than static. In other words, consumers are responsive to changes in legal prescripts though it can differ from country to country. Consider, for instance, that strong demand for rhino horn is a relatively recent occurrence in Vietnam and that it can decline in response to bans (for instance, in Yemen, where demand halved between 2008 and 2013).¹⁹ The fact that demand is pre-existent is not sufficient reason to feed it (which is what breeding clearly does). We cannot reduce demand unless we send credible supply-side signals that trade is illegitimate and will no longer occur. Legal markets limit the effectiveness of efforts to reduce demand because they send confusing signals.²⁰ The availability of legal products can destigmatize consumption. Consequently, demand can increase.²¹ The idea that bans create increased demand is unsupported in the academic literature. Incomplete bans are the real problem because the effectiveness of the ban (say, against Appendix-I listed species) is undermined by continued or increased demand. This is especially the case when legal lion bone supply is being sold into the illegal tiger bone trade.

An evaluation of the paper cited in support of setting an annual quota that reflects current supply availability from captive stock

The paper by Vivienne Williams and Michael ‘t Sas-Rolfes, recently published in PLOS|ONE²² was cited as the outcome of a collaborative research effort between Wits and Oxford Universities and the South African National Biodiversity Institute (SANBI). The abstract of the paper opens with a disingenuous claim. ‘Following a 2016 decision by Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora, South Africa must establish an annual export quota for lion skeletons from captive sources, *such that threats to wild*

¹⁸ Kirsten Conrad, “Trade Bans: A Perfect Storm for Poaching?,” *Tropical Conservation Science* 5, no. 3 (2012): 245–54.

¹⁹ Lucy Vigne and Esmond Martin, “Demand for Rhino Horn Declines in Yemen,” *Oryx* 47, no. 3 (2013): 323–323, <https://doi.org/10.1017/s0030605313000768>.

²⁰ Wiersema, “Incomplete Bans and Uncertain Markets in Wildlife Trade,” 83.

²¹ Carolyn Fischer, “The Complex Interactions of Markets for Endangered Species Products,” *Journal of Environmental Economics and Management* 48 (2004): 926–53, <https://doi.org/10.1016/j.jeem.2003.12.003>.

²² Williams and ‘t Sas-Rolfes, “Born Captive: A Survey of the Lion Breeding, Keeping and Hunting Industries in South Africa.”

lions are mitigated (emphasis mine). There is nothing in the CITES annotation to Appendix II that suggests that the quota will serve to mitigate threats to wild lions per se. That is reading into the text a positive conservation benefit that simply does not exist in the CITES document. The actual text reads as follows: ‘Annual export quotas for trade in bones, bone pieces, bone products, claws, skeletons, skulls and teeth for commercial purposes, derived from captive breeding operations in South Africa will be established and communicated annually to the CITES Secretariat.’²³ It does not specify, firstly, that it must of necessity be a non-zero quota. Certainly, a non-detriment finding (NDF) (that captive lions have no negative effect on wild lion survival) would have been a minimal conservation requirement. But an NDF of that nature²⁴ was not gazetted until at least 7 months after the Minister of Environmental Affairs had communicated²⁵ the 2017 quota of 800 skeletons to the CITES secretariat. Even so, that NDF could only conclude that there would be no likely negative impact on *South Africa’s* wild lions. But that does not go far enough, given that lions are a migratory species²⁶, and captive breeding in South Africa may well have a negative effect on Appendix-I listed lions in other range states.²⁷

The second concerning feature of the abstract of the paper alone is that it recognises ‘rising consumer demand for lion body parts, notably skulls.’ Growing demand is a commercial benefit for the South African captive breeding industry, but a conservation drawback for all the reasons explained in the first part of this opinion. Then, 52% of respondents indicated that they would adapt to the USA suspension of trophy imports from South Africa by seeking ‘alternative markets’ for lion bones if the export quota allocation restricted their business. But this only shows the commercial nature of the industry, with no concern for either welfare or conservation. When this is challenged in court, the Constitutional Court ruling of 2017 that links welfare to conservation will no doubt be among the first judgments to be considered. It also tells us something significant about respondents’ willingness to break the law, presuming that ‘alternative markets’ implies illegal export. Michele Pfab, the SANBI coordinator for this project, stated – at

²³ Committee 1, “Conservation of and Trade in the African Lion,” *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (Johannesburg, 2016), https://cites.org/sites/default/files/eng/cop/17/Com_I/E-CoP17-Com-I-29.pdf.

²⁴ Scientific Authority of South Africa, Non-detriment finding assessment for *Panthera leo* (African lion).

²⁵ Department of Environmental Affairs, “Lion Export Quota for 2017 Communicated to the CITES Secretariat in Line with CITES Requirements,” Government Press Release, June 28, 2017, https://www.environment.gov.za/mediarelease/lionexportquota_communicatedtocitessecretariat.

²⁶ Timothy Hodgetts et al., “Improving the Role of Global Conservation Treaties in Addressing Contemporary Threats to Lions,” *Biodiversity and Conservation* 27, no. 10 (2018): 2747–65, <https://doi.org/10.1007/s10531-018-1567-1>.

²⁷ Lion Conservationists, “The African Lion Conservation Community’s Response to the South African Predator Association’s Letter,” 2017, <https://conservationaction.co.za/wp-content/uploads/2017/11/LionConservationResponseToSAPALetterZinkeNov2017-2.pdf>; Panthera, “Panthera Statement on South Africa’s Proposed Quota for Lion Skeleton Exports And Its Impact on Wild Lion Populations” (New York: Panthera, 2017), https://www.panthera.org/cms/sites/default/files/Panthera_PressRelease_LionBones.pdf.

a public consultation on the matter – that this was a ‘fair response’, but it remains difficult to see how it is ever ‘fair’ to break the law. Moreover, policy-setting should not be held ransom to veiled threats from those who have a vested commercial interest in an unrestrictive quota being established. Threats cannot masquerade as science when considering a policy. This raises a question over why respondents’ views are being given pre-eminence in the process of determining a quota rather than the conservation of wild species, which is ultimately CITES’ mandate, and one which DEFF is responsible for executing.

It is disconcerting to see the language of the 2018 NDF repeated in the introduction of the paper: ‘it is also plausible that the former may provide a buffer effect against over-exploitation of the latter’²⁸, which is not exactly what the Lindsey et al paper (cited in support of the assertion) stated, as detailed earlier.²⁹ This phrase is repeated in one form or another four times throughout the paper. Furthermore, the paper states that in 2017, the SA ‘initiated a programme of interdisciplinary, collaborative, scientific research with university institution affiliates (including ourselves) to obtain further information on lions bred and maintained in captivity, legal and illegal trade, and consequences of trade for wild lions.’³⁰ But the ‘National Captive Lion Survey’ was only one dimension of this, and does not address the latter two themes, namely the interaction between legal and illegal trade (simply assumed away despite extensive evidence of criminality among South African lion bone trades), nor the consequences of trade for wild lions. CITES has already determined that trade is detrimental to the probability of wild lion survival, which is why the majority of African lions are Appendix-I listed. It is difficult to understand why this study did not rather address the question of what impact the captive lion industry is having on wild lion populations beyond South Africa’s borders. What we have now is a thriving legal trade that creates – on the demand side – an incomplete ban on lion products, especially given that most lion products are sold as tiger products in those consumer markets. This legal trade is being regulated through a quota, despite no one knowing exactly how many facilities or captive lions actually exist in South Africa. It is hard to understand how a quota can be managed when the industry numbers themselves are unknown.

²⁸ Williams and ‘t Sas-Rolfes, “Born Captive: A Survey of the Lion Breeding, Keeping and Hunting Industries in South Africa,” 2.

²⁹ Lindsey et al., “Possible Relationships between the South African Captive-Bred Lion Hunting Industry and the Hunting and Conservation of Lions Elsewhere in Africa.”

³⁰ Williams and ‘t Sas-Rolfes, “Born Captive: A Survey of the Lion Breeding, Keeping and Hunting Industries in South Africa,” 2.

This in turn raises questions of methodology. The authors of the paper received 117 usable responses to the lengthy questionnaire from industry respondents. The fact that only industry respondents were consulted seems to build in a bias from the beginning. Asking for responses only from industry members and not also interviewing conservationists appears likely to skew the policy decision in favour of commercial interests rather than attending to the significant public concern on this matter (which the authors duly recognise). It is also not clear how or whether the authors checked that responses were from industry members and that the information supplied was accurate. The problems with this kind of survey methodology are well known. First is the issue of accuracy. Second is the problem of attaining a sufficiently large sample size. If the size of the industry is unknown, it is not clear that the authors can establish a reliable saturation point at which they have enough data from which to draw reasonable inferences. The authors write that increasing the sample size until more than 25% of the ToPS-registered lion breeding/hunting facilities per province had been sampled was considered large enough for ‘robust scientific scrutiny.’ ‘For the purpose of the intended analysis, achieving this level of detail was considered realistic and sufficient.’ But it is not clear what the term ‘realistic’ refers to here, nor the term ‘sufficient’ – a realistic reflection of what and sufficient for what? Third is the problem of self-reporting and answering the questions in a way that produces desired results for the vested interests of the respondent. Asking questions about what strategies respondents would employ in response to the USA trophy import ban creates an incentive for respondents to answer in a way that simply uses the survey as a mouthpiece to voice threats that unduly influence policy management. These factors appear not to have been controlled for.

As one reads the paper, one gets a distinct sense that the narrative is crafted, from start to finish, to justify a large quota. For instance, it references earlier papers by Williams that ‘questioned whether measures implemented between 1993 and 2007 to curb the Asia-driven tiger parts trade provoked the start of South Africa’s lion bone trade in 2008 (Fig 1), and hence whether well-meaning policy interventions intended to protect species can create economic incentives that perversely influence trade dynamics and lead to unintended consequences elsewhere.’ This is a hinge in the narrative that tries to convince the reader that the trade ban on tigers is the problem and *provoked* South Africa’s lion bone trade. That is a strong causal claim couched in ‘question’ language. But the graph (figure 1) does not answer the question of why – if it is indeed the case, as claimed, that the 1993 tiger parts ban provoked lion breeding in South Africa – there is such a long delay between 1993 and 2007. For action x to have a causal effect y, x must precede y, but to have such a lag effect appears to make the connection dubitable at best. Certainly, it is not

scientific, but merely speculative. It surely does not take 14 years to respond to a policy measure. It is also not clear exactly what these ‘unintended consequences’ are that ‘perversely influence’ trade dynamics. What is perverse is not responding in 2008 with a complete ban on the export of all derivative lion parts, as soon as it was known that lion parts substitute for tiger parts. The proliferation of the industry to the point where no one knows how many lions are even in captivity is truly perverse.

In the section on page 15 of the paper that addresses the impacts and adaptations of the lion bone quota, Williams and ‘t Sas-Rolfes say that they asked ‘respondents whether the quota would restrict their businesses in any way – and if so, how would their business be adapted’. But it remains unclear as to why the quota would restrict business if the quota determination was predicated on reflecting existing available supply.³¹ It turns out the 800 for 2017 had been set using data of exports from the previous year. The department then admitted that in fact the number had been closer to 1800. It is not that the quota was designed to be restrictive, it was inadvertently restrictive, which skews the nature of the question and simultaneously reflects the lack of governance over the industry. You cannot govern what you cannot quantify. With a skewed question – respondents believing that the government made the quota restrictive on purpose – it was likely that they were going to respond by threatening to find ‘alternative markets for the bones’, but this doesn’t tell us anything useful; it simply tells us how breeders feel about a restrictive quota (which wasn’t meant to be restrictive) and that they intend to break the law should the law not suit their commercial interests. Further entrenching this point is that ‘some frustrated aspiring sellers might resort to other (potentially illegal) trade channels. All these factors point to a distinct threat of the development of a parallel illegal market’.³² But again this appears to ignore the strong connection between the small number of South African lion bone traders and criminal syndicates³³, which preceded the quota. Therefore, it appears more likely that a quota is providing a laundering channel for illicit supply rather than a means of preventing it.

³¹ Portfolio Committee on Environmental Affairs, “Report of the Portfolio Committee on Environmental Affairs on the Colloquium on Captive Lion Breeding for Hunting in South Africa: Harming or Promoting the Conservation Image of the Country, Held on 21 and 22 August 2018, Dated 8 November 2018” (Cape Town: Parliamentary Monitoring Group, 2018), <https://pmg.org.za/taled-committee-report/3595/>.

³² Williams and ‘t Sas-Rolfes, “Born Captive: A Survey of the Lion Breeding, Keeping and Hunting Industries in South Africa,” 16.

³³ EMS Foundation and Ban Animal Trading, “The Extinction Business: South Africa’s Lion Bone Trade.”

One of the primary concluding arguments of the paper is as follows: ‘The fact that a large proportion of respondents have stated that they will seek ‘other markets’ for lion bones and other body parts signals the potential for a parallel illegal market to develop if quotas are viewed by industry participants as excessively restrictive. South Africa experienced a similar situation with rhino horn trade, whereby increased restrictions were contested by market participants, sparking a significant wave of illegal activity. Should any South African captive lion industry participants develop closer links with organized criminal enterprises, the effects could be irreversible and result in greater and more widespread threats of focused commercial-scale poaching of wild felids.’³⁴

The direct reference to the rhino horn debate here brings the reasoning of the entire paper into disrepute. The authors are making a causal claim on the following premises:

P₁: Increased rhino horn trade restrictions were contested by market participants

P₂: Rhino horn traders sought alternative markets as a result of P₁

C: These caused a significant wave of illegal activity

The first premise is correct in that the department’s moratorium, imposed in 2009, was eventually overturned by the Constitutional Court. The second premise is dubious, which is why it was conveniently overlooked in the claim that restrictive measures *sparked* a significant wave of illegal activity. There has never been a large domestic market for rhino horn, and the international ban has been in place since 1977. If it is indeed the case that traders sought alternative illegal markets after South Africa imposed a moratorium on the domestic trade, it only shows us that South Africa’s legal trade, until that point, had been used as a means of getting rhino horn out of the country to sell on the black market (given that there was no legal global market). But, either way, the moratorium of 2009 did not cause a wave of illegal activity. The more likely story is that demand (mostly in Vietnam) started to escalate (around 2006), possibly because of excellent marketing from South African breeders who boasted about having extensive stockpiles. South Africa imposed a moratorium on domestic trade *in response* to increased illegal activity in 2009. Poaching escalated at least 18 months *before* the moratorium was imposed. The department’s own rationale for imposing the moratorium was that it was a *response* mechanism to increased poaching. It could therefore not plausibly have caused the upsurge in

³⁴ Williams and ‘t Sas-Rolfes, “Born Captive: A Survey of the Lion Breeding, Keeping and Hunting Industries in South Africa,” 27.

poaching. Here the authors betray themselves as being pre-committed to trade as a means of preventing an upsurge in illegal activity, conveniently ignoring factual historical sequence in the process. Moreover, excellent work in economics has shown that trade is not the solution to the rhino poaching problem.³⁵

The authors also seem willing to ignore the fact that there already are close ‘links with organised criminal enterprises’ and industry participants. This is extensively documented in a lengthy report produced by the EMS Foundation with hard evidence³⁶, and the authors claim to have read the report but chose nonetheless to ignore it. It strikes me as a dishonest endeavour to be pre-committed to a view and ignore evidence that stands in the way of that pre-commitment. It is also critical to note that building policy on the grounds of ‘adaptive management’ – a response to threats of illegality from the industry – is not scientific.

Adaptive Management and the Precautionary Principle

The Williams and ‘t Sas-Rolfes paper is grounded in a proposition that ‘the most appropriate way for the Scientific Authority to address such uncertainty is by employing principles of adaptive management’.³⁷ They conclude that it is important to know the total number of captive lions, trends in market prices for live felids and/or their parts, the prevalence of poaching on private property, how facilities respond to restrictions on trade and the changes in earnings across all sectors of the industry.³⁸ With this I fully concur but would add that it is critical to know how wild tigers and wild lions are likely to fair as a result of trade decisions. Either way, the authors state that this information should guide an ‘adaptive management’ approach ‘aimed at minimising the risk of adversely affecting wild lion populations.’ In this respect, policymakers ‘should take care to avoid price shocks – i.e. sudden upward spikes in market prices that would boost incentives for poaching illegal trading activity, with potential adverse consequences for wild lions.’³⁹

³⁵ Douglas J Crookes and JN Blignaut, “A Categorisation and Evaluation of Rhino Management Policies,” *Development Southern Africa* 33, no. 4 (2016): 459–69, <https://doi.org/10.1080/0376835X.2016.1179100>; Douglas J Crookes, “Does a Reduction in the Price of Rhino Horn Prevent Poaching?,” *Journal for Nature Conservation* 39 (2017): 73–82, <https://doi.org/10.1016/j.jnc.2017.07.008>; Crookes and Blignaut, “Debunking the Myth That a Legal Trade Will Solve the Rhino Horn Crisis: A System Dynamics Model for Market Demand.”

³⁶ EMS Foundation and Ban Animal Trading, “The Extinction Business: South Africa’s Lion Bone Trade.”

³⁷ Williams and ‘t Sas-Rolfes, “Born Captive: A Survey of the Lion Breeding, Keeping and Hunting Industries in South Africa,” 2.

³⁸ Williams and ‘t Sas-Rolfes, “Born Captive: A Survey of the Lion Breeding, Keeping and Hunting Industries in South Africa.”

³⁹ *Ibid.*, 28.

The first obvious point to note is that sudden upward spikes in market prices would result in a decrease in quantity demanded, as explained in the first part of this opinion. What matters are the second-round effects on the movements of the demand curve. That is what is missing from current considerations. If the demand curve (for lion and tiger products) moves down through a stigma effect (mediated through changing norms as a result of a trade ban), the initial upward price shock will ultimately be a cost worth incurring for the associated conservation benefits. Of course, the size of the price-inelastic segment of the demand curve needs to be better understood, especially if the price-inelasticity is rooted in a preference for evidently wild-sourced product (which is usually the case). But in that case, supply from captive-breeding is not going to help in any event. And law enforcement faces much lower transaction costs if they are not required to try and distinguish illegal from legal product. This in turn makes it easier to stop illegally-acquired supply from accessing global markets.

The second thing to note is that ‘adaptive management’ does not justify maintaining the status quo so as not to upset the apple cart (breeders and traders) or risk a short-term increase in poaching. If an outright ban is the way to move out of the ‘incomplete ban’ problem raised earlier, then that may well be the optimal approach to conserve wild lions and tigers. Uncertainty may be permanent as it might result from complexity and indeterminacy ‘and cannot always be resolved by more data’. It is also critical to be aware of the limitations of science and to note that ‘incorporating precaution within adaptive management is therefore necessary for decision-making on wildlife trade, but it is not sufficient.’⁴⁰ Part of the challenge facing the conservation community is that precaution tends to be limited to a role of monitoring and information gathering rather than something that leans towards complete bans⁴¹ (which would clearly be more effective than partial bans). According to Wiersema’s analysis, parties to CITES have tended to shy ‘away from expressly relying on precaution as a tool to manage uncertainty and have not, therefore, fully engaged with deeper layers of uncertainty.’⁴² This seems to me to be the problem with South Africa’s policy approach to the captive lion breeding industry – it is unwilling to exercise precaution by restricting trade and instead allows a continuation of the status quo under the banner of ‘adaptive management’. Precaution cannot be limited to a merely procedural role; it has to play a more substantive role in listing species, ‘even if that species is

⁴⁰ Annecoos Wiersema, “Uncertainty, Precaution, and Adaptive Management in Wildlife Trade,” *Michigan Journal of International Law* 36, no. 3 (2015): 377, <http://search.proquest.com/docview/1726782679?accountid=12763>.

⁴¹ *Ibid.*

⁴² *Ibid.*, 423.

threatened by many factors in addition to trade'.⁴³ Precaution should also generate greater consistency to avoid the problem of incomplete bans. It is, for example, gratuitously confusing to have some lions listed on Appendix I and others exempt from that ban at the very same time. The trade that caused Appendix I listing is still the same trade that is being fuelled through captive stock. CITES itself has recognised the problem of split-listing. South Africa's lion breeding industry is further exacerbating that problem, in addition to possibly escalating the demand for tiger products in Asia, which may further decimate that highly endangered species.

Finally, I would urge South African policymakers to consider the strong evidence⁴⁴ that farming tigers will not save the species, and why that logic applies similarly to lions, especially given that lion bones substitute for tiger bones in Asian markets.

⁴³ Ibid.

⁴⁴ Abbott and van Kooten, "Can Domestication of Wildlife Lead to Conservation? The Economics of Tiger Farming in China"; Laura Tensen, "Under What Circumstances Can Wildlife Farming Benefit Species Conservation?," *Global Ecology and Conservation* 6 (2016): 286–98, <https://doi.org/10.1016/j.gecco.2016.03.007>; Kirkpatrick and Emerton, "Killing Tigers to Save Them: Fallacies of the Farming Argument"; Gratwicke et al., "The World Can't Have Wild Tigers and Eat Them, Too"; Terrence McCoy, "Tiger Farms in Laos Fuel Demand for Tiger Parts on Black Market," *Washington Post*, May 9, 2019, https://www.washingtonpost.com/graphics/2019/investigations/tiger-farms-poaching-laos/?noredirect=on&utm_term=.243cbb253f21; Environmental Investigation Agency, "The Lion's Share: South Africa's Trade Exacerbates Demand for Tiger Parts and Derivatives."

Ross Harvey, *PhD Candidate*

WILDLIFE ECONOMICS & POLICY ANALYST

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POLICY INFLUENCE—**Joined the global policy conversation that informed the Chinese government’s decision to close its domestic ivory market by the end of 2017** by authoring an occasional paper (2015) highlighting global and local challenges to elephant conservation. The article formed the basis of a £90,000, four-part research project funded by Stop Ivory that culminated at CITES CoP17 in Johannesburg, 2016. One of those outputs was a [journal article](#) published in *Ecological Economics* recommending that the Chinese domestic ban should be immediate and permanent to disincentivise speculators from stockpiling ivory.

Contributed to the South African government’s decision to move away from the legalisation of the Rhino horn trade by highlighting flaws in pro-trade policy in a presentation to an independent panel of cross-sector experts. These views were later cemented in articles published in *The Daily Maverick*, *The Conversation* and *Project Syndicate*.

Quantified a potential R54 billion risk to the reputation and brand value of South African tourism that could result from the unregulated proliferation of captive predator breeding in the country using careful analysis of data gathered, related indicators and statistical strategies. Analysis emanated from a project commissioned by the Humane Society International (HSI) to the value of \$26,000, personally procured.

Motivated the Parliamentary Portfolio Committee on Environmental Affairs to condemn the captive predator breeding industry. The significant findings from my report were quoted in the final report submitted by the committee to the National Assembly that called for – among other things – a ‘policy and legislative review of captive breeding of lions for hunting and lion bone trade to putting an end to this practice...’ That report has led the **Minister of Environmental Affairs to appoint a high-level panel** to carry out the resolutions of the Portfolio Committee.

PROTOCOL DEVELOPMENT—**Laid the foundation for how data might be gathered more reliably than through survey questionnaires for wildlife conservation and the illegal wildlife trade** by modelling the captive predator breeding industry’s value and operations by building a database of verifiable industry information and interrogating it for reliability, replicability and accuracy.

LICIT AND ILLICIT WILDLIFE ECONOMIC ANALYSIS— **Research on the ivory, rhino horn and lion bone trade demonstrated that the existence of legal domestic trades provides cover for illicit product trafficking**, imperilling the survival probability of wild species. My analyses have also shown the need for holistic and well-coordinated policy responses across range states and in consumer markets to reduce demand simultaneously with banning the trade.

ROBUST QUANTITATIVE AND QUALITATIVE ANALYSIS—**Despite the absence of publicly available high-quality data, produced robust quantitative and qualitative analysis of the captive predator breeding industry and efficacy of existing policy** in addition to using game-theoretic models to understand how speculators and consumers might behave in ivory markets, and how range states should better align their elephant conservation and anti-trafficking policies.

IDENTIFIED ECONOMIC INCENTIVES TO CONSERVATION—**Demonstrated the importance of symmetrical incentives between local communities and wildlife tourism operators in Botswana** through on-the-ground field research in Chobe and the Okavango Delta if wildlife-based tourism is to be sustainable. **Shown the importance of considering negative externalities and opportunity costs** associated with policy decisions such as the Tanzanian government’s commitment to the Stiegler’s Gorge hydro power project in the Selous game reserve, which will negatively impact the ecological foundation of wildlife tourism and undermine food security downstream on the Rufiji River floodplains.

PUBLIC INSPIRATION—**Provided direct and public-orientated policy influence through media, governmental presentations and publication development as the author/co-author of 25+ papers and articles.** Commissioned and oversaw external authors on the development of two occasional papers for the Stop Ivory project and presented to the committee of inquiry regarding legalising the rhino horn trade. Presented research findings at a major TUSK event at CITES CoP17 in 2016 to audience that included members of DIRCO and the DEA.

Overview of 10+ years' Natural Resource Economics & Policy Analysis

LEAD/SENIOR RESEARCHER | South African Institute of International Affairs (SAIIA)

Jun 2013—present

An independent, non-government think-tank on regional and international issues which encourages broader and more informed awareness of a variety of environmental and other globally impacting issues. **Reported To:** Programme Head; **Managed Budgets for wildlife work:** R1.58m (ivory) and R355,000 (lion bone); **Team Size:** ~4 (variable – but roughly 2 internal, 2 contracted)

Key Performance Indicators:

...results focused [Ross] delivers work outputs quickly and efficiently. [He] has strong values and defends what is just and right. He is passionate about his work and the thematic areas in which he works. He adds a lot of insight to discussions and debates and is knowledgeable about a broad range of topics. Ross is friendly and polite. He has a positive attitude and is a wonderful person to have in an office environment. – Romy Chevallier —Senior Researcher & Co-Author on numerous articles

★ Exceeded SAIIA's position expectations for Key Deliverables with average performance review ratings of 4.3/5 on Wildlife and Extractive Industries Governance for the Governance of Africa's Resources Programme from 2015 to 2018.

RESEARCH OUTPUT & EVENTS COORDINATION (~50%)—

Contributed to SAIIA's specialisation brand awareness and reached target audiences with Policy Insights and Briefings; Occasional Papers; Peer-Reviewed Journal Articles; Working Papers; Submissions to parliament and government departments; and Events (conferences, roundtables and media briefings).

STRATEGIC DISSEMINATION & INPUT, MEDIA ENGAGEMENT AND STAKEHOLDER RELATIONSHIP MANAGEMENT (~30%)

★ Achieved notable quotes in leading international publications—The Economist and The Globe & Mail – by developing and executing strategic media plans with each project.

Delivered opinion & analysis pieces that have appeared in Project Syndicate, Business Day, The Daily Maverick and The Conversation. Co-authored pieces in external publications such as The Council of Councils (a memo on CITES) and The Ecologist (on the importance of community members as drivers of conservation); TV appearances; Web Features; Notes from the field (Botswana and Tanzania), as well as numerous radio interviews on subjects from illegal mining to elephant conversation.

MONITORING & EVALUATION AND REPORTING (~10%)—Delivered stakeholder analysis on the illicit ivory, rhino horn and lion bone trades, identified the appropriate target audiences and secured invitations to present work to parliament and relevant government departments.

FINANCIAL TARGETING (~10%)—Secured the £90,000 Stop Ivory Project and the \$26,000 Captive Predator breeding project while contributing to numerous other proposals. Laid the foundation for potential future partnership with the Natural Resources Governance Institute (NRGI) by securing a position as a peer reviewer for them.

Ross has performed exceptionally well in terms of strategic dissemination and media engagement. This relates not only to the quantity of media engagements, but also in using strategic, high-visibility online platforms like The Conversation. Ross is also particularly strong on using social media to disseminate his outputs.

—Alex Benkenstein - GARP
Programme Head

Previous Experience

Parliamentary Researcher | South African Parliament Nov 2011—Jan 2013

Lecturer | University of Cape Town-Political Economy, Political Studies Department

Jan 2010—Jul 2011

Lectured 'Introductory Political Economy' at the University of Cape Town (second half of course); Convened and taught 'Politics of International Economic Relations' at UCT (2010); Co-taught a Masters-level seminar in International Political Economy with Dr Harry Stephan at UCT. Head-tutored International Trade Bargaining.

Intern | South African Institute of International Affairs (GARP); wrote a review of the 'resource curse' Jan 2009—Jan 2010

Education

Economics PhD candidate | University of Cape Town

Oct 2013—Dec 2018 (submitted)

'Two petro-states diverge; explaining the institutional evolution of Angola and Nigeria'. Supervisor: Professor Don Ross. Co-supervisor: Professor Brian Levy.

M.Phil. in Public Policy Graduated with distinction | University of Cape Town

2008—2009

B.Com. in Philosophy, Politics & Economics | University of Cape Town

2002—2005

Publications

Harvey R, 'Greening South African Mining Through the Fourth Industrial Revolution', in *The Political Economy of Mining in South Africa* (Johannesburg: MISTRA, 2018).

Harvey R, 'The Economics of Captive Predator Breeding in South Africa', Working Paper, SAIIA, August 2018, https://saiia.org.za/wp-content/uploads/2018/08/Harvey_180818_WorkingPaper_PredatorBreedingSA.pdf

Harvey R, 'China and Ivory Trade: From Poacher to Game Keeper' in *Africa's Ivory Trade: When Wildlife Meets Geopolitics*, June 2018, <https://www.ispionline.it/it/pubblicazione/china-and-ivory-trade-poacher-game-keeper-20606>

Harvey R, 'Transnational organized crime and the illicit wildlife trade' in *The Council of Councils Tenth Regional Conference Panelist Papers*, November 5-7, 2017, available for download at <https://www.cfr.org/councilofcouncils/events/p39166>

Harvey R, Alden C and Y Wu, 'Speculating a fire sale: Options for Chinese authorities in implementing a domestic ivory trade ban', *Ecological Economics*, 141, 2017, 22-31, <https://doi.org/10.1016/j.ecolecon.2017.05.017>

Harvey R, 'Risks and fallacies associated with promoting a legalised trade in ivory', *Politikon*, 2016, <http://dx.doi.org/10.1080/02589346.2016.1201378>

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Harvey R, 'Mineral rights, rents and resources in South Africa's development narrative', 2015, Occasional Paper, SAIIA.

Harvey R, 'Between a rock and a hard place: State-business relations in the South African Mining Sector', in (eds) Pillay, Khadiagala, Naidoo & Southall, *New South Africa Review 5*, Wits University Press: Johannesburg, 2015.

Harvey R, 'From diamonds to coal? Critical reflections on Botswana's economic future', *The Extractive Industries and Society*, 2015, <http://dx.doi.org/10.1016/j.exis.2015.06.009>

Harvey R, *Fossil Fuels are Dead, Long Live Fossil Fuels: Botswana's Options for Economic Diversification*, 2015, Research Report 20, SAIIA.

Harvey R, *Preserving the African Elephant for Future Generations*, 2015, Occasional Paper 219, SAIIA.

Harvey R, *What Role for Natural Resources in Botswana's Quest for Economic Diversification?* 2015, Policy Briefing 135, SAIIA.

Bello O, Benkenstein A & R Harvey, 'The security dimension of labour relations conflicts in Africa's minerals sector: Experiences from South Africa and Zambia' in eds. Ewusi SK & JB Butera, *Beyond State Building: Confronting Africa's Governance and Socio-economic Challenges in the 21st Century*, (Addis Ababa: PEACE Africa Programme, 2014).

Harvey R, 'Natural resource rents and elite bargains in Africa: Exploring avenues for future research', *South African Journal of International Affairs*, 2014: <http://dx.doi.org/10.1080/10220461.2014.941001>

Harvey R, *Botswana's coal: Dead in the water or economic game changer?* 2014, Policy Insights 4.

Harvey R, *From Natural Resource Dependence onto Diversified Economies: An Agenda for Future Research*, 2014, Policy Insights 5, SAIIA.

Harvey R, *Minefields of Marikana: Prospects for Forging a New Social Compact*, 2014, Occasional Paper 183, SAIIA.

Harvey R, *Future Oil Revenues and Political Dynamics in West and East Africa: A Slippery Slope?*, 2014 Occasional Paper 188, SAIIA.

Harvey R, *Mining and Development: Lessons Learnt from South Africa and Beyond*, 2014, Policy Briefing 86, SAIIA.

Harvey R, *Mining for Development in Guinea: An examination of the Simandou Iron Ore Project*, 2014, Policy Briefing 83, SAIIA.

Harvey R, *Releasing the Prisoners from their Dilemma: How to Resolve Labour Tensions in South Africa's Mining Sector*, 2013, Policy Briefing 81, SAIIA.

Harvey R, *Marikana as a Tipping Point? The Political Economy of Labour Tensions in South Africa's Mining Industry and How Best to Resolve Them*, 2013, Occasional Paper 164, SAIIA.

Bello O, Benkenstein A and R Harvey, *Assessing Competitive Resource Tenders as an Option for Mining Rights Allocation in South Africa*, 2013, Occasional Paper 159, SAIIA.

Presentations

Poster presentation at the Evidence to Action research event ahead of the 2018 London Illegal Wildlife Trade Conference

Panel participant at London Mines and Money Conference, on political and social risks facing mining investment in South Africa

Speech delivered to the audience at TUSK/SAIIA/Stop Ivory event pre-CoP17, CITES, Sandton Convention Centre, Johannesburg.

'A tale of two kingdoms', OneLife HUB 2016, Jubilee Community Church: <https://www.youtube.com/watch?v=tdijk0xfmBQ>

SAIIA Submission to the Department of Mineral Resources on the revised draft reviewed Mining Charter (III), Pretoria, 2017.

SAIIA Submission to the 'Committee of Inquiry into the possibility of a legalised trade in rhino horn', Johannesburg, hosted by the Department of Environmental Affairs. 2015.

The political economy of natural resource governance: A South Korea/South Africa comparison, Johannesburg, hosted by the Development Policy Research Unit at the University of Cape Town, 2015.

Mining for development in Guinea: An examination of the Simandou Iron Ore Project, Maputo, hosted by the African Iron and Steel Conference, Maputo, July 2015.

Media Engagements

'Why Botswana is no longer a safe haven for elephants', The Conversation, 7 September 2018

'South Africa's role in the trade in lion bones: a neglected story', The Conversation, 21 August 2018

'How to break the impasse between opposing camps in ivory trade debate', The Conversation, 21 May 2018

'Can SA survive the fallout of US's decision to leave Iran deal?', Business Day TV, 10 May 2018

'How to ensure communities living near mining activities get a better deal', The Conversation, 7 May 2018

'The outlook for SA's mining industry, if Ramaphosa is quick, is bountiful', Business Day, 7 February 2018

'South Africa's Rhino Paradox', Project Syndicate, 22 September 2017

'Why allowing the sale of horn stockpiles is a setback for rhinos in the wild', The Conversation, 21 August 2017

'Game theory suggests China should keep its ivory trade ban in place indefinitely', The Conversation, 8 June 2017

'The fourth industrial revolution: potential and risks for Africa', The Conversation, 30 March 2017

'Africa must embrace shifting world by exploiting 'new' commodities', Business Day, 3 February 2017

Channel Africa panel interview, 'Mining Challenges', 13 February 2017: <http://iono.fm/e/385901>

'China's ban on domestic ivory trade is huge, but the battle isn't won', The Conversation, 12 January 2017. Data: 1,989 readers, 51 tweets, 171 Facebook (FB) and 6 LinkedIn shares.

'Saving the elephant: don't forget local communities!', with Alexander Rhodes, The Ecologist, 10 October 2016. Data: 344 Facebook shares.

'Unpacking CITES and the ban on elephant ivory trade', SABC TV interview, 26 September 2016.

'Conservation decisions must protect the livelihoods of people living in Africa', The Conversation 28 September 2016. Data: 2,859 readers, 66 tweets, 165 FB and 50 LinkedIn shares.

'Can multilateral efforts save threatened wildlife?' with Romy Chevallier, Council of Councils Global Memo, 19 September 2016.

'What is CITES and why should we care?' The Conversation Explainer, 18 September 2016. Data: 3,200 readers, 126 tweets, 718 FB and 32 LinkedIn shares.

'African countries square up for battle over future of ivory trade ban', written with Chris Alden, The Conversation, 10 August 2016. Data: 9,361 readers, 177 tweets, 5,063 FB and 61 LinkedIn shares.

'Tanzania: Notes from the field', SAIIA blog post with Romy Chevallier, SAIIA, 7 July 2016.

'Ivory sales by Zimbabwe and Namibia could 'create demand spike', with Chris Alden, Business Day, 17 May 2016.

'Labour law fuels strife on mines', Business Day, 26 May 2016.

'The case for burning ivory', with Chris Alden, Project Syndicate, 29 April 2016.

'Keeping the wolf from the door: Did President Zuma succeed?', SAIIA, 16 February 2016.

'Three mining changes that could net major investment', Business Day, 8 February 2016.

'SAIIA #CoffeeAmbush 5: The annual Mining Indaba 2016', YouTube, 8 February 2016.

'Behind the scenes: Botswana research feature', SAIIA, 7 January 2016.

'Policy reform is key for future of mining', SAIIA, 15 December 2015.

'Declining oil prices and the effect on African growth', Africa Business Today TV channel, 6 November 2015.

'Mining licence controversies continue to jeopardise industry', SAIIA, 7 September 2015.

For all older media engagements, please see <http://www.saiia.org.za/expertise/ross-harvey>

References

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