

# Abstracts Of Recently Published Wildlife Papers

**LION (PANTHERA LEO) POPULATIONS ARE DECLINING RAPIDLY ACROSS AFRICA, EXCEPT IN INTENSIVELY MANAGED AREAS** Hans Bauer, Guillaume Chapron, Kristin Nowell, Philipp Henschel, Paul Funston, Luke T. B. Hunter, David W. Macdonald, and Craig Packer. 2015, *Proceedings of the National Academy of Sciences*. DOI: [10.1073/pnas.1500664112](https://doi.org/10.1073/pnas.1500664112)

Abstract: We compiled all credible repeated lion surveys

and present time series data for 47 lion (*Panthera leo*) populations. We used a Bayesian state space model to estimate growth rate- $\lambda$  for each population and summed these into three regional sets to provide conservation-relevant estimates of trends since 1990. We found a striking geographical pattern: African lion populations are declining everywhere, except in four southern countries (Botswana, Namibia, South Africa, and Zimbabwe). Population models indicate a 67% chance that lions in West and Central Africa decline by one-half, while estimating a 37% chance that lions in East Africa also decline by one-half over two decades. We recommend separate regional assessments of the lion in the World Conservation Union (IUCN) Red List of Threatened Species: already recognized as critically endangered in West Africa, our analysis supports listing as regionally endangered in Central and East Africa and least concern in southern Africa. Almost all lion populations that historically exceeded ~500 individuals are declining, but lion conservation is successful in southern Africa, in part because of the proliferation of reintroduced lions in small, fenced, intensively managed, and funded reserves. If management budgets for wild lands cannot keep pace with mounting levels of threat, the species may rely increasingly on these southern African areas and may no longer be a flagship species of the once vast natural ecosystems across the rest of the continent. Download at <http://www.pnas.org/content/112/48/14894>

**LION POPULATIONS MAY BE DECLINING IN AFRICA BUT NOT AS BAUER ET AL. SUGGEST** Jason Riggio, Tim Caro, Luke Dollar Sarah M. Durant, Andrew P. Jacobson, Christian Kiffner, Stuart L. Pimm, and Rudi J. van Aarde. 2015, *Proceedings of the National Academy of Sciences*

Abstract: Historical knowledge and recent surveys attest that lions are declining across parts of Africa. We applaud Bauer et al. for assembling available counts because they motivate better monitoring and conservation support. Their own data, however, rejects their claims that lions are “declining everywhere, except in four southern countries” and that lions increase only where “intensively managed.” See:

<http://discovery.ucl.ac.uk/1473612/1/jacobson%20PNAS%201030%202.0%20consensus.pdf>

**ASSESSING THE SUSTAINABILITY OF AFRICAN LION TROPHY HUNTING, WITH RECOMMENDATIONS FOR POLICY** Scott Creel, Jassiel M’soka, Egil Drøge, Eli Rosenblatt,

**Matt Becker, Wigganson Matandiko & Twakundine Simpamba. 2016. John Wiley & Sons, Ecol Appl. Accepted Author Manuscript. DOI: 10.1002/eap.1377.**

Abstract: While trophy hunting provides revenue for conservation, it must be carefully managed to avoid negative population impacts, particularly for long-lived species with low natural mortality rates. Trophy hunting has had negative effects on lion populations throughout Africa, and the species serves as an important case study to consider the balance of costs and benefits, and to consider the effectiveness of alternative strategies to conserve exploited species. Age-restricted harvesting is widely recommended to mitigate negative effects of lion hunting, but this recommendation was based on a population model parameterized with data from a well-protected and growing lion population. Here, we used demographic data from lions subject to more typical conditions, including source-sink dynamics between a protected National Park and adjacent hunting areas in Zambia's Luangwa Valley, to develop a stochastic population projection model and evaluate alternative harvest scenarios. Hunting resulted in population declines over a 25-year period for all continuous harvest strategies, with large declines for quotas greater than 1 lion/concession (~0.5 lion/1000 km<sup>2</sup>) and hunting of males younger than 7 years. A strategy that combined periods of recovery, an age limit of  $\geq 7$  years and a maximum quota of ~0.5 lions shot per 1000 km<sup>2</sup> yielded a risk of extirpation < 10%. Our analysis incorporated the effects of human encroachment, poaching and prey depletion on survival, but assumed that these problems will not increase, which is unlikely. These results suggest conservative management of lion trophy hunting with a combination of regulations. To implement sustainable trophy hunting while maintaining revenue for conservation of hunting areas, our results suggest that hunting fees must increase as a consequence of diminished supply. These findings are broadly applicable to hunted lion populations throughout Africa, and to inform global efforts to conserve exploited carnivore populations. Download the full article [HERE](#). See also <http://www.montana.edu/screel/Webpages/creel.html>

**EMBARGO ON LION HUNTING TROPHIES FROM WEST AFRICA: AN EFFECTIVE MEASURE OR A THREAT TO LION CONSERVATION? Philippe Bouché, William Crosmar, Pierre Kafando, Benoit Doamba, Ferdinand Claude Kidjo, Cédric Vermeulen, Philippe Chardonnet. 2016 PLoS ONE 11(5): e0155763. doi:10.1371/journal.pone.0155763**

Abstract: The W-Arly-Pendjari (WAP) ecosystem, shared among Benin, Burkina Faso and Niger, represents the last lion stronghold of West Africa. To assess the impact of trophy hunting on lion populations in hunting areas of the WAP, we analyzed trends in harvest rates from 1999 to 2014. We also investigated whether the hunting areas with higher initial hunting intensity experienced steeper declines in lion harvest between 1999 and 2014, and whether lion densities in hunting areas were lower than in national parks. Lion harvest rate remained overall constant in the WAP. At initial hunting intensities below 1.5 lions/1000km<sup>2</sup>, most hunting areas experienced an increase in lion harvest rate, although that increase was of lower magnitude for hunting areas with higher initial hunting intensity. The proportion of hunting areas that experienced a decline in lion harvest rate increased at initial hunting intensities above 1.5 lions/1000km<sup>2</sup>. In 2014, the lion population of the WAP was estimated with a spoor count at 418 (230-648) adults and sub-adult individuals, comparable to the 311 (123-498) individuals estimated in the previous 2012 spoor survey. We found no significant lion spoor density differences between national parks and hunting areas. Hunting areas with higher mean harvest rates

did not have lower lion densities. The ratio of large adult males, females and sub-adults was similar between the national parks and the hunting areas. These results suggested that the lion population was not significantly affected by hunting in the WAP. We concluded that a quota of 1 lion/1000km<sup>2</sup> would be sustainable for the WAP. Based on our results, an import embargo on lion trophies from the WAP would not be justified. It could ruin the incentive of local actors to conserve lions in hunting areas, and lead to a drastic reduction of lion range in West Africa. Download the full article [HERE](#)

**CECIL: A MOMENT OR A MOVEMENT? ANALYSIS OF MEDIA COVERAGE OF THE DEATH OF A LION, PANTHERA LEO** David W. Macdonald , Kim S. Jacobsen, Dawn Burnham, Paul J. Johnson and Andrew J. Loveridge. *Animals* 2016, 6, 26.

Abstract: The killing of a satellite-tagged male lion by a trophy hunter in Zimbabwe in July 2015 provoked an unprecedented media reaction. We analyze the global media response to the trophy hunting of the lion, nicknamed “Cecil”, a study animal in a long-term project run by Oxford University’s Wildlife Conservation Research Unit (WildCRU). We collaborated with a media-monitoring company to investigate the development of the media coverage spatially and temporally. Relevant articles were identified using a Boolean search for the terms Cecil AND lion in 127 languages. Stories about Cecil the Lion in the editorial media increased from approximately 15 per day to nearly 12,000 at its peak, and mentions of Cecil the Lion in social media reached 87,533 at its peak. We found that, while there were clear regional differences in the level of media saturation of the Cecil story, the patterns of the development of the coverage of this story were remarkably similar across the globe, and that there was no evidence of a lag between the social media and the editorial media. Further, all the main social media platforms appeared to react in synchrony. This story appears to have spread synchronously across media channels and geographically across the globe over the span of about two days. For lion conservation in particular, and perhaps for wildlife conservation more generally, we speculate that the atmosphere may have been changed significantly. We consider the possible reasons why this incident provoked a reaction unprecedented in the conservation sector. Download at: <http://www.mdpi.com/2076-2615/6/5/26/htm> - It is important to read the comment in the Conservation Force Bulletin June 2016 (click for the pdf download) in conjunction with the paper of Macdonald et. al.

**AGE ESTIMATION OF AFRICAN LIONS PANTHERA LEO BY RATIO OF TOOTH AREAS** Paula A. White<sup>1</sup>, Dennis Ikanda, Luigi Ferrante, Philippe Chardonnet, Pascal Mesochina, Roberto Cameriere. 2016 *PLoS ONE* 11(4): e0153648. doi:10.1371/journal.pone.0153648

Abstract: Improved age estimation of African lions *Panthera leo* is needed to address a number of pressing conservation issues. Here we present a formula for estimating lion age to within six months of known age based on measuring the extent of pulp closure from X-rays, or Ratio Of tooth AREAs (ROAR). Derived from measurements taken from lions aged 3–13 years for which exact ages were known, the formula explains 92% of the total variance. The method of calculating the pulp/tooth area ratio, which has been used extensively in forensic science, is novel in the study of lion aging. As a quantifiable measure, ROAR offers improved lion age estimates for population modeling and investigations of age-related mortality, and may assist national and international wildlife authorities in judging compliance with regulatory measures involving age. Download the full article [HERE](#)

**THE IMPACT OF LAND REFORM ON THE STATUS OF LARGE CARNIVORES IN ZIMBABWE**  
**Samual T. Williams, Kathryn S. Williams, Christoffel J. Joubert and Russell A. Hill. PEERJ,**  
**January 2016 Impact Factor: 2.11 · DOI: 10.7717/peerj.1537**

Abstract: Large carnivores are decreasing in number due to growing pressure from an expanding human population. It is increasingly recognized that state-protected conservation areas are unlikely to be sufficient to protect viable populations of large carnivores, and that private land will be central to conservation efforts. In 2000, a fast-track land reform program (FTLRP) was initiated in Zimbabwe, ostensibly to redress the racial imbalance in land ownership, but which also had the potential to break up large areas of carnivore habitat on private land. To date, research has focused on the impact of the FTLRP process on the different human communities, while impacts on wildlife have been overlooked. Here we provide the first systematic assessment of the impact of the FTLRP on the status of large carnivores. Spoor counts were conducted across private, resettled and communal land use types in order to estimate the abundance of large carnivores, and to determine how this had been affected by land reform. The density of carnivore spoor differed significantly between land use types, and was lower on resettlement land than on private land, suggesting that the resettlement process has resulted in a substantial decline in carnivore abundance. Habitat loss and high levels of poaching in and around resettlement areas are the most likely causes. The FTLRP resulted in the large-scale conversion of land that was used sustainably and productively for wildlife into unsustainable, unproductive agricultural land uses. We recommended that models of land reform should consider the type of land available, that existing expertise in land management should be retained where possible, and that resettlement programmes should be carefully planned in order to minimize the impacts on wildlife and on people. Download at <https://peerj.com/articles/1537/>

**LEOPARD STATUS, DISTRIBUTION, AND THE RESEARCH EFFORTS ACROSS ITS RANGE**  
**Andrew P. Jacobson, Peter Gerngross., Joseph R. Lemeris Jr., Rebecca F. Schoonover, Corey Anco, Christine Breitenmoser-Wursten, Sarah M. Durant<sup>1</sup>, Mohammad S. Farhadinia, Philipp Henschel, Jan F. Kamler, Alice Laguardia, Susana Rostro-Garcia, Andrew B. Stein and Luke Dollar. Jacobson et al., PeerJ,2016. DOI 10.7717/peerj.1974, Creative Commons CC-BY 4.0**

The leopard's (*Panthera pardus*) broad geographic range, remarkable adaptability, and secretive nature have contributed to a misconception that this species might not be severely threatened across its range. We find that not only are several subspecies and regional populations critically endangered but also the overall range loss is greater than the average for terrestrial large carnivores. To assess the leopard's status, we compile 6,000 records at 2,500 locations from over 1,300 sources on its historic (post 1750) and current distribution. We map the species across Africa and Asia, delineating areas where the species is confirmed present, is possibly present, is possibly extinct or is almost certainly extinct. The leopard now occupies 25–37% of its historic range, but this obscures important differences between subspecies. Of the nine recognized subspecies, three (*P. p. pardus*, *fuscus*, and *saxicolor*) account for 97% of the leopard's extant range while another three (*P. p. orientalis*, *nimr*, and *japonensis*) have each lost as much as 98% of their historic range. Isolation, small patch sizes, and few remaining patches further threaten the six subspecies that each have less than 100,000 km<sup>2</sup> of extant range. Approximately 17% of extant leopard range is protected, although some endangered subspecies have

far less. We found that while leopard research was increasing, research effort was primarily on the subspecies with the most remaining range whereas subspecies that are most in need of urgent attention were neglected. Download at: <https://peerj.com/articles/1974.pdf>

**HYBRIDIZATION FOLLOWING POPULATION COLLAPSE IN A CRITICALLY ENDANGERED ANTELOPE Pedro Vaz Pinto<sup>1</sup>, Pedro Beja, Nuno Ferrand & Raquel Godinho. 2016 Sci. Rep. 6, 18788; doi: 10.1038/srep18788**

Abstract: Population declines may promote interspecific hybridization due to the shortage of conspecific mates (Hubb's 'desperation' hypothesis), thus greatly increasing the risk of species extinction. Yet, confirming this process in the wild has proved elusive. Here we combine camera-trapping and molecular surveys over seven years to document demographic processes associated with introgressive hybridization between the critically endangered giant sable antelope (*Hippotragus niger variani*), and the naturally sympatric roan antelope (*H. equinus*). Hybrids with intermediate phenotypes, including backcrosses with roan, were confirmed in one of the two remnant giant sable populations. Hybridization followed population depletion of both species due to severe wartime poaching. In the absence of mature sable males, a mixed herd of sable females and hybrids formed and grew progressively over time. To prevent further hybridization and recover this small population, all sable females were confined to a large enclosure, to which sables from the other remnant population were translocated. Given the large scale declines in many animal populations, hybridization and introgression associated with the scarcity of conspecific mates may be an increasing cause of biodiversity conservation concern. In these circumstances, the early detection of hybrids should be a priority in the conservation management of small populations. Download at <http://www.nature.com/articles/srep18788>