

An Appraisal of Green Militarization to Protect Rhinoceroses in Kruger National Park

JOHAN JOOSTE and SAM M. FERREIRA

Abstract: Trafficking of rhinoceros (rhino) horn threatens the persistence of two species living in Kruger National Park. Anti-poaching initiatives form part of an integrated approach adopted by South Africa. Several scholars see these initiatives as green militarization when authorities put people in readiness and assemble equipment, funding or approaches for war to deal with environmental emergencies. The militarization of rhino protection receives critique from several scholars and focuses on 1) ranger functions shifting more to law enforcement that are 2) increasingly militarized which 3) increases alienation of people living next to protected areas. We highlight that law enforcement was always a key element of ranger functions and that it is increasing. We illustrate militarization of rangers in Kruger, a responsible response given the changing global social context. We challenge, however, the hypothesis that militarization further alienates neighbours. The present qualitative narrative-based social science approaches introduce uncertainties that make it hard to evaluate the hypothesis. Complimentary formal hypothesis-based approaches may overcome these uncertainties. In addition, we postulate that improving protection of wildlife may carry crime reduction footprints into areas abutting reserves that can be beneficial to people living next to protected areas.

Introduction

Wildlife trafficking is a primary threat to the persistence of several species worldwide.¹ Drivers of trafficking wildlife products associate with long histories of trade, inelastic demand for products often at distant markets, high profit potential, unclear wildlife property rights, human-wildlife conflict disincentives and inadequate law enforcement.² Poaching is the active killing or capturing of individuals of a species and the start of the trafficking supply chain. The drastic escalation of poaching often links with economic growth in primary consumer countries.³ The first type of response to curb the consequences of wildlife trafficking requires broad-scale law enforcement across a local to cooperative international scale.⁴ Authorities, however, do recognize that the multitude of drivers of poaching storms require integrated responses with a whole of government approach needing several functions to work together.⁵

Responses to threats of poaching for horn to the persistence of rhinoceroses (rhino) species in South Africa reflect integrated interventions. South Africa implements a strategic response of interventions embedded in national and international coordination.⁶ Compulsory anti-poaching interventions rely on traditional perimeter and area protection tactics complimented by zone-, technology- and intelligence-led approaches. Biological management seeks to maximize the growth of rhino populations through skewing sex ratios

Maj. Gen. (Ret) Johan Jooste is head of Special Projects at SANParks and oversees the rhinoceros protection initiatives of the organization.

Dr. Sam Ferreira is the large mammal ecologist of SANParks based in Kruger National Park.

<http://www.africa.ufl.edu/asq/v18/v18i1a4.pdf>

towards cows and establishing several new populations in safer areas where births are not constrained by environmental factors or high rhinoceros densities. Biological management was and remains the backbone of rhino recovery in South Africa.⁷

Apart from the two traditional responses, South African authorities also pursue long-term sustainability interventions through trade options of various commodities associated with rhinos at local and international scales (although international trade in rhino horn is prohibited at present), while advocating demand management interventions in end-user countries.⁸ Game-changing interventions, however, focus on dealing with some of the causes of poaching such as inadequate law enforcement.⁹ Providing career opportunities and disrupting organized crime irrespective of association with rhino poaching remains the highest priority.¹⁰ This pillar also addresses the possible force multiplier effect of appropriate technologies.

The efforts of law enforcement staff and the organized approach to anti-poaching draw critiques of green militarization.¹¹ Militarization is an act by authorities of assembling and putting into readiness people, equipment, funding or approaches for war or other emergencies.¹² Authorities have a responsibility to ensure mission preparedness in terms of people, equipment, techniques and resources to sustain (e.g. budget). Green militarization refers to cases where such acts focus on environmental emergencies or threats such as wildlife trafficking that result in the plundering and degradation of environmental assets.¹³

Scholars focusing on risks associated with green militarization address a range of other issues as well, including governance and security, social media and philanthropy, as well as confluence of politics and capital. These issues focus on some of the aspects of the integrated approaches adopted by authorities. Critique of green militarization, however, have three specific associated aspects emerging from scholars: 1) ranger functions shifted from less conservation management to more law enforcement; 2) law enforcement responses are increasingly militarized; and 3) militarization intensifies existing alienation of people living next to protected areas. We use a case study of critiques of the protection of rhinoceroses in Kruger National Park (Kruger), South Africa, to review these prepositions.

The Law Enforcement Role of a Wildlife Ranger

The primary responsibility of wildlife rangers working in protected areas is to ensure the territorial integrity and safety for an area of responsibility. Tasks are multi-faceted and include ensuring the day to day health and well-being of the wildlife, research and monitoring, game capture and introductions, population management, controlled fire burning programs, infrastructure and equipment maintenance, public relations, environmental education, as well as local community relations, liaison and involvement. Added to these are the normal day to day management tasks, human resource planning and administration.¹⁴

A key task that forms a focused part of ensuring territorial integrity of an area is law enforcement. All protected areas were proclaimed under legislation (e.g. South African National Environmental Management: Protected Areas Act - Act No. 57 of 2003).¹⁵ Wildlife rangers are essentially tasked with ensuring compliance with the various rules and regulations of these various levels of legislation (e.g. South African National Environmental Management: Biodiversity Act - Act No. 10 of 2004).¹⁶ Law enforcement has and will always be the key part of a wildlife ranger's job. The rhinoceros poaching is emphasising a certain

kind of law enforcement at present, but does not reflect a change in the role and conservation ethics of a wildlife ranger.

In addition, the social context of wildlife protection changed substantially in the past decade or two.¹⁷ Society expects fair and equitable benefits from protected areas.¹⁸ At the same time the globalization of economic processes impose poaching drivers very differently from what they were before – poaching supply chains were always transnational, but the involvement of organized crime was not as rigorous.¹⁹ In this context, poachers seeking to hunt rhino change tactics. For instance, at present, much poaching takes place at night while this was not the case when the poaching surge started.²⁰

This means a far more holistic requirement for empowering wildlife rangers to fulfil their law enforcement tasks. Authorities now have to implement ranger-wellness programmes and facilitate counselling of wildlife rangers that have had contact with poachers while completing their law enforcement roles, including: supporting the rangers' families, repeated training in rules of engagement procedures, and awareness programmes of organized crime's entrapment schemes. Rangers have better weapons and access to technology to ensure a day and night advantage given the changing tactics of poachers. What the responses in Kruger and elsewhere reflect, however, are responsible management empowering rangers with training and equipment to fulfil law enforcement as one of the multiple tasks that they are responsible for in a rapidly changing world. These responses necessitated that rangers' daily tasks became more dominated by law enforcement activities than previously.

The Increased Militarization of Wildlife Law Enforcement

Green militarization could result from a redirection of a country's formal security forces to protect specifically wildlife. Such redistribution acts are common in several responses across Africa. The Botswana Defence Force, for example, has taken over all anti-poaching initiatives to protect African elephants and two species of rhinoceroses.²¹ In South Africa's case, the redistribution of priorities of formal security forces involved minimal re-assignment to protecting rhinoceroses.²² Militarization reflected by re-assigning formal security forces did thus not materialize in the case of Kruger and are often flagged as a symptom of the lack of Government commitment towards protecting natural heritage, perhaps unfairly given the strategic priorities of South Africa.²³

Green militarization, however, also reflects an adaptation of approaches.²⁴ This is when management authorities responsible for protected areas apply the military principles, but formal security forces are typically marginally involved. A critical analysis of anti-poaching tactics associated with rhino protection in Kruger will highlight that most of the strategies of militarized responses are embedded at some level within tactics to strategies and management thoughts on approaches.²⁵ For instance, since 2013, authorities in Kruger increased ranger numbers from 250 to 400. Kruger management also implemented high level technologies and make use of medium level technologies such as canine systems as well as various sensor systems. The Mission Area Joint Operations Centre collates information and provides intelligence to direct patrolling efforts, investigations and arrests. These responses reflect on an increased level of readiness for emergencies through formal and informal activities. Wildlife law enforcement to protect rhinos in Kruger thus manifested through bold decision making in increased militarization since 2008 and decidedly so since 2013. This is in line with the broad concept of green militarization defined previously for Kruger.²⁶

This trend, however, is not unique to wildlife management agencies. Several large scale businesses make formal and informal use of strategies of war as part of their outlook and financial growth potential.²⁷ Businesses engage in crime prevention initiatives based on such tactics in an attempt to curb asset thefts.²⁸ In addition, the private security industry is one of the fastest growing industries in South Africa.²⁹

The Intensified Alienation of Neighbours from Wildlife Protected Areas

A key critique of the implementation of anti-poaching tactics is the further alienation of neighbours resulting from militarized approaches. Published studies that made use of social surveys conclude that militarization approaches in Kruger are one of the key drivers of increased antagonistic perceptions that local people living next to parks have of protected areas and their managers. Several other studies and reviews that included Kruger as a case study also concluded more negative impacts on people's perception of Kruger and the management of the Park.³⁰

By the end of 2017, SANParks Environmental Crime Investigations unit were aware of approximately 7500 people that were directly involved in poaching of rhinos and elephants in Kruger.³¹ Household sizes of people living in municipalities abutting Kruger ranges from three to four.³² If we assume that rural people have a typical circle of friends of fifteen and five of those are really close friends, often family members, we can estimate that approximately 135,000 to 142,500 people are directly or indirectly involved in poaching.³³ A total of 3,155,265 people lived in the municipalities that abut Kruger in South Africa by 2016.³⁴ This translates to between 4.3% and 4.5% of the people living next to Kruger in South Africa being directly impacted and thus also potentially alienated by green militarization activities associated with protecting rhinos and elephants.

SANParks conducted 30 public and 24 thematic focal group meetings during which 5762 people took part with a further 501 written inputs as part of the revision of the Kruger National Park Management plan. Of the 30 public meetings, 22 took place within the municipalities that border Kruger. It is noteworthy that no negative feedback on law enforcement and/or ranger related matters were received from stakeholders. Instead, safety for people was the sixth most flagged issue, poaching was the eighth and people flagged a need of more rangers within the top 25 concerns raised.³⁵

In addition, benefit flows from Kruger are diverse including: employment and business opportunities, capacity building, infrastructure support, direct benefits from ecosystem goods and services, and managing relationships by restoring rights.³⁶ For instance, during 2013/2014, 2243 people were directly employed by SANParks in Kruger of which approximately 550 were directly involved in law enforcement. A further 949 were employed through the Expanded Public Works Programme, while Kruger concessions including tourism lodges, shops, restaurants and vehicle rentals (each of which contribute significantly towards job creation in the park) collectively employed 1277 people. In addition, Kruger stimulated the establishment of several abutting conservation areas that employ 7880 people, a fraction of which are also directly involved in law enforcement. Using the same logic as for people impacted by poaching, approximately 7.0% to 7.4% of the people living next to the park directly or indirectly benefit from Kruger. In addition, of the R346,858,898.41 total spent by Kruger management on goods and services for the 2014/2015 financial year, 90.19% was from Black Economic Empowerment rated companies.

These examples extracted from a diverse set of benefits that people derived through Kruger and its activities including law enforcement, provide a contrasting perspective on the importance of green militarization as a factor increasing alienation of people towards protected areas like Kruger. It is likely that general perceptions may be less negative than before unlike the perceptions described by various scholars.

Our reflections highlight the need for a study on general perceptions of people living next to Kruger. This could be complemented by also focusing on the impacts of poaching rather than just the effects of anti-poaching. The various studies that critique green militarization approaches, however, acknowledge and give weight to the legacy of past conservation practices. The forceful removal of people from land, South Africa's apartheid history and the existence of Kruger as largely a white elitist facility alienated local people communities from Kruger as a protected area long before managers equipped wildlife rangers with militarized skills.³⁷ The management of Kruger has changed emphasis and are now more people focused than before.³⁸ This also predicts changes in perceptions of people that may contrast those highlighted by scholars depicting increased alienation associated with militarization. Even so, the challenge of fixing the social injustices of the past remains a focus. Green militarization may serve, however, as an additional factor to be recognized together with past social injustices, rather than militarization being the key or only cause of alienation. Scholars that critique green militarization may add additional value if they could also provide potential solutions for the underlying pathology of past social injustices, or alternatives to militarization of anti-poaching tactics when authorities seek to protect wildlife assets.

The Perceptions and Factual Uncertainties of Militarized Alienation

A key challenge is dealing with perceptions, versus factual certainties. Evidence-based conservation management is a key requirement for authorities responsible for complex socio-economic-ecological systems typical of managing protected areas.³⁹ Science-based techniques provide robust data. Evidence of intensified alienation through militarization should thus adhere to scientific principles of learning.

The quantitative science process typically starts with an observation or idea from which scholars construct hypotheses including alternative and null-hypotheses.⁴⁰ Researchers use experimental, comparative or experiential approaches to collect data that allows them to test these hypotheses. The science process focuses on seeking to falsify a hypothesis, typically through quantitative statistical approaches, but non-statistical patterns are as powerful.⁴¹ Learning takes place through the falsifying process – a hypothesis remains true as long as it cannot be falsified. In the face of uncertainty and urgency, ecosystem managers often resort to adaptive management, a process of learning by doing.⁴² Even so, the scientific basis of learning and obtaining information remains the same – adaptive managers have some idea how an ecosystem might work, conduct management as if they were correct, collect data, and evaluate predictions made from how they thought the system work using the science-based hypothesis testing approach.⁴³

The social sciences make extensively use of learning processes embedded in qualitative approaches and narratives that capture the subtle nuances that quantitative science and hypothesis testing approaches neglect.⁴⁴ Various learning approaches thus carry different benefits and risks. The qualitative science approaches may capture nuances better than the

quantitative science processes, but learning may be less robust because the process does not explicitly aim to eliminate alternative explanations.

The present literature reflecting on increased alienation of local people towards conservation authorities through the militarization of law enforcement by wildlife rangers primarily make use of qualitative approaches. Authors of the published and peer-reviewed outputs associated with militarization effects in Kruger set a clear basis of their perception from other literature that people are increasingly more alienated by ranger militarization in Kruger. The authors, however, do not provide a clear set of hypotheses including null hypothesis. Some published studies made use of extensive individual and focus group interviews.⁴⁵ In some instances, studies also used ethnographic research methods. Even so, authors did not use quantitative analytical approaches to falsify hypotheses. Authors often used selected quotes to support their perception. This limits the exploration of alternative explanations for increased alienation of people living next to protected areas.

The combination of aspects of the approaches used by authors that critique wildlife protection efforts at present may impose limitations on conclusions. Applying complimentary quantitative and qualitative narrative and hypothesis-based approaches may add significant value and provide better insight into the role that green militarization may play in the alienation of people living next to protected areas, and specifically Kruger.

The Societal Footprint of Providing Security to Wildlife

An alternative outcome of responsible managers empowering wildlife rangers to fulfil their law enforcement roles to militarized alienation is an expanded security footprint for people living next to protected areas. The integrated approaches implemented by SANParks require disruption of organized crime.⁴⁶ Investigations led by the SANParks Environmental Crime Investigations unit provided evidence that assisted the South African Police to arrest over a thousand wildlife criminals inside as well as areas abutting Kruger from 2012 to 2017. These likely have consequences for reduction in other criminal activities as were recorded elsewhere.⁴⁷

In addition, providing secure areas within which people live next to parks is a key requirement if authorities seek to continue disrupting organized crime and provide for career and economic opportunities.⁴⁸ Provision of such opportunities is a key aspect that substantially changes the willingness of people to poach.⁴⁹ Green militarization provides an opportunity for options to expand the security skills into a footprint within the buffer zones of protected areas to contribute to regional safety and security for all people. The reality is that no project seeking to address social injustices of the past will succeed without real proof that authorities can maintain law and order.

The concept of focusing on people has been the basis of river catchment management strategies changing from water for animals in parks to sustainable use of water resources that benefit people across the region in and around Kruger.⁵⁰ The conservation outcome that resulted from a people-focused approach was substantially reduced mortalities of animals within Kruger during the drought of 2015/2016 when no perennial river stopped flowing.⁵¹ Authorities could thus benefit from establishing and implementing security programs that place less focus on rhinos and more focus of people in and around protected areas.

Conclusion

Our appraisal highlights that a primary role of wildlife rangers remains as law enforcement, but that the changing context of transnational wildlife crime resulted in ranger tasks being more law enforcement focused than before. In addition, responsible conservation management increasingly militarized the law enforcement role of wildlife rangers following significant societal change as well as a global trend set by big businesses participating in large-scale economies. Militarized law enforcement is an intervention of necessity to buy time whilst other more lasting solutions are pursued given this global context. Furthermore, authorities have the added responsibility to protect the staff made responsible for this dangerous and thankless task.

We find it hard though to conclusively support the preposition that militarization leads to increased alienation of people living next to protected areas towards wildlife as well as managers of wildlife. This is particularly so given the lack of recent knowledge on the trends in the perception of various stakeholders living in areas abutting Kruger. By combining different science approaches, authorities could rigorously evaluate the role of green militarization that could allow the development and implementation of responses embedded in interventions to fix social wrongs of the past.

For wildlife and people, addressing the social wrongs of the past hinges on implementing the game changing interventions – provide career opportunities for people, while disrupting organized crime. Disrupting organized crime starts with a broken-window or zero tolerance strategy. That way the militarization footprint of law enforcement associated with wildlife expands to a regional safety and security for people.

Notes

1 Rosen and Smith 2010.

2 Conrad 2012.

3 Nijman 2010.

4 Republic of South Africa. 2017. "National integrated strategy to combat wildlife trafficking." <https://pmg.org.za/committee-meeting/24509/> (accessed 14 July 2017).

5 Conrad 2012; Schmitz, et al. 2017.

6 Department of Environmental Affairs. 2014. "Minister Edna Molewa leads implementation of integrated strategic management of rhinoceros in South Africa."

https://www.environment.gov.za/mediarelease/molewa-integratedstrategicmanagement_rhinoceros (accessed 2 July 2017).

7 Knight, et al. 2013; Knight, et al. 2015.

8 Department of Environmental Affairs. 2017. "Department of Environmental Affairs clarifies that rhino horn may not be traded internationally."

<https://www.environment.gov.za/mediarelease/deaclarifiesrhinohorntrade> (accessed 2 July 2017).

9 Conrad 2012.

10 Haas and Ferreira 2016.

- 11 Duffy 2014; Humphreys and Smith 2014; Lunstrum 2014; Büscher and Ramutsindela 2015; Duffy, et al. 2015; Annecke and Masubelele 2016; Elliot 2016; Büscher 2016; Ramutsindela 2016; Hübschle 2017; Lunstrum 2017.
- 12 Kraska 2007.
- 13 Lunstrum 2014.
- 14 Game Ranger Association of South Africa. 2017. "What is a game ranger?" <http://www.gameranger.org/who-we-are/what-is-a-game-ranger.html> (accessed 2 July 2017).
- 15 South African Government 2003. National Environmental Management: Protected Areas Act. <http://www.gov.za/documents/national-environmental-management-protected-areas-act> (accessed 24 July 2017).
- 16 South African Government 2004. National Environmental Management: Biodiversity Act 10. <http://www.gov.za/documents/national-environmental-management-biodiversity-act-0> (accessed 24 July 2017).
- 17 Ghimire 2013.
- 18 Brechin, et al. 2002.
- 19 Warchol, et al. 2003; Hübschle 2015; Hübschle 2017.
- 20 SANParks, Environmental Crime Investigation, Unpublished data.
- 21 Mogomotsi and Madigele 2017.
- 22 Shaw and Rademeyer 2016.
- 23 National Planning Commission. 2012. National Development Plan 2030: Our future, make it work. <http://www.gov.za/sites/www.gov.za/files/Executive%20Summary-NDP%202030%20-%20Our%20future%20-%20make%20it%20work.pdf> (accessed 2 July 2017).
- 24 Lunstrum 2014.
- 25 Greene 2007.
- 26 Lunstrum 2014.
- 27 Stokes, et al. 2007.
- 28 Horn 2012.
- 29 Minnaar 2005.
- 30 Duffy 2014; Lunstrum 2014; Hübschle 2017. Büscher and Ramutsindela 2015; Duffy, et al. 2015; Annecke and Masubelele 2016; Elliott 2016; Büscher 2016; Ramutsindela 2016; Lunstrum 2017.
- 31 SANParks, Environmental Crime Investigations, Unpublished Data.
- 32 <https://municipalities.co.za/> Accessed 20 May 2018.
- 33 Zhou, et al. 2005.
- 34 <https://municipalities.co.za/> Accessed 20 May 2018.
- 35 SANParks, Unpublished data.
- 36 Swemmer and Mmethi 2016.
- 37 Venter, et al. 2008; Worden 1996; Carruthers 1995.
- 38 Carruthers 1995.
- 39 Sutherland, et al. 2004.
- 40 Gauch 2003.
- 41 Popper 2005.
- 42 Keith, et al. 2011.
- 43 Johnson 1999.

44 Rust, et al. 2017.

45 Lunstrum 2014; Duffy, et al. 2015; Hübschle 2017.

46 Haas and Ferreira 2016.

47 Kelling and Coles 1997.

48 Duffy, et al. 2015.

49 Haas and Ferreira 2017.

50 Pollard and du Toit 2011.

51 <https://www.iol.co.za/dailynews/news/drought-was-good-for-kruger-says-sanparks-1995773>, Accessed 6 June 2018.

References

Annecke, W. and M. Masubelele. 2016. "A Review of the Impact of Militarisation: The Case of Rhino Poaching in Kruger National Park, South Africa." *Conservation and Society* 14.3: 195.

Brechin, S.R., et al. 2002. "Beyond the Square Wheel: Toward a More Comprehensive Understanding of Biodiversity Conservation as Social and Political Process." *Society and Natural Resources* 15.1: 41-64.

Büscher, B. 2016. "'Rhino Poaching is out of Control!' Violence, Race and the Politics of Hysteria in Online Conservation." *Environment and Planning* 48.5: 979-998.

Büscher, B. and M. Ramutsindela. 2015. "Green Violence: Rhino Poaching and the War to Save Southern Africa's Peace Parks." *African Affairs* 115.458: 1-22.

Carruthers, J. 1995. *The Kruger National Park: a Social and Political History*. Pietermaritzburg: University of Natal Press.

Conrad, K. 2012. "Trade Bans: a Perfect Storm for Poaching?" *Tropical Conservation Science* 5.3: 245-54.

Duffy, R. 2014. "Waging a War to Save Biodiversity: the Rise of Militarized Conservation." *International Affairs* 90.4: 819-34.

Duffy, R., et al. 2015. "The Militarization of Anti-poaching: Undermining Long Term Goals?" *Environmental Conservation* 42.4: 345-48.

Elliott, L. 2016. "The Securitization of Transnational Environmental Crime and the Militarization of Conservation." *Handbook of Transnational Environmental Crime* 4: 68.

Ghimire, K.B. 2013. *Social Change and Conservation*. New York: Routledge.

Gauch, H.G. 2003. *Scientific Method in Practice*. Cambridge: Cambridge University Press.

Greene, R. 2007. *The 33 Strategies of War*. London: Profile Books Ltd.

Haas, T.C. and S.M. Ferreira. 2017. "Finding Politically Feasible Conservation Strategies: The Case of Wildlife Trafficking." *Ecological Applications* 28.2: 473-94.

_____. 2016. "Combating Rhino Horn Trafficking: The Need to Disrupt Criminal Networks." *PLOS One* 11.11.

Horn, R.E. 2012. *A Pro-active Approach to Curb Asset Theft at a South African Mine*. Pretoria: University of South Africa.

- Hübschle, A.M. 2015. *A Game of Horns: Transnational Flows of Rhino Horn*. Köln: Universität zu Köln.
- _____. 2017. "The Social Economy of Rhino Poaching: Of Economic Freedom Fighters, Professional Hunters and Marginalized Local People." *Current Sociology* 65.3: 427-447.
- Humphreys, J, and M.L. Smith. 2014. "The 'Rhinofication' of South African Security." *International Affairs* 90.4: 795-818.
- Johnson, B. 1999. "The Role of Adaptive Management as an Operational Approach for Resource Management Agencies." *Conservation Ecology* 3.2.
- Keith, D.A., T.G. Martin, E. McDonald-Madden and C. Walters. 2011. "Uncertainty and Adaptive Management for Biodiversity Conservation." *Biological Conservation* 144.4: 1175-78.
- Kelling, G.L. and C.M. Coles. 1997. *Fixing Broken Windows: Restoring Order and Reducing Crime in Our Communities*. New York: Simon and Schuster.
- Knight, M.H., D. Balfour and R.H. Emslie. 2013. *Biodiversity Management Plan for the Black Rhinoceros (Diceros bicornis) in South Africa 2011–2020*. Pretoria: Government Gazette 36096: 5–76.
- Knight, M.H., R.H. Emslie, R. Smart and D. Balfour. 2015. *Biodiversity Management Plan for the White Rhinoceros (Ceratotherium simum) in South Africa 2015-2020*. Pretoria: Department of Environmental Affairs.
- Kraska, P.B. 2007. "Militarization and Policing: Its Relevance to 21st Century Police." *Policing: a Journal of Policy and Practice* 1.4: 501-13.
- Lunstrum, E. 2014. "Green Militarization: Anti-poaching Efforts and the Spatial Contours of Kruger National Park." *Annals of the Association of American Geographers* 104.4: 816-832.
- Lunstrum, E. 2017. "Feed Them to the Lions: Conservation Violence Goes Online." *Geoforum* 79: 134-43.
- Minnaar, A. 2005. "Private-public partnerships: Private security, Crime Prevention and Policing in South Africa." *Acta Criminologica: Southern African Journal of Criminology* 18.1: 85-114.
- Mogomotsi, G.E.J. and P.K. Madigele. 2017. "Live by the Gun, Die by the Gun: Botswana's 'Shoot-to-kill' Policy as an Anti-poaching Strategy." *South African Crime Quarterly* 60: 51-58.
- Nijman, V. 2010. "An Overview of International Wildlife Trade from Southeast Asia." *Biodiversity and Conservation* 19.4: 1101-14.
- Pollard, S. and D. du Toit. 2011. "Towards Adaptive Integrated Water Resources Management in Southern Africa: The Role Of Self-Organisation And Multi-Scale Feedbacks for Learning and Responsiveness in the Letaba and Crocodile Catchments." *Water Resources Management* 25.15: 4019-35.
- Popper, K. 2005. *The Logic of Scientific Discovery*. New York: Routledge.
- Ramutsindela, M. 2016. "Wildlife Crime and State Security in South(ern) Africa: An Overview of Developments." *Politikon* 43.2: 159-471.

- Rosen, G.E. and K.F. Smith. 2010. "Summarizing the Evidence on the International Trade in Illegal Wildlife." *EcoHealth* 7.1: 24-32.
- Rust, N.A., et al. 2017. "Quantity does not always mean Quality: The Importance of Qualitative Social Science in Conservation Research." *Society and Natural Resources* 2017: 1-7.
- Schmitz, P.M., D. Gonçalves and M. Jacobs. 2017. "Mapping Community Vulnerability to Poaching: A Whole-Of-Society Approach." *International Cartographic Conference*: 325-340.
- Shaw, M. and J. Rademeyer. 2016. "A Flawed War: Rethinking 'Green Militarisation' in the Kruger National Park." *Politikon* 43.2: 173-92.
- Stokes, P., R. Bishop and J. Phillips. 2007. "Introduction: Militarization and International Business." *Critical Perspectives on International Business* 3.1: 5-10.
- Sutherland, W.J., et al. 2004. "The Need for Evidence-based Conservation." *Trends in Ecology & Evolution* 19.6: 305-308.
- Swemmer, L.K. and A.H. Mmethi. 2016. *Biodiversity for Society - A reflection on the diversity of direct, local impacts (benefits and costs) of the Kruger National Park*. Pretoria: South African National Parks.
- Venter, F.J., et al. 2008. "The Evolution of Conservation Management Philosophy: Science, Environmental Change and Social Adjustments In Kruger National Park." *Ecosystems* 11.2: 173-92.
- Warchol, G.L., L.L. Zupan and W. Clack. 2003. "Transnational Criminality: An Analysis of the Illegal Wildlife Market in southern Africa." *International Criminal Justice Review* 13.1: 1-27.
- Worden, N. 1996. "The Making of Modern South Africa: Conquest, Segregation and Apartheid." *The English Historical Review* 111.443: 1016-18.
- Zhou, W.X., et al. 2005. "Discrete Hierarchical Organization of Social Group Sizes." *Proceedings of the Royal Society of London B: Biological Sciences* 272.1561: 439-444.

