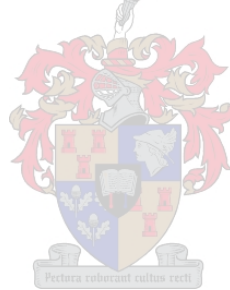


**Why Conservation Fails:  
Uncovering the wicked political nature of Southern Africa's  
fight against wildlife extinction**

by

Lindsay Mandy



Supervisor: Dr Derica Lambrechts

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## DECLARATION

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## ABSTRACT

Since the dawn of Mankind, the extraction and ownership of natural resources has shaped our social development. Competition over who has control over what resources – particularly the shiny, sparkly and flammable ones buried deep within the earth’s crust – has governed political dynamics. This relationship between the earth’s depleting non-renewable resources, land and people has indeed occupied those in the Political Sciences and natural resource management (NRM) sectors. Although we became bipedal some time ago, we seem to have our heads in the sand when it comes to the renewable resources that play just as political a role. Particularly, our understanding of the management of wildlife has been left up to those within the Natural Sciences and confined to its scope which cannot cater for the sociopolitical complexities that influence the survival of endangered species, and which, in turn, influence the sociopolitical complexities of our present time.

Bridging the gap in academia between politics and wildlife management, Wicked Problem Theory (WPT) provides a framework in which conservation problems can be analysed from a political perspective. In this theory’s view, policy problems involving the management of endangered species are wicked by nature and design, as human values, not the science of population decline, are at the core of the problem, and can therefore never truly be solved. Wicked problems cannot simply be solved through research, understandings and policies formulated within the scope of Natural Science, as they tend to do more damage than alleviate the problems they intend to solve. So, through the use of WPT, this study attempted to answer the broader question - *Why is conservation in Southern Africa failing?* For this task, African lions and vultures within the region are used as case studies to illustrate just how complex, fluid, political, and sticky designing and implementing wildlife legislation becomes.

This study aimed to contextualise the complexities of conserving lions and vultures in Southern Africa, and to analyse the context through the wicked lens. In doing so, the analysis by no means attempted to clarify or solve the political problems of wildlife management, but rather to construct a political interpretation of the problem that illustrates just how complex the problem is. In taking the wicked argument to heart, it is unsurprising that the study’s findings reveal a situation in which the relationship between sacredness and science, policy design and implementation, and the dynamics between competing stakeholders governed by multiple agendas are simultaneously

operating in the complex adaptive system we call NRM. So far, the political perspective on Southern Africa's conservation, especially regarding vultures, has not been thoroughly voiced. By creating this missing link between the Natural and Political Sciences, such research has the potential to advance the way we look at, and underestimate, the political nature of conservation. Only when we give up the attempt to simplify such problems and accept their complicated nature will we ever stand any chance of healing the fundamental problems within the wicked nature of conservation.

## OPSOMMING

Sedert die ontstaan van die mensdom het die ontginning en eienaarskap van natuurlike hulpbronne ons sosiale ontwikkeling gevorm. Wedywering oor wie beheer watter hulpbronne beheer politiese dinamika – veral die blink, glimmende en vlambare hulpbronne diep begrawe binne die aardkors. Hierdie verhouding tussen die aarde se uitputtende en onhernubare hulpbronne, die land en die mense het inderdaad diegene in die Politiese Wetenskappe sowel as die natuurlike hulpbronbestuur (NRM) sektore besig gehou. Alhoewel ons lank gelede reeds tweevoetig geword het, blyk ons koppe steeds in die sand begrawe te wees wanneer dit kom tot hernubare hulpbronne en die politiese rol wat sulke hulpbronne speel. In die besonder is ons verstandhouding van wildbestuur oorgelaat aan diegene in die Natuurwetenskappe en sodanig beperk in omvang wat min voorsiening maak vir die sosio-politiese ingewikkeldhede wat bedreigde spesies se oorlewing beïnvloed en, op die se beurt, die sosio-politiese ingewikkeldhede van die hede beïnvloed.

Om die gaping in akademie tussen politiek en wildbestuur te oorbrug, bied die Bose Probleem Teorie (BPT) die raamwerk waarmee bewaringsprobleme uit 'n politiese oogpunt kan ontleed word. Uit dié teorie se standpunt is beleidsprobleme betrekkende die bestuur van bedreigde spesies van nature en ontwerp onsalig omrede menslike waardes, en nie bevolkingsafname nie, die probleemkern is en dus nooit werklik opgelos kan word nie. Bose probleme kan eenvoudig nie opgelos word deur navorsing, verstandhouding en beleid saamgestel in die omvang van die Natuurwetenskappe nie, aangesien dit geneig is om meer skade te berokken in vergelyking met die probleme wat bedoel is om opgelos te word. Hierdie studie, met behulp van BPT, beoog om die volgende vraag te beantwoord: “Hoekom is bewaring in Suider-Afrika besig om te misluk?” Vir hierdie taak word Afrikaleus en -aasvoëls uit 'n sekere gebied gebruik as gevallestudies om te wys hoe ingewikkeld, vloeibaar, polities en taai die ontwerp en toepassing van wildswetgewing kan word.

Die studie poog om die ingewikkeldhede van leeu- en aasvoëlbewaring in Suider-Afrika in konteks te plaas en hierdie konteks deur die lens van BPT te ontleed. Die ontleding is derhalwe nie 'n poging om die politieke probleme op te klaar of op te los nie, maar eerder 'n poging om 'n politiese vertolking van die probleem te skep wat wys hoe ingewikkeld die probleem is. In ooreenstemming met die BPT is dit nie verbasend dat die studie se bevindinge 'n situasie ontbloot waar die verhouding tussen onskendbaarheid en wetenskap, beleidsontwerp en toepassing, en die dinamika

tussen mededingende belanghebbendes regeer deur meervoudige agendas gelyktydig in werking is in die komplekse, aanpasbare stelsel wat ons NRM in afkorting noem. Tot dusver is die politieke standpunt oor Suider-Afrika se bewaring, veral met betrekking tot aasvoëls, nie duidelik geboekstaaf nie. Deur hierdie verlore skakel tussen die Natuurwetenskappe en Politiese Wetenskappe te skep, het hierdie navorsing die potensiaal om die wyses waarop ons die politieke natuur van bewaring besigtig, en onderskat, te bevorder. Slegs wanneer ons ophou om sulke probleme te probeer vereenvoudig en die ingewikkeldheid aanvaar, sal ons enige kans staan om die wesenlike probleme binne die onsalige natuur van bewaring te genees.

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

ACI	African Carnivore Initiative
ANC	African National Congress
AP	Action Plan
AWF	African Wildlife Foundation
AWPD	African Wildlife Poisoning Database
BAT	Ban Animal Trading
BDP	Botswana Democratic Party
BFF	Born Free Foundation
BNP	Banhine National Park
CACH	Campaign Against Canned Hunting
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources
CAT	Conservation Action Trust
CBD	Convention on Biological Diversity
CCMA	Commission for Conciliation, Mediation and Arbitration
CHASA	Confederation of Hunting Associations of South Africa
CIC	International Council for Game and Wildlife Conservation
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Conservation of Migratory Species of Wild Animals
DA	Democratic Alliance
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
EFF	Economic Freedom Fighters

EIA	Environmental Investigation Agency
EIA	Environmental Impact Assessment
EJNF	Environmental Justice Networking Forum
EMS	Elizabeth Margaret Steyn Foundation
EPI	Environmental Policy Integration
EU	European Union
EWT	Endangered Wildlife Trust
GLTFCA	Greater Limpopo Transfrontier Conservation Area
GNP	Gorongosa National Park
HLC	Human-Lion Conflict
HNP	Hwange National Park
HSI	Humane Society International
HWC	Human-Wildlife Conflict
IBA	Important Bird and Biodiversity Area
IFP	Inkatha Freedom Party
IGO	Intergovernmental Organisation
IISD	International Institute for Sustainable Development
IRF	International Rhino Foundation
ISS	Institute for Security Studies
IUCN	International Union for Conservation of Nature
KNP	Kruger National Park
KTFCA	Kgalagadi Transfrontier Conservation Area
LNP	Limpopo National Park

MsAP	Multi-species Action Plan
NAMC	National Agricultural Marketing Council
NBSAP	National Biodiversity Strategy and Action Plan
NDA	Non-Disclosure Agreement
NEMBA	National Environmental Management: Biodiversity Act, 2004
NGO	Non-governmental Organisation
NISCWT	National Integrated Strategy to Combat Wildlife Trafficking
NNP	Niassa National Park
NPO	Non-profit Organisation
NRC	Natural Resource Conflict
NRM	Natural Resource Management
PA	Protected Area
PMG	Parliamentary Monitoring Group
REST	Rare and Endangered Species Trust
RSA	Republic of South Africa
SADC	Southern African Development Community
SAIIA	South African Institute of International Affairs
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks
SAPA	South African Predators Association
SAPS	South African Police Service
SPOTS	Save and Protect Our Treasures
SVC	Save Valley Conservancy

TFCA	Transfrontier Conservation Area
TOPS	Threatened or Protected Species Regulations
UN	United Nations
UNEP	United Nations Environment Programme
US	United States
USAID	United States Agency for International Development
USIP	United States Institute of Peace
WCMC	World Conservation Monitoring Centre
WCS	Wildlife Conservation Society
WP	Wicked Problem
WPT	Wicked Problem Theory
WWF	World Wildlife Fund

# 1. CHAPTER ONE

## Introduction

Although the 2010s witnessed a global rise in environmental awareness, the decade also saw the rapid depletion of the earth's resources. As a result, continuing into the new decade, regions of the world are experiencing an increase in conflict over the remaining (and depleting) natural resources. Perhaps the most complicated of these natural resource conflicts (NRCs) is over the survival of endangered wildlife (Nie, 2003:307). How then can we explain the prevalence of NRC and wildlife declines in a so-called conservation-orientated environment that pumps copious resources into combating these trends? This study aims to address this issue in Southern African conservation from the political perspective of Wicked Problem Theory (WPT).<sup>1</sup> In doing so, the study aims to show how understandings of the problem currently rooted in the Natural Sciences underestimate the intrinsic and toxic role of human values in creating and sustaining conflict over endangered resources. Since current efforts in conservation do not seem to work, perhaps the sociopolitical elements involved are actually at the core of Southern Africa's conservation problem. The first chapter will provide the scope of the research topic, key questions that ought to be considered, a brief overview of the literature, objectives and relevance of the study, the design and methodology for obtaining and synthesising data, and the limitations that may affect the capacity of the study.

### 1.1. Background to Research

In examining trends over the course of a century, African wildlife has declined considerably. The current rate of human-related deaths of wildlife imply that some species are facing a critical threat of extinction within the next decade. Human population growth has caused an increase in land use, land fragmentation, infrastructure, poverty, unemployment and human-wildlife conflict (HWC). Adding to that, poor education, governance, and law enforcement all facilitate the incentive for individuals and organised groups to resort to poaching<sup>2</sup> for economic gain (Ogutu *et al.*, 2016:2). While the population declines of rhinoceros and elephant have held the limelight for over a decade, threats to wild African lions and vultures in the region are equally worrisome.

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<sup>1</sup> Wicked Problem Theory was devised by Rittel and Webber in *Dilemmas in a General Theory of Planning* (1973) to understand the complex nature of conflict over social policymaking and its implementation. The theory is critical of the state's dependence on scientific interpretations of social problems, which result in the making of incompatible policies that cause more conflict in the implementation phase. The conflict caused is considered intractable.

<sup>2</sup> *Poaching* is broadly defined as the illegal killing or extraction of wildlife (Aucoin & Donnenfeld, 2017:7).



Tracking extinction paths from north to south of the African continent indicates that population declines are steadily encroaching on the Southern region, which is regarded as Africa's safe haven for remaining populations. While rhino numbers have actually increased by 30% in the last decade, the population has seen a drop since 2017 at a rate of one poaching every ten hours. The population is currently estimated at 23 000 – 27 000 individuals, of which 21 000 – 23 000 dwell in Southern Africa (IRF, 2019; Emslie *et al.*, 2019:2). In the past 90 years, African elephant numbers have dropped from 10 million to 415 000 due to habitat loss, HWC and ivory demands (WWF, 2018).

African wild lions have seen a habitat loss of 82% in the last century, and while some may argue that Southern African lion numbers have actually increased in the last decade, this is only due to captive lion breeding serving the trophy hunting and ecotourism markets, and more recently, the lion bone trade with East Asian countries (Trinkel & Angelici, 2016:46). Including captive lions in the statistics that illustrate lion numbers causes serious inaccuracies on their conservation status, as only wild lions play a role in natural ecosystems.

Vultures have become the most threatened of these animals and deserve a special mention. Africa's vultures have declined rapidly since 1970, with the most conservative estimate at 62% (Ogada *et al.*, 2016:89). While victim to traditional medicine, powerline and wind turbine collisions, and farming practices, vultures are also victim to the rising rate of sentinel poaching. Sentinel poaching refers to the deliberate poisoning of carcasses by poachers in the attempt to conceal their crimes from nearby rangers who may spot the vultures circling above and give away their location. For one rhino, elephant or lion poached and poisoned, over 300 vultures can be killed (EWT, 2019:74; Murn & Botha, 2018:553). Elephant poisonings in Botswana in June 2019 resulted in over 500 vulture deaths, with a quarter of Botswana's 'Critically Endangered' White-backed Vulture population being killed (Africa Geographic, 2019). Relative to the species' population size, this could be considered as the most dramatic 'genocide' of a species ever recorded. It is believed that poachers are systematically wiping out vultures to increase illegal operations targeting the above-mentioned mammals (EWT, 2019:74). Sentinel poaching means that the anti-poaching efforts regarding the other animals are inextricably linked to the survival chances of vultures.

Along with Africa's human population growth and subsequent wildlife decline, conservation-oriented organisations and campaigns have increased dramatically. Environmental organisations include entities that are driven by the purpose to protect, monitor or analyse the environment

regarding the impact of human exploitation. They can take the form of governmental and non-governmental organisations, charities and trusts, and operate on local to global platforms (Stephan & Zelli, 2009:4). They can also be understood as interest groups which are organisations aiming to influence public policy. Some are orientated around governments, business or foundations from which institutional support is drawn, while others may rely on the support and contributions of individuals (Milojevich, 2014:3). Since the 1960s there has been a remarkable rise in interest groups recognising the consequences of human exploitation on natural resources. In South Africa alone, more than 400 private bodies are involved in conservation efforts in various fields (DEA, 2018:9). Intergovernmental organisations (IGOs) such as the United Nations Environmental Programme (UNEP) and Convention on International Trade in Endangered Species (CITES) have also grown, promoting conservation-oriented awareness and policymaking (UNEP, 2019; CITES, 2019). However, non-governmental organisations (NGOs) operating internationally have played the biggest role in facilitating global awareness on the plight of wildlife.

These organisations tend to focus on the alleviation of environmental degradation, but do not always recognise the impact that wildlife exploitation has had on increasing political conflict. The growth trend of natural resource-based political conflicts and their complexity is a remarkable development of particular interest to this study. Such forms of conflict include disputes over water, land ownership, farming methods, HWC, trading and hunting rights, opposing community values, anti-poaching measures, policy formation and coordination, and other forms of conflict that may arise (Nie, 2003:307; Massé *et al.*, 2017:20). The increasing complexity of these conflicts has made successful efforts particularly difficult for conservationists<sup>3</sup> to realise, and have created a noteworthy rise in scholarship debating these challenges. Despite all this focus, efforts to combat the above-mentioned trends in wildlife decline and natural resource-based conflicts generally do not seem to be working, and are thus issues worth pursuing.

## **1.2. Research Problem Statement**

The trends discussed above are particularly stubborn, and this needs to change soon if we stand any chance of preserving our remaining wildlife. Since current data on the situation forecasts a dismal future for conflict over these resources, research into the political nature of NRC demands

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<sup>3</sup> The term *conservationist* broadly includes any person or organisational entity that spends significant resources or time advocating for the conservation of natural ecosystems or certain species within ecosystems.

our attention. Such a task requires an interdisciplinary approach transcending the current confines of the Natural Science scope that erroneously dominates this field. For this task, WPT provides a framework that utilises political, economic and social theories of planning to paint a picture of NRC. The picture illustrates NRC as a highly complex system involving competing human incentives, and where the consequences of scientifically formulated solutions ramify throughout the misunderstood, simplified political context. Formulating a new political perspective on wildlife management has the potential to shift the paradigm in which NRC is currently underestimated.

In Southern Africa at present, wildlife management displays a lack of effective policymaking, implementation, and collaboration between engaged actors. Governments and NGOs (and task forces operating between them) are unequally involved, and resultant policies inadequately enforce or regulate action plans (APs). Academics stress the lack of and need for sustainable development initiatives educating and encouraging affected communities to support conservation, as without this, conservation cannot happen (Knobel, 2013:206; Ogada, 2014:1). Although laws are in place with penalties for poachers and traders, governmental support is limited beyond this, and is simply not a priority. Another problem is that wildlife law enforcement is considered voluntary, mostly by NGO efforts, who lack the necessary means to target both the ecological and social dimensions of these crimes and conflicts (Rowcliffe *et al.*, 2004:2631). It is also a mistake to assume voluntary compliance and respect for anti-poaching laws from criminals, as poaching continues to increase despite 83% of African countries adopting such legal measures (Ogada, 2014:1).

Since conservationists leading the efforts come from predominantly Natural Science backgrounds, resulting policies and programmes are mostly derived from within their limited field of thinking. Literature assessing the quality of policymaking stresses the need for further research into the social element affecting anti-poaching laws established between and within Southern African countries.<sup>4</sup> This includes the socio-economic factors that influence public support. When poaching is caused predominantly by traditional practice and poverty-stricken communities, culture, economic development, education, and social awareness are at the core of wildlife declines. The lack of sustainable development results in further complicating this conflict, as found by Muboko

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<sup>4</sup> Growing literature signals a lack of consideration in conservation legislation and strategies for social factors influencing the disregard for the environment. The need for education and sustainable development initiatives that aim rather to address social drivers of poaching such as poverty and inequality are encouraged. Collaboration between social and natural scientists is essential in this task (King *et al.*, 2007:88; Knobel, 2013:207; Mdhlanho *et al.*, 2018:8).

*et al.* (2014:93) in Zimbabwe, as disgruntled communities not benefiting from conservation deliberately retaliate against the law. Because of this, it is essential that someone examines this conflict from the political perspective.

The above concerns contextualise the practical problem at hand as worth pursuing. This problem is about the conflict relating to the lack of adequate conservation-orientated policymaking, implementation and support for protecting endangered wildlife in Southern Africa. Investigating the problem can be done through delving into the research theme; to use the wicked problem (WP) lens to create a new political perspective on the challenges facing anti-poaching policymaking and law enforcement methods. WPT, which will be discussed in greater depth in the literature review to follow, identifies a number of conflict drivers that may help explain why effective policymaking and implementation is so hard to achieve. Answering the question from a political perspective examining resource scarcity, tradition and science, policy design, and interest group strategy may help solve the problem at hand.

The scope of this study will pertain to countries in Southern Africa – Zimbabwe, Mozambique, Botswana and Namibia, with particular focus on South Africa. The species brought into question are African lions (*Panthera leo*) and five resident vulture species – White-backed (*Gyps africanus*), White-headed (*Trigonoceps occipitalis*), Hooded (*Necrosyrtes monachus*), Lappet-faced (*Torgos tracheliotos*) and Cape (*Gyps coprotheres*). These species have been chosen as their conservation has an array of competing and contradictory factors that illustrate the complex system in which WPs exist, how their survival depends on the plight of other species, how their symbolic value plays a role in their protection or demise, and how political these factors really are. Although these species are central, others will come up where relevant. The scope will focus on poaching as the most significant cause of death, which for this purpose is defined as killing without permission. The international demand side of the problem mainly regarding East Asia's insatiable appetite for wildlife commodities is not within this scope, and pertains only to elements within Southern Africa. The dynamics between key stakeholders and actors involved in the conflict will be examined and understood through the WP lens. This will include conservation NGOs, corporations, rural communities, farmers, governments, wildlife managers, and the media. Power dynamics between these groups are crucial in understanding why current conservation methods have not managed to curb the rapid decline of Southern Africa's wildlife.

### 1.3. Key Research Questions

In order to research the problem stated above, a number of sub-problems that collectively encapsulate the main problem should be mentioned. The aim of this study is to answer the main research question – *How can the framework of Wicked Problem Theory create a new political perspective on the complexities of conserving wild lions and vultures in Southern Africa?* To answer this in depth, a number of sub-questions pertaining to WPT’s conflict drivers should be asked:

- *How does the relationship between sacredness and science in problem research and policy design affect the success of wildlife legislation?*
- *How do policy shortfalls contradict conservation aims?*
- *How do interest group strategies create and exacerbate political conflict over wildlife?*

Although WPT is central to this task, literature within the NRC domain is jointly utilised to compliment areas in which WPT needs assistance in problems facing wildlife management. It would be more accurate, perhaps, to say that it is a ‘WPT featuring NRC’ framework.

### 1.4. Preliminary Literature Review

A preliminary discussion on WPT should be provided as it forms the bulk of the study’s theoretical framework. Brief conceptualisations of NRC and wildlife management, which form the rest of the framework, are also useful. NRC, according to the United States Institute of Peace, refers to the relationship between the natural resources of an area and the people competing for them (2007:7). Resources include water, land, flora, minerals, and fauna exploitable for economic gain (Stats SA, 2020). Competition causes conflict over the ownership, allocation and management of the resource (USIP, 2007:3). Wildlife management refers to researching and making decisions on how to best maintain an environment for the well-being of animals inhabiting it (Anderson *et al.*, 2002:8). However, the Wildlife Conservation Society (2020) says it is more about managing people than wildlife, as human activity is the prominent threat to wildlife. Wildlife management can therefore be considered as an attempt to balance the needs of wildlife and the interests of people.

Within the arenas of social dynamics and complexity, WPT developed as an analytical tool for the reconceptualisation of resource-based and policy conflicts. It was introduced by Rittel and Webber in *Dilemmas in a General Theory of Planning* (1973), considered as a paradigm shift in complexity theory (Pryshlakivsky & Searcy, 2013:114). Since then, the theory has been built on by numerous

WP theorists, notably including Nie's paper, *Drivers of Natural Resource-based Political Conflict* (2003). WP theorists' main argument is that scientifically formulated social policies will inevitably fail because the problems they attempt to fix are wicked. A problem is wicked by nature and design when it involves social, scientific, political and economic incentives that are competing or contradictory. Deep-rooted human values are at its core, and thus scientifically researched understandings of the issues are incompatible, usually causing more harm in policymaking than good (Rittel & Webber, 1973:155; Kreuter *et al.*, 2004:445; Buchanan, 1995:14).

There is a consensus that the resulting conflict caused by these policy issues is not simply a form of healthy democratic practices being exercised, as these conflicts are intractable. WPs involve multiple stakeholders with conflicting agendas, where every problem is interconnected, and every policy decision made to alleviate the problem ramifies throughout the system (Nie, 2003:307). Because there are so many competing interests and values at stake, solutions (or rather, resolutions) to these problems can never be right or wrong, but rather good or bad, or better or worse. What they are depends, of course, on which side of the conflict you are on (Coyne, 2005:6). Not only are resolutions difficult to form, but they are difficult to undo once done. Rittel and Webber were the first in the field to argue that scientifically based policies are incompatible with social problems in both its understanding of the problem and its methodology (Crowley & Head, 2017:540).

This theory has been applied to multiple social scientific fields since its inception, notably including dynamics in the workplace of virtually any industry. Its application is mostly in understanding policy problems in the health sector and problems regarding resource conflicts.<sup>5</sup> Relevant here is the application of WPT to the realm of NRC and conservation. Scholars in favour of this theory argue that it adequately clarifies why conservation policymaking is so unclear, and that it should be considered as a useful analytical tool. Nie's (2003) work mentioned above has been identified as the most useful for this study as the application is dedicated to endangered wildlife. Capra (2001:4) stresses that a conservation-based reconceptualisation of social policymaking will be the project of the new century, and that WPT can fulfil this task.

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<sup>5</sup> WPT has been applied in policy analysis in childcare (Carter, 2011), human medicine (Lewis, 2008), architecture (Jarzombek, 2003), climate change (Levin *et al.*, 2012), violent conflict (Davies, 2016), state fragility (Menkhous, 2010), stakeholder governance (Sachs *et al.*, 2010) and sustainable development (Pryshlakivsky & Searcy, 2013).

An important gap present in the literature must be pointed out here. Despite the wide use of WPT in academics as a tool to understand NRCs, no case studies have been carried out in Southern Africa. Published work dedicated to understanding endangered wildlife policy problems are drawn significantly from the hard scientific theoretical standpoint which is the very habit that WP theorists detest. Since conservation efforts in Southern Africa seem to be causing more strife than stride, the social angle presented by this theory may indeed be worth looking into. Nie's (2003) article is conceptually useful for this task.

Nie (2003:307) argues that normal natural resource-based conflicts are characterised by distributive or regulatory policy debates, where battle lines and political or economic motivations can easily be identified. Such conflicts become wicked, however, when an endangered species is thrown into the debate. The debate goes far beyond scientific, economic and techno-rational methods and disagreements, as these conflicts become value-based, with competing cultural and moral values at their core. Policy planning becomes controversial, and promises more controversy in the future trends our planet faces in human population growth and loss of natural land. Nie (2003:308) argues that human values are at the core of the conflict, while the scientific and technical concerns are important, but not central. Nie's (2003) argument corresponds to that of Rittel and Webber (1973) in the context of conservation, illustrating the value of WPT in understanding conflict over conservation in Southern Africa.

Nie (2003) identifies twelve drivers of NRC in his work which should briefly be mentioned here as they pertain to the research questions above. His drivers include scarcity, the policy surrogate, the sacred, spiritual and importance of place, policy design, policy frames, scientific disagreement and uncertainty, electoral and political wedge issues, interest group strategy, media framing, adversarial governance, administrative language, and distrust.

Although WP theorists generally agree on the causes and consequences of WPs, there is some disagreement. Some authors have indicated scepticism, not so much towards the theory itself, but towards many scholars' misunderstandings of the formal definition of a wicked problem. Peters (2017:386) and Ney (2009:26) are cautious of 'conceptual stretching' by scholars quick to call problems *wicked*, arguing that most of these problems do not meet the wicked requirements. Some critics, such as Sabel and Zeitland (2011:168) and Termeer *et al.* (2019:170), go as far as to say that since many difficult problems out there may tick some of the WP boxes but not all of them

(and are therefore not wicked), the validity and reliability of the theory comes into question. Literature also stresses that policymakers defining their problems as wicked, yet still aiming to form normative solutions for them, both misunderstand the theory, and set out unrealistic and unachievable tasks, once again rendering the theory useless (Carter, 2012:429). Scepticism is thus evident in the literature, and this sets out noteworthy precautions to be considered in the theory's application. This theory and linked concepts will be further explained in Chapter Two.

### **1.5. Objectives and Relevance of the Study**

The need for a reconceptualisation of wildlife management and science-based policymaking is vital going into the next decade. The evident trends mentioned indicate that human population growth and poverty are directly linked to the increase of NRCs and the decline of endangered species. This threat poses serious concerns going forward, as these threatened species play important roles in natural ecosystems. For lions, not only are they apex predators with complex social structures that control populations of ungulates and predators, but as a member of the Big Five, they draw in foreign tourists by the planeload who contribute greatly to financing ecotourism and rural development. Vultures arguably hold the most important role as the 'clean-up crew' by consuming rotting meat. Their decline has serious consequences in the spreading of diseases (notably anthrax) from carcasses. If the aftermath of India's vulture crisis is anything to go by, the resultant increase of other scavengers such as feral dogs may lead to the spread of rabies, which for India, had widespread disastrous effects on human health and the state's financial resources (Markandya *et al.*, 2008:197). Despite this, not much attention has been drawn towards the possibility of this occurring in Southern Africa.

The political context of Southern African states reveals some unique threats to the survival of these species. The focus on South Africa's current political affairs is particularly important for this study, as the country contains the only legal consumptive lion breeding industry for trophy hunting and bone exports. With the rise of land reform and the selective dismissal of conservation laws by the South African Government, the political situation poses conservation threats beyond that of lions. Additionally, Botswana's electoral strategies, the demise of Khama's conservation-orientated presidency, and the lifting of the hunting ban has raised great concern for the effects of politics on conservation. Mozambique's feeble attempt to fund conservation and rural development illustrates the environmental ramifications of the incapacity of Third World governance. The effects of



Zimbabwe's land reform and mismanagement of natural resources show grave potential consequences for Namibia and South Africa's land reform which are underway. Public ignorance regarding Namibia's mass vulture poisonings indicate the important yet delicate role the media plays in creating awareness on conservation problems. Since these countries have been hit by catastrophic poaching incidents, questioning their wildlife management efforts is justifiable.

Since current policies and implementation methods are built on a combination of hard scientific data and the assumption that implementation will occur voluntarily, the social element driving wildlife decline is inadequately explored, and enforcement is ill-funded and not a priority for the region's governing bodies. As WP theorists have suggested, the reason why conservation is not working is because the drivers of NRCs are based on human values requiring an understanding beyond the scientific scope. Current policies and strategies are incompatible with the root causes of the declines in species. Since there is an evident lack of studies applying WPT in Southern Africa, a study aiming to fill this academic void is useful. A political perspective that focuses on the value-based causes of conflict in conservation could potentially help natural scientists in policymaking and APs. Answering the problem statement's main question from a political perspective that examines resource scarcity, tradition and science, policy design and interest group strategy may help solve the practical problem at hand.

The objective of the study is thus to explore why and how conservation efforts are not working by understanding the conflict between the actors involved through Nie's drivers. His twelve drivers can be grouped and understood more succinctly for the sake of the research questions into three drivers, namely: *sacredness and science*, *policy design and implementation*, and *political and interest group strategy*. These wicked drivers, integrated with NRC literature, will be used as the theoretical framework of this study, and will be discussed in greater detail in the second chapter. The *sacredness and science* driver refers to the problem conservationists from scientific backgrounds face in trying to understand wildlife decline from the perspective that avoids cultural explanations. Resultant policies are often unsupported by communities and individuals as they are incompatible with their values. *Policy design and implementation* refers to the conflict caused by vague or contradictory legislation, the historical context in which policies were formed, the marriage between science and law, and the alternative priorities of actors that undermine policies. *Political and interest group strategy* refers to the act of groups using certain endangered species

as surrogate problems for larger political concerns, and for publicity or economic gains through awareness campaigns.

### **1.6. Research Design and Methodology**

In order to address these research questions, a qualitative research method has been chosen, following an inductive path. However, since the study aims to apply WPT as an analytical typology in a way that is extended into the context of Southern African wildlife management, a deductive element exists, and this is normally associated with quantitative research. The method of research is mostly qualitative, as the case study design is flexible and open to change or new information, and aims to contribute to the theory on wicked problems. Although the study will extend the theory, the purpose of doing so is not to test the theory and seek universal laws, but rather to utilise the theory for the purpose of developing an understanding of the problem at hand in a way that solutions can later be considered, while simultaneously offering a contribution to the theory itself.

Because of its ability to address causal complexity and maintain conceptual validity, a case study research design has been selected. The classification of the type of case study depends on the time dimension and its purpose (Starman, 2013:34). The study can be understood as a nested study, in which multiple cases (subunits) within the analytical field (principal unit) are examined to develop meaning (Thomas, 2011:517). The principal unit of analysis, or object for this study, is wildlife-based political conflict in Southern Africa. The multiple case studies (subunits or subjects) nested within the principal unit include conservation-orientated NGOs, communities, governments, legislation, political parties, interest groups and businesses operating in the system. The principal unit of analysis is considered as the object, while the individual cases or subunits are considered as the subjects. This is because the object and subjects are mutually linked. In other words, the roles of actors and stakeholders involved, and the dynamics between them, heavily influence the political nature of wildlife conflict in Southern Africa. The level on which each case exists indicates a multilevel research approach, as the role of individuals (micro), interest groups (meso) and governments (macro-level) are important to the theory-building process. The theoretical purpose of the study is a combination of a disciplined configurative study that applies the theory to understand the problem at hand, and a 'building block' study, which examines individual cases to contribute to the theory (George & Bennett, 2005:76).

The role of the researcher is as an inside observer in primary data collection, as well as an outsider in examining secondary sources. In order to understand the perspectives of conservationists and the challenges they face, the chosen method included key informant interviews (KII). A more active participant role in shadowing subjects in the field would have been more extensive, but due to Covid-19 regulations, this was only possible with essential workers and where permits were obtainable. Fieldwork undertaken occurred in the Karoo National Park and farms in the Northern Cape as a part of two projects with the EWT Birds of Prey Programme. Research and travel permits were obtained through the EWT for this task. Snowball sampling and conducting respondent interviews were indeed feasible within the time frame and the University's ethical requirements. Correspondence with key informants included online interviews, phone calls, and emails. These interviews were best suited to semi-structured and unstructured formats, as the flexibility is useful in understanding the dynamics within governments, NGOs, businesses and communities. A desktop approach was also important in cases where active research was not possible or applicable. This took effect with secondary resources, such as academic articles containing more reliable information needed for a holistic perspective on the relationships and dynamics between relevant subjects. This notably included the roles of governments, political parties and interest groups. Therefore, the research approach is flexible, open to snowball sampling and to change. The aimed findings are more specific to social contexts, and not so much to general laws (Pierce, 2008:43).

The purpose of this research is a combination of explanatory, descriptive and exploratory objectives. This is because NRCs and conservation-orientated policies in Southern Africa have mostly been understood in the limited scope of the hard sciences, and exploring the human values behind the problem holds the explanatory purpose of finding out why conservation efforts are not working. Such an explanation is thus far understudied. It is also descriptive, as the study attempts to describe the dynamics of stakeholders and actors involved and affected by this type of conflict (the 'who') and how their relationships threaten endangered species. The exploratory dimension is present in the aim to develop new insight into the topic, as producing a wicked political perspective on the conflict of conservation in Southern Africa is yet to take place. The complexities of conserving vultures and lions in the region are rich case studies for this task.

### **1.7. Limitations and Delimitations**

Although the gap in literature that this thesis attempts to fill gives the study its significance, the lack of research pertaining to a number of areas in the study presents an obstacle. There appear to be many disagreements in current research regarding the conservation status, threats and population size of the endangered species in question, and a lack of transparency regarding data obtained by Southern African governments extends this concern. Mozambique is most worrisome in terms of obtaining reliable data, as research is poorly funded and often non-existent. Botswana, although willing to fund research, is reluctant to share its findings, and since it is a problem conservationists experience, this study surely faced the same hurdle. Performing elite interviews presents the same obstacle, as access to certain people can be difficult. However, since this study is predominantly focused on the efforts, incentives and dynamics between actors involved in conservation, the questionable reliability of the scientific data available is not central, so research gaps have to some extent been overcome. The timing of this study has, of course, been unfortunate. While field research had been planned, Covid-19 regulations halted some of these plans.

As critics mentioned in the brief literature review pointed out, WPT must be used with caution. It appears to be a common mistake that the theory is hastily chosen to describe a political situation or problem that may actually not pertain to the theory. The mistake of using the theory in an invalid context could thus render the theoretical framework of this thesis as invalid and unreliable for the sake of drawing meaning from its use. In order to overcome this problem that others have faced, a careful interpretation of Nie's (2003) drivers is used as a guideline.

Some weaknesses of the qualitative research method chosen should be considered. The unfortunate habit of researchers either overidentifying with the subjects, or becoming too distant, can cause unreliable data collection. The use of WPT in a study that aims to contribute research to a new, understudied field can also lead to biases. By engaging with subjects, the possibility of influencing or manipulating findings is also concerning, and while this is actively avoided, the researcher is still subject to misinterpretation (Pierce, 2008:46). To avoid these limitations, primary data collected has been recorded with great attention so that manipulations and misinterpretations are avoided. The careful use of the qualitative method assists the researcher in providing high quality findings, with meaningful insights into the experiences and values of the subjects involved.

## 1.8. Outline of Study

Chapter 1, as the introduction, consists of the intended methodological processes used for this study, and establishes some foundations on which the study gains its relevance in the field of Political Science and wildlife management. Chapter 2 provides a detailed literature review beyond the scope of the preliminary review provided above, and discusses further concepts relevant to the study. This includes conceptualising wildlife-based resource conflicts within the realm of political conflict. WPT is discussed in greater detail, with more attention given to Nie's (2003) conflict drivers. More concepts regarding conservation, endangered wildlife, and wildlife management are provided. Chapter 3 contextualises the situation experienced by the species in question and the struggles faced by conservationists attempting to combat their threats. Legislation in operation throughout the region is also identified. Chapter 4 then merges the context provided in Chapter 3 with the WPT drivers, namely, *sacredness and science, policy design and implementation, and political and interest group strategy*. By doing so, the political perspective of this NRC will be understood, as well as why conservation efforts are currently failing. The analysis by no means attempts to clarify the complex system in which wildlife conflict exists, but rather to grasp just how complicated, messy, and fluid the situation actually is. Chapter 5 concludes the research by giving an overview of the discussions of the previous chapters. The chapter addresses the research questions, and evaluates the research findings. Recommendations for further research into this field are also provided.

## 1.9. Conclusion

This chapter has provided an introduction to the topic chosen for this study that may contribute a new political perspective for the concerns facing Southern Africa's declining wildlife populations. The political perspective that will be explored within WPT is based on the argument that current conservation efforts, dominated by hard scientific researchers and data, are incompatible with the social issues central to the conflict. The research background provided an overview of the current situation in Southern Africa with the worrying trends that all point towards the extinction of the region's vultures and lions. The problem statement discussed the topic of the study. The following section containing sub-questions was presented to encapsulate the various areas of interest that may provide answers to the problem statement. A preliminary literature review was provided to demonstrate the main arguments, authors and applications of WPT and NRC, which will be used as the theoretical framework for guiding this study. The significance and relevance of exploring

such a topic within the field of Political Science was reiterated, stressing the contributions this research could make in the limited time left for Southern Africa's endangered wildlife. A research design and methodology has been identified to best undertake the study, and to create a sense of its structure going forward. For the sake of understanding and re-examining current conservation efforts and NRC in Southern Africa over the region's endangered species, the wicked problem perspective may discover vital findings for future efforts.

## 2. CHAPTER TWO

### Literature Review

#### 2.1. Introduction

The purpose of this literature review is to capture the current state of knowledge available on NRC, WPT and conservation<sup>6</sup> in Southern Africa. The objective therefore, is to “identify, criticise and synthesise the most recent, relevant, authoritative texts” (Pierce, 2008:102). The authoritative texts are accepted as studies of considerable scholarship in the academic community. This will be conducted by reviewing the concept of NRC which will be followed by WPT literature to provide the theoretical frame of the study. The wicked problem (WP) drivers of natural resource-based conflict relating particularly to endangered wildlife will then be identified, which combines the concepts in NRC and WPT. Particular attention will be given to the work of Martin Nie (2003) in this task. His twelve identified drivers place wildlife conflict in the political perspective, which is indeed the objective of this study. To refine the discussion, WP research previously conducted on conservation in Southern Africa will be looked at. The important gaps in the current state of available literature should be pointed out, and how the research can be operationalised for the sake of data collection and analysis should also be discussed.

#### 2.2. Natural Resource Conflict and Sustainability

The fields of NRC and sustainability<sup>7</sup> form a suitable starting point for developing the theoretical background. These fields are the base of this study as they bridge the gap in many cases between political conflict and concerns for the environment in the face of climate change and human population growth (Swilling & Annecke, 2012:23). NRC literature delves deeply into the politics of conservation, and is particularly concerned about the role of natural resources<sup>8</sup> in causing and sustaining conflict in developing regions. It will become clear later on that NRC and WPT research have many similarities, but it is important to first discuss the broad context in which WP literature concerned for the environment is placed, and this is within the domain of NRC. This section will

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<sup>6</sup> *Conservation* is a system of management which advocates the effective and wise use of natural resources to mitigate supply scarcity and degradation (USIP, 2007:16).

<sup>7</sup> *Sustainability* refers to harnessing resources without depleting them, and searching for alternative methods and technologies unharmed to the environment. Like WPT, equity is central (Swilling & Annecke, 2012:3).

<sup>8</sup> *Natural resources* are useful materials found in nature. Renewable resources can naturally replenish if used wisely, including farmland, water and wildlife. Non-renewable resources cannot replenish in a lifetime, including precious stones, metals and oils (USIP, 2007:15). Renewables usually have a low economic value relative to non-renewables. They are important for human survival, while many non-renewable resources are not (Ratner *et al.*, 2013:183).

illustrate the dominant arguments concerned with obstacles facing conflict and sustainability, and suggested resolution strategies. The final discussion suggests how the themes in this field help in creating a workable guide to identify the drivers of wildlife conflict for the study going forward.

### 2.2.1. Central themes and concerns in NRC research

NRC and sustainability research emerged in the 1970s with the rising concern for climate change and population growth, peaking in the 2000s. As Swilling and Annecke put it, policymakers saw two realities facing modern economies; the growing evidence of global warming and inequality worldwide (2012:23). Although research has consistently focused on the developing world, earlier work is concerned mostly with the political consequences of non-renewable, high-value resources such as diamonds and oil (Le Billon, 2001; Ross, 2004). Recent literature is more concerned with renewable, low-value commodities. Conflict over water in developing states dominates (Gleditsch, 2006; Ratner *et al.*, 2018), followed by land and forestry (Sanginga, 2007; Abdalla, 2009; Mutia & Herdiansyah, 2019). Although fisheries have received some attention, terrestrial wildlife is barely addressed (Evans, 2010; Hossu *et al.*, 2018). Additionally, conflict, even in recent literature, is mostly regarded in the context of civil war or sustained armed conflict (Maphosa, 2012; Krampe, 2017; Conrad *et al.*, 2019). Regardless of the different perspectives, all authors are concerned with finding the causes of conflict and sustainable solutions to managing resources.

Central to theories on NRC and sustainability is the argument that *science and modernisation* have dismal consequences for inequality and the environment. NRC scholars fundamentally oppose the superiority of science and industrial development. Gausset and Whyte state in natural resource management<sup>9</sup> (NRM) that “policymaking relies heavily on theories which are reductionist and oversimplifying” (2005:13). In agreement, Lubell *et al.* (2000:15) argue that reductionist measures cannot handle heterogeneous, geographically diffuse resource users, dimensions of environmental degradation,<sup>10</sup> and related issues crossing political or administrative boundaries. McNeish suggests that research ought to be qualitative, exploring the cultural, historical and political factors of NRC (2010:1). Swilling and Annecke add that sustainability scholars should embrace complexity and uncertainty. Equity, instead of economic growth, must be central (2012:3). Scholars are therefore

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<sup>9</sup> *Natural resource management* is a system monitoring the extraction, use and trade of resources. Transparency and equity can be improved through proper management, preventing corruption and environmental degradation (USIP, 2007:15).

<sup>10</sup> *Environmental degradation* is the diminishing of natural resources through man’s consumption and misuse. Examples include water and air pollution, ecosystem loss, land erosion and wildlife extinction (USIP, 2007:15).



critical of quantitative methods attempting to reduce problem complexity, favouring context-free, technical solutions to NRM (Gausset & Whyte, 2005:15). Resultant policies neglecting complex social behaviour and political interests are typically met with local resistance, and while this happens, environmental damages continue (Lubell *et al.*, 2000:151). Interestingly, Swilling and Annecke (2012:6) note that even social scientists fear change. This is often the case with African intellectuals fearful of past experiences of modern change like colonialism. Having this fear of change can actually reinforce current destructive methods as a result of doubting all other claims to improvement. Science and modernisation are thus obstacles for sustainability.

*Poverty and inequality* are serious challenges. For sustainability scholars, development can only occur within the capacity of the environment, and central to this is inequality. Tamas (2003:11) notes important links between NRM and poverty. Since the majority of the poor rely on natural resources for their livelihood, poverty-stricken areas are vulnerable to resource depletion. This spirals as poverty increases environmental degradation, and degradation increases poverty. Thus, Swilling and Annecke (2012:46) state that the challenge for sustainable development<sup>11</sup> is finding a method to eradicate poverty by means that rebuild natural ecosystems and resources. Poverty can only reduce once economies shift to non-material means of growth. Gausset and Whyte (2005:16) add that people reliant on scarce resources usually have unequal access. Scarcity is a real problem and not just an analytical tool, as it affects lives and people's agency. The unequal distribution of resources will likely cause and continue disputes (Ratner *et al.*, 2018:799). Swilling and Annecke (2012:38) recognize a considerable increase in policy and literature on poverty worldwide, but still neglects the relation to inequality. Literature on inequality is substantially smaller.

Literature moving on from population growth considers *interests and interactions of stakeholders* as the major component. There is consensus that values and interactions between individuals, communities, NGOs, businesses and governments affect the environment. While some scholars focus only on economic and political factors driving policymaking and conflict over the ownership of resources (Nilsson & Persson, 2003), others have progressed to wider social factors. The social argument finds that the heterogeneity of complex factors such as education, occupation and ethnicity cause and increase NRM (Lubell *et al.*, 2000; Maphosa, 2012; Pomeroy *et al.*, 2016). Some scholars

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<sup>11</sup> Swilling and Annecke describe *sustainable development* as “improvements in well-being plus non-material economic growth” (2012:46). Environmental factors should be accounted for in economic policymaking.

take this further by examining the psychology of stakeholder dynamics. Sclee in this regard asks “who is fighting whom and why, and where is there a distinction between friend and foe?” (2004:135). This includes aspects of group identity creating an *us* and *them* dichotomy, group decisions on inclusion or exclusion of values or members, or the costs and benefits of taking certain stances (2004:137). Historical claims to resources and intergroup histories may provide the lines on which conflict or cooperation is chosen (Ratner *et al.*, 2013:189).

Similarly, the quality of *social capital* is an important social factor in facilitating cooperation or conflict. This refers to the mechanisms in a society that help reduce conflict, bridge value gaps between groups, and build cooperation (Ratner *et al.*, 2013:190). If the quality of social capital is high, mechanisms are flexible and embrace the complex nature of NRC (Maphosa, 2012:1). However, if the quality is poor, concerns for the environment are neglected in stakeholder disputes, and the inability to cope with complex disputes over authority and regulations usually lead to the denial of responsibility by stakeholders (Mutia & Herdiansyah, 2019:5). Poor social capital results in conflict resolution and sustainability efforts only conducted on a voluntary basis.

The role of *resource availability and value* in shaping conflict and degradation is critical across this field. The depletion of natural resources is increasingly becoming the cause of violent conflict on local and global levels, and if left unmanaged, sustainability efforts will become progressively more difficult (Swilling & Annecke, 2012:181). Although everyone agrees about that, the debate starts as to how the availability and value of resources drive conflict. There are three main camps arguing whether resource scarcity, abundance, or dependence contributes the most.

The scarcity hypothesis claims that the low availability of a resource (usually renewable) leads to conflict between stakeholders trying to secure access to it (Le Billon, 2001:564). Scarcity theorists stress that rapid population growth, resource depletion and unequal access exacerbate poverty and inequality, leading to conflict (Evans, 2010:8; Pomeroy *et al.*, 2016:3). In contrast, the abundant resource hypothesis claims that the relative abundance of a high-value resource (usually non-renewable) in a territory that is globally scarce causes greed-driven conflict over extraction rights (Le Billon, 2001:564). Extraction of the commodity then causes local community grievances for being excluded from the trade (Ross, 2004:39). Gausset and Whyte refer to relative abundance as *political scarcity* as one group is deprived of a resource by another (2005:20). While some scholars accept that both scarcity and abundance play roles (Tamas, 2003:3), the third hypothesis argues

that neither scarcity nor abundance, but rather dependency on the resource causes conflict (Le Billon, 2001:565). This occurs mostly in developing states relying heavily on the consumption and trade of primary commodities. The more dependent a state is on a resource, the higher the chances of conflict (Theisen, 2008:801). The availability and value of resources are thus conflict drivers.

On this point, Conrad *et al.* (2019) identify a gap in research in how resources can increase rebel group strength and sustain conflict. The smuggling of resources is particularly beneficial to rebels as it creates flexible, mobile networks in which rebels can operate undetected (2019:591). This is because networks are not geographically specific, can cross borders easily at many points, take advantage of multiple transit routes, and travel over difficult terrain. Rebel networks can easily gain access to arms supplies to increase strength, and can relocate swiftly when detected by authorities (2019:597). This adds another component to conflict.

A smaller area of focus is the *geopolitical factors* that determine the risk and strength of conflict. Le Billon distinguishes between *proximate* and *distant* resources, and *point* and *diffuse* resources. Proximate resources are located in close range of policing centres and are therefore easier to monitor. Distant resources are further from policing centres, closer to political boundaries, and difficult to police. So, the higher the availability and value of resources on the periphery, the higher the chances of sustained conflict. Point resources are geographically concentrated and extracted by mechanised modes (such as mining), while diffuse resources stretch widely and are extracted by various methods (such as farming or hunting). Therefore, diffuse resources are easily extracted by rebels, and more difficult to police over extended territories (2001:570). When considering land as a resource, it is becoming scarcer as the world modernises. The findings of USIP (2007:5) and Gausset and Whyte (2005:18) add that possession of land secures access to other resources in the territory (such as water or wildlife), and that sentimental attachments to certain lands can increase its status. These factors can surge competition for land and conflict over its regulations.

The final factor dominant in academic literature is *governance*. The capacity of a state in the distribution, regulation, and transparency of natural resources is vital for avoiding conflict. African states are instead riddled with fragility which exacerbates poverty, inequality and conflict (Maphosa, 2012:2). This is partly due to globalisation, according to Abdalla (2009:3), as the role of non-government actors becomes substantial and undermines the state. Resource scarcity, abundance or dependence in developing states usually weaken state capacity and the economy, as

governments mismanage resources (USIP, 2007:9). Resultant instability opens opportunities for rebels and corrupt officials to engage in the illicit trade or control of resources. Governments, supposedly neutral actors, become players in their own right (Evans, 2010:6; Swilling & Annecke, 2012:199). The presence of democratic mechanisms is important in governing arrangements. Ratner *et al.* (2013:192) explain that systems of representation, accountability, and transparent distribution of power are essential in avoiding conflict. Many problems related to resource mismanagement and unrest are results of democratic institutional gaps. The lack of stakeholder involvement in decision-making can lead to disconnects between local needs and national policy initiatives. The changing of rules without regard for communities increases the likelihood of conflict (Ratner *et al.*, 2018:809). Poor governance is thus a serious obstacle for sustainability.

### 2.2.2. Strategies in conflict management and sustainable development

Management and development strategies are linked, but can be categorised according to emphasis. The most emphasised strategies are *Environmental Policy Integration*<sup>12</sup> (EPI) and *collective action*. According to Sanginga (2007:6) and Pomeroy *et al.* (2016:102), EPI is needed in community policy and macroeconomics to manage natural resources with context-specific policies catering for all stakeholder needs. EPI projects must have a clear vision, engage the private sector, uphold professionalism, and hold actors accountable (2016:102). The suggested mechanism by which integration occurs is through collective, collaborative action. Calling them “watershed partnerships”, Lubell *et al.* (2000:149) argue that local institutions are better equipped for resolving NRM problems. Such collaborative methods are cost-effective and supported as they access local knowledge, rely on volunteers, and engage stakeholders (2000:159). Local collaboration is said to play a role in conflict resolution and sustainability by promoting co-management and conservation. International organisations are important for regulating global markets and ensuring local sovereignty over resources (USIP, 2007:11; Krampe, 2017:1). Ratner *et al.* (2018:799) add that the key element in collaboration is stakeholder dialogue. It helps uncover root causes of NRC and competition, and may reveal unexpected links between vulnerability, local resilience, and conflict transformation. This does, however, require long-term commitment and funding (2018:807).

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<sup>12</sup> *EPI* is the inclusion of environmental objectives in policy (Lafferty & Hovden, 2003:5). It poses a challenge to the traditional hierarchy of economic objectives in policymaking and cuts across multiple sectors (Collier, 1997:36). *EPI* is also understood in terms of stimulating environmental changes – successful or negative. Sustainability through *EPI* is regarded as a complex and difficult process, but necessary (Nilsson & Persson, 2003:335).

NRC and sustainability theorists also describe a *complex adaptive system* in conflict resolution. This strategy embraces complexity and uncertainty in flexible mechanisms. Such systems reject reductionist interpretations of problems, as interactions between stakeholders and the environment are highly dynamic and context-specific. Decisions are determined by multiple interests working simultaneously, previous experiences, and the quality of interactions between actors (Swilling & Annecke, 2012:11). Hossu *et al.* (2018:816) state that only once uncertainty, interdependence, leadership and incentives are understood, can collaboration occur. Such an understanding can create a problem-solving system of adaption, self-organisation, non-linearity and uncertainty (2018:817). Similarly, strategies to resolve resource conflicts need to be able to adapt to multiple circumstances and illustrate the openness of authorities to multiple solutions (Ratner *et al.*, 2013:198). EPI and collaboration through understanding complex adaptive systems can increase cooperation, encourage innovation, and rebuild ecosystems (Swilling & Annecke, 2012:24).

### 2.2.3. Implications and relevance of NRC literature

At this stage some comments can be made on what information from NRC is useful going forward, what shortcomings exist, and how the information encourages further research. Firstly, the concept of renewable resources carried throughout regards renewable resources as low-value essentials. But in the context of this study, the renewable resources are of high-value, are non-essential and greed-driven by the international demand side, and perhaps poverty-driven on the supply side. This illustrates a noteworthy research gap neglecting the high value of wildlife commodities in NRC.

The topic of scarcity, abundance and dependence is useful for this study. Relative abundance may indeed be a variable that increases the value of commodities, the international demand, sustained conflict, community grievance over protected resource access, and consequential degradation of natural ecosystems in which these commodities are extracted. This political scarcity can definitely spark disputes and disregard for conservation. NRC argues that only sustainable development initiatives that are collaborative and inclusive of poverty-stricken community needs are able to decrease the extent of poaching. These ideas within NRC are relevant, and will be applied when assessing how the value and necessity of wildlife commodities influence political conflict.

Conrad *et al.* (2019) draw attention to complexities created by smuggling resource commodities. This consideration is certainly relevant to the context of this study which focuses on endangered animals smuggled by transnational syndicates. Geopolitical factors should also be considered

going forward, especially regarding the peripheral location of natural resources and the restrictions offered by borders to protected natural areas and state boundaries.

Perhaps the most obvious contribution that NRC and sustainability literature make in this study is pointing out the role of governance in resource conflict. Such an assessment simply cannot be avoided when dealing with developing states. The democratic mechanisms mentioned should be considered going forward, and ask questions such as: *How transparent are authorities*, or, *How well do authorities consider the needs of all stakeholders?*

A criticism can be made here that is also stressed by a number of scholars, is the feasibility of sustainable development strategies. As great and necessary as they sound, such collaborative efforts are time-consuming, rely on voluntary work and can be costly (Lubell *et al.*, 2000:156). These three concerns are particularly unattractive for countries geared towards short-term, cheap solutions. While literature stresses that strategies should be context-specific, they also need to be continent-wide (Maphosa, 2012:7). This is because, and what some literature neglects, NRC crosses state boundaries, and illicit networks endangering wildlife are transboundary operations. As McNeish (2012:21) also notes, most literature refers to armed conflict in the context of civil war or sustained armed conflict, without including transboundary, regional conflict.

As much as the literature claims to embrace complexity, it may be underestimating the extent to which difficult economic or political incentives oppose each other, and how intractable deep-rooted grievances actually persist. Hossu *et al.* (2018:816) warn that stakeholders are only likely to show willingness to collaborate if there are economic benefits to doing so. If conserving endangered wildlife is the main priority of APs, the likelihood of stakeholder participation and support will be limited. And since these plans need to be context-specific, yet continent-wide, involving governments and a multitude of stakeholders across a region will take a great deal of work. What may be even more difficult is trying to convince those countries with resource-dependent economies to put environmental concerns first. The literature fails to mention how innovation incentives transcending primary commodity reliance is achieved in local communities and extractive industries. Also, the assumption in the literature that state capacity can be built is perhaps too optimistic, and neglects to explain how party politics and interest group strategies, religion and culture drive conflict. As useful as NRC and sustainability literature may be, many factors driving conflict and limiting the effectiveness of EPI still need explaining.

### 2.3. Wicked Problem Theory

Narrowing the focus down to a detailed understanding of the political nature of conflict over policy and planning problems draws attention to WPT. The information and operational methods within this literature field have the potential to facilitate the political perspective on wildlife conflict in Southern Africa, and offer new insights into the intractable nature of conservation problems. WP literature should thus be discussed in greater detail, and the combination of lessons drawn from NRC literature and WPT should be identified to create a lens in which the study can be conducted. As the next logical step, WPT literature will be reviewed.

The context in which WPT was founded rationalises its purpose and argument. The founders, Rittel and Webber, addressed the difficulties facing policy planning at the turn of the 20<sup>th</sup> Century in the theory's debut article, *Dilemmas in a General Theory of Planning* (1973). The authors criticise experts relying on scientific methods, which are helpful in industrial development, but unequipped to handle complex social problems and rising environmental concerns. This anti-professional movement, joined by professionals themselves, voiced a need for a "reconceptualization of the professional's task" (1973:156). Public policymakers were losing support for their efforts "at the juncture where goal-formation, problem-definition and equity issues meet" (1973:157). This forms the grounds on which the authors reject science in social problem-solving, and express the need for a new theory promoting man's inventive and intellectual capabilities.

Scholars since then have continued to discuss the context in which WPT was created, and how it is still applicable. They recognise the impact of globalisation, the growth of service, knowledge, and information markets, and democracy adding to the complexity of social problems and policymaking (Paquet, 1999:41; Roberts, 2000:2; Weber & Khademian, 2008:334; Sachs *et al.*, 2010:57). Trends in population growth increasing diverse interests is also a noted factor increasing complex problems (Paquet, 1999:41; Nie, 2003:308). Currently employed scientific standards, methods and procedures are incapable of responding effectively to these complex problems that are reaching beyond state boundaries and political institutions (Sachs *et al.*, 2010:57).

Since the theory's construction, its application has been far-reaching in planning and policy research. Domains include: military sciences and conflict (Kramer, 2011); architectural design (Jarzombek, 2003); software design (DeGrade & Stahl, 1990); systems engineering (Kovacic & Sousa-Poza, 2013); healthcare (Lewis, 2008; Carter, 2011); education (Davies, 2016); governance

(Menkhaus, 2010); business (Fahey, 2016); and environmental policy (Nie, 2003; Termeer *et al.*, 2015). The need to re-examine and reconceptualise policymaking and planning to consider social concerns within these fields is clear throughout (Catron, 1981:13; Roberts, 2000:15; Peters, 2017:393). If anything, the more recent contexts in which WPT has been discussed or applied since 1973 demonstrate the ever-growing complexities that public planning experiences globally. Common throughout all contexts is the disapproval towards the use of scientific methodology.

### 2.3.1. The rejection of science

Remarkably similar to NRC literature, the fundamental stance of WPT rejects scientific superiority in social problem-solving. Scientifically formulated public policies are destined to fail because the nature of a social issue is *wicked*. It is impossible to definitively describe such problems since there is no universal definition of equity. Discord thus means there are no objective solutions for such problems, or standardised rules and methods for researching them. Rittel and Webber express that scientific problem-solving methods governed by efficiency lack the scope for social values and morality, and so its capabilities are inadequate (1973:155). The argument rejecting scientific rationality is supported, unsurprisingly, by all WP theorists. Catron agrees that society favours ‘technical fixes’ to complex problems which are mostly unsuccessful (1981:13). This is because, Paquet (1999:41) contends, states need to re-examine policy processes. Weber and Khademian add that the complexity of these problems defies the confines of scientific systems (2008:334).

Critics can be distinguished into two categories, namely the public administration critics, and social policy analysts (Head, 2008:102). The first group is critical of blueprint, one-size-fits-all models of handling complex problems. Such an approach tends to misunderstand the problem and contribute nothing towards its alleviation (Coyne, 2005:6; Weber & Khademian, 2008:334; Kramer, 2011:83). The second group draws attention to scientific shortfalls that overlook social values in policymaking, and the lived experiences of stakeholders whose insights are valuable (Catron, 1981:13; Paquet, 1999:41; Sachs *et al.*, 2010:57; Davies, 2016:31). Both groups draw the conclusion that science cannot appropriately understand complex social problems, and since scientific problem-identification is inadequate, so too are its solutions. Researchers and planners ought to acknowledge that defining problems and solutions is determined by social values and interests, and not scientific principles (Head, 2008:106). All of the literature sourced for this review has, in fact, dedicated at least some attention to criticising the role of science.



### 2.3.2. Defining wicked problems

To conceptualise WPs, Rittel and Webber, followed by others, define wickedness by contrast to tameness. For tame problems, solutions can be applied (1973:158). Their mission is clear, the problem is well-defined and a solution is identified (Coyne, 2005:5). There are right and wrong answers in dealing with these problems, which are largely agreed upon. The problem-solver is able to identify when the problem has been solved, and can choose from a limited amount of alternative solutions to get the task done (Nie, 2003:309). Some of these problems may be difficult to solve, but are still considered to be tame. This is usually when stakeholders agree upon either the problem definition or the solution, and when the methods used to solve the problem can be applied and stopped without consequence (Catron, 1981:14; Roberts, 2000:1; Menkhaus, 2010:86; McCall & Burge, 2016:201). Tame problems are in contrast to the characteristics of WPs.

WPs are complex planning problems for which a definition and solution cannot objectively be found. Historically, the generic procedures to deal with them have only made the problems more complicated. Rittel and Webber thus state “one of the most intractable problems is that of defining problems” (1973:159). They bleakly predict that human society will never be able to perfect governing systems with WPs, as we lack adequate theory, have insufficient intelligence, and are plagued by the plurality of politics and objectives influencing public planning. Such problems can never be solved; only resolved again and again (1973:160). In light of this, they propose 10 defining characteristics<sup>13</sup> of WPs on which WPT is entirely based:

*Table 1: The 10 Propositions of Wicked Problems*

<b>Proposition</b>	<b>Characteristics</b>
1	Wicked problems cannot definitively be formulated in definition or scope
2	There is no “stopping rule” whereby the problem is definitively solved by a solution
3	Solutions cannot be true/false or right/wrong, but rather good/bad or better/worse
4	There is no ultimate method or controlled environment in which solutions can be tested
5	Solutions are “one-shot operations” with no opportunity for trial-and-error. They have unforeseen and irreversible consequences
6	Since there is no accepted problem definition, there is no definitive solution
7	Every problem is unique

<sup>13</sup> Although Rittel and Webber (1973) call them “propositions”, they are rather characteristics of WPs. For the sake of simplicity, when dealing with the original traits set out by Rittel and Webber (1973), they will be called “propositions”.

8	Every problem is a symptom of another wicked problem
9	There are multiple and competing interpretations of both problems and solutions
10	The problem-solver has “no right to be wrong” as there is little tolerance for failure

Source: Adapted from Rittel and Webber (1973)

Uniqueness means that WPs cannot be classed, while their interconnectedness means they are impossible to solve on a broader scale. The decided problem definition is the outcome of dominant stakeholder objectives (1973:161). Every resolution is terminated by external factors like budget cuts or lack of interest, and not because the problem is solved. Resolutions are based on difficult judgments that differ between stakeholders, and are implemented publicly without knowledge of possible repercussions (1973:167). The solutions are just as wicked as the problems.

### 2.3.3. Positive appraisal of the 10 characteristics and further contributions

Growing attention dedicated to these characteristics in WPT literature indicates that this section is certainly not under-theorised. For some, the propositions are gospel and the foundation of WPT (Menkhaus, 2010:87; Davies, 2016:32; Crowley & Head, 2017:539). Many scholars applying WPT to contemporary cases do so by means of simply regurgitating the propositions, or at least applying some effort to reword them. Little disagreement exists with most theorists contributing to theory-building or critically assessing it. While the propositions are widely accepted, they have also sparked some debate. In light of this, the critique on WPT and its propositions can be sectioned into three categories: those in general agreement offering further insights to the theory, those who express disagreement to the original propositions, and those who generally accept the propositions, but are critical of their misinterpretation by other scholars. These criticisms will be discussed later.

Additional insights have been offered by scholars contributing to the concept of wicked problems. Lewis (2008:209) and Nie (2003:312) address the role of language in WPs. Language is considered as a critical variable in defining problems and solutions. Language, especially when ambiguous, can worsen conflict by undermining the seriousness of the problem, and vaguely state solutions and policies that draw little support. Roberts (2002) draws attention to the relationship between wickedness and democracy. She notes that WPs are even more complex in democracies, as the stakeholders involved have the ability to pause unfavourable decisions through judicial reviews, lawsuits, or voting people out of office. The problem-solving process in democracies is thus “ambiguous, fluid, complex, political, and frustrating as hell” (2000:2).

Scholars have also considered the international element of WPs, its implications for authority and responsibility. For Sachs *et al.* (2010:57), WPs go far beyond international borders, infiltrating business, political and social institutions of all kinds. Head (2008:107) conceptualises WPs in the international context as “nested” problems, whereby domestic problems (such as policies on natural resources and sustainability) are nested in international issues (such as climate change and global markets). WPs also question the role of authority. Head (2008:104) mentions that power, procedural rules and authority are entrenched in WPs. Sachs *et al.* (2010:57) and Termeer *et al.* (2015:681) add that since WPs are riddled with differing actor interests, values and objectives, the complexity, uncertainty and arbitrary nature of these problems means that they cannot be solved or led by a single sector or institution. WPs thus undermine the authority of policymakers.

This brings literature to the question of responsibility. According to Nie (2003:310) and Head (2008:103), the complexity of WPs constantly shifts focus, and the interests, strategies and values of actors continuously change. As a result, responsibility is often moved to non-governmental actors. However, Kramer (2011:82) argues that the complex nature means responsibility can never really be given to one actor, as the problem exists (and ought to be handled) on multiple levels. Nie (2003:310) describes this dilemma in addressing WPs on multiple levels as a catch-22 situation; the higher the level on which the problem is formed, the more general and broadly it is considered, and the more difficult it becomes to act upon effectively. But policies formed on lower levels only cure the symptoms present in smaller, more specific problems, and never tackle the bigger issue at hand. Responsibility is thus an important element to consider.

These elements brought to attention beyond the years of Rittel and Webber (1973) have led to scholars conceptualising WPs further. Weber and Khademian’s (2008:336) inputs are notable in conceptualising WPs into three characteristics: they are unstructured (in problem-solution relationships and shifting focus); cross-cutting (through authority and structures between actors and policy domains); and relentless (they cannot be solved, and solutions have unintended consequences). Similarly, Head (2008:103) describes three dimensions of wickedness that include uncertainty (in risks, consequences, and changing patterns), complexity (in the interdependence of the variables involved), and divergence (in actor viewpoints, strategic intentions and values). These six concepts of WPs are present across more recent literature, and scholars generally agreeing with the original propositions are quick to accept these reconceptualised characteristics.

#### 2.3.4. Criticism towards the propositions and Wicked Problem Theory

Soon after the theory's debut article, literature started raising questions about the claims and contradictions in the propositions. The claims can be grouped into ontological, epistemological, methodological and ethical claims. The propositions state that WPs are unsolvable, that every problem is unique, and that no experience from previous problems is helpful in decision-making. This, Catron argues, is a bold ontological claim to make (1981:14). Peters (2017:387) also shows this concern, as the assumption is made that policy research and design are impossible, making these fields futile. The epistemological claims are that we cannot formulate an explanation for these problems, and that the decision to wrap up resolution efforts is arbitrary. While Catron (1981:16) agrees that termination is based on conditions and not solely on logic, he asserts that reason is still used in assessing the feasibility of continuing efforts. McCall and Burge (2016:221) point out the methodological claim that every problem should be handled separately as they are unique. In their view, Rittel and Webber (1973) mistakenly downplay the role of trial and error, testing multiple solutions, and learning from experience, which they argue are indeed possible (2016:225). To this, Catron (1981:15) adds that WPs could surely be classed into groups of similar problems where previous methods could be helpful. Catron also points out the propositions' implications on ethics, where solutions have unintended effects, and planners have no right to be wrong (1981:16). Planners are often not held accountable and are protected more than the propositions suggest. Overall, the claims "present a strong threat to the very idea of planning, policy analysis, and our ability to reason effectively" (1981:14). Criticisms generally agree that the propositions undermine the intelligence, ethics, and efforts of public planners.

Scholars have also pointed out logical contradictions within the propositions. Head (2008:106) remains critical of the main argument that the fundamental cause of WPs is the lack of effective scientific knowledge. If this is true then surely the solution is more scientific research to fill the gaps? The argument's implications are therefore contradictory. Roberts (2018:4) adds another contradiction that, by definition, if we agree on what a problem is it cannot be wicked. So, can we even call problems we do not agree on (wicked problems) problems? She takes this a step further in reasoning that just by naming WPs, we deviate from the original writing.

Additionally, some scholars make the argument that WPs, if not solvable, are at least tameable. However, the original article states that if a problem is tame, then it is solvable. Such scholars

making this claim include Catron (1981:16) and Paquet (1999:45), but this debate will be discussed later. Termeer *et al.* (2019:176) assert that the claims and contradictions identified in critical literature are the result of a lack of analytical precisions in the original writings. This encapsulates the main criticisms directed at WPT and its 10 propositions.

### 2.3.5. Responses to criticisms

The lack of clarity in the propositions offered by Rittel and Webber (1973) have led to deviations from the original writings. Although this last point is in part a criticism of the original theory, it is also a response to the arguments made above. Such authors responding to the criticism offered above effectively criticise those scholars as having misinterpreted the original propositions. Like Termeer *et al.* (2019), McCall and Burge (2016:204) subsequently criticise the vagueness of the 10 propositions in stating that the theory's unclear definitions allow for incompatible interpretations. They maintain that WPT critics attempting to undermine the propositions are doing so with misinterpretations of the original work. They thus discredit critical claims on the basis of evident ambiguity in the original text.

Conversely, Coyne (2005:4) makes the argument that it is rather design thinking's wide and willing acceptance of the existence of WPs that has caused a divergence, as these researchers have forgotten the "radical edge of the original propositions" (2005:5). In this sense, the over-willingness to accept WPs has subsequently led to critical literature. Roberts (2018:3) makes the argument that diverging interpretations are rather the fault of those thinking WPs can be tamed or solved. It is these misguided views that have led to the misuse of the propositions and conceptual stretching of the original theory. Peters (2017) adds to this point that major conceptual stretching has *undermined* the analytic capacity of the wicked concept. Also, since so many tame problems can possess wicked traits, some critics question the usefulness of the WP concept as a concept (2017:386). There is also an unintended normative element taken on by those maintaining the view that WPs are solvable.<sup>14</sup> Subsequently, the nature of WPs is undervalued by the theory's opponents as well as its supporters.

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<sup>14</sup> This begs the question: *Is the theory descriptive or normative?* On the one hand, it is overwhelmingly cynical towards man's intellectual capabilities in problem-solving. Yet on the other hand, its prescriptive style in drawing attention to what ought to be and the encouragement of using man's innovative skills to tackle wickedness suggests otherwise. This is seen in Rittel and Webber's comment on wickedness and what is "equally intractable, the problem of identifying the actions that might effectively narrow the gap between what-is and what-ought-to-be" (1973:159).

### 2.3.6. Finding the line between wicked and tame problems

Unsurprisingly, distinguishing between wicked and tame problems has drawn some attention and debate. At the start Rittel and Webber (1973:159) maintained that all planning (political and social) problems are wicked, while scientific problems are tame, no matter how difficult. In literature since then, the dominant opinion is that most, not all, planning problems are wicked (Catron, 1981:13; Nie, 2003:311; Menkhaus, 2010:86; Kramer, 2011:82). Some scholars, such as Peters (2017:386), assert that most planning problems, at least in recent years, are actually not wicked as they do not meet the original 10 propositions. Some problems may be intractable, but they are still not wicked. They are thus far less common than they appear in literature (2017:387). On the other extreme, Coyne (2005:12) argues that all problems are wicked, and scientific problems are just *less wicked*. Even games we play are wicked because we create the game's meaning, and follow rules that have been established according to that meaning. Wickedness is thus the norm, and tame formulations by professionals are deviations. There is evidently not much consensus in this regard.

While Coyne (2005:8) maintains that distinctions between wicked and tame problems cannot be made since there are no tame problems, other scholars take this challenge on. Those doing so generally agree that tame and WPs face fundamentally different challenges (McCall & Burge, 2016:202), and these challenges form the distinction. Catron (1981:14) identifies the dividing line as the in/ability of scientific rules. If by nature the problem is governed by rules, it is tame. If rules cannot govern the situation, it is wicked. For Kramer (2011:82), the dividing line is the consensus or dissensus over the problem and solution. If planners can agree on the problem, but not the solution, it is still tame. If there is disagreement on both, it is wicked. Nie (2003:312) draws the line by means of a simple example; that it is relatively easy to find the most economically efficient method of building a road (which is tame), but reaching agreement on its location can be impossible, as there are multiple competing interests at stake (which is wicked). Alternatively, Menkhaus (2010:86) identifies attitude as the dividing line, and does so in terms of state fragility. Tame problems are present when a government is willing, but unable to address its fragility, while WPs are present when a government is unwilling to strengthen its own capacity. These distinctions are continuously debated in WP literature.

### 2.3.7. Simple, complex, and super wicked problems

As a result of both the lack of clarity in the original propositions and debates on distinguishing between wicked and tame problems, new concepts have emerged to fill these voids. Tame and WPs have been distinguished further into simple, complex, and *super* WPs. Simple and complex problems fall within tame problems. Simple problems feature low levels of conflict, where there is agreement on the problem definition and solution. It is well-defined, structured, and can be solved with the use of established methods (Roberts, 2018:10). Complex problems, although still tame, lie between simple and WPs. There is either agreement on the problem definition or the solution (Roberts, 2000:2; Kramer, 2011:82). *Super* WPs go beyond standard WPs. Peters (2017:388) identifies four characteristics of these that set them apart. There is a sense of emergency in dealing with the problem as time appears to be running out. There is weak or no central authority capable of assisting in problem-solving. The same actors causing the problem also appear to be the ones trying to solve it, and, because of its emergency, problem-solving goals are short term. This, Peters argues, is becoming more apparent with the global rise in environmental concerns (2017:392). The emergence of new concepts illustrates elements of the evolving nature of WPT.

### 2.3.8. Can wicked problems be solved?

The above question is central to the WP debate, where three views persist in the literature. Firstly, the optimistic view that WPs can be solved and tamed with the right approach. Secondly, the dominant view that they cannot be tamed, but can be resolved through coping mechanisms. And thirdly, the sceptical view that by nature they cannot be solved.

For the optimistic view, scholars either explicitly state that WPs can be tamed, or it is implied in their strategies. Many scholars believe that WPs can be solved with the right attitude and analytical approach transcending coping strategies. While some say this can be achieved by grouping problems according to similarity and using previously tested solutions (Catron, 1981:16), others advocate “social learning” whereby problem-solvers learn on the job, engage with stakeholders, and make ethical considerations (Paquet, 1999:48; *Sachs et al.*, 2010:62). Alternatively, Conklin (2003:22) offers some coping strategies which include narrowing the scope of the problem by locking down a problem definition, setting goal parameters so success can be measured, ignoring evidence that may complicate the process, and making some improvements in the current situation instead of solving it entirely. These strategies generally encapsulate positive literature.

The more cautious scholars believing that WPs by nature cannot be solved, they tend to highlight the evolving nature of WPs, and how coping strategies need to be flexible in response (Weber & Khademian, 2008:337). As McCall and Burge put it, resolvers need to show “commitment to repeated redesign” (2016:226). Those emphasising dialogue, participation and learning are critical of narrow, linear thinking that is ill-equipped to handle the complex nature of WPs. By learning from all participants, mutual understandings and goals can be created, aiding efforts to understand the problem (Roberts, 2000:13; Head, 2008:106; Kramer, 2011:82; Termeer *et al.*, 2015:681; Davies, 2016:34). Additionally, some authors maintain the view that problems can be grouped according to similarities, where learning from experience can help resolve similar cases (McCall & Burge, 2016:226; Roberts, 2018:27). Overall, these scholars dismiss the scientific approach, and agree that a more flexible approach that emphasises dialogue, participation, learning from differences, and building on past experience in complex adaptive systems is possible.

The third group of scholars is critical of attempts to tame or cope with WPs. In this view, attempts will only complicate problems further, and people thinking they can be solved have misinterpreted the fundamental characteristics of WPs. Lewis (2008:12) is critical of those offering coping strategies – Conklin (2005) gets a special mention – as they do not consider the long run and only worsen the problem. Coyne (2005:14) is cautious of any method used by planners, as he warns that researchers are stuck within certain knowledge frames, and are unlikely to communicate with stakeholders from different ones. Since research questions are determined by the knowledge frame in which they are formed, stakeholders outside of the frame may seem irrelevant and left out of the process. Attempts, therefore, only simplify the problem and inevitably cause more conflict. Because of this, Peters (2017:387) concludes, governments should just admit that WPs are unsolvable, and lower their unattainable performance tasks.

#### 2.3.9. Relevance and Application of WPT

Regarding the contribution that WPT has made in research domains, the theory still maintains its relevance. *Dilemmas in a General Theory of Planning* (1973) is to date the most cited article ever published by *Policy Sciences*. The theory has featured most notably in environmental journals covering policy domains in water management, forestry, spatial planning, pollution, fisheries, agriculture, and climate change. The problems Rittel and Webber (1973) identified as the professional’s task still remain today in the context of human population growth, globalisation and



democratisation. Because of this, the need for social value considerations across policy domains is increasing (Paquet, 1999:41). The research questions that WPT encourages still question contemporary conventional methods in policy research.

It is interesting that despite the level of disagreement and vagueness present throughout the literature, all theorists recognise the negative impact of conventional scientific research and methods on planning problems. It is argued to be ill-equipped to deal with social values and morality. This fundamental argument must be considered going forward in reviewing the methods commonly used to understand threats to conservation, and the measures taken to mitigate them.

With regards to the discussion on the implications of Rittel and Webber's (1973) propositions, some points should be considered. The criticism directed at the ontological claim of uniqueness holds some value, as the purpose of political research in many cases is to draw lessons from the shortfalls of past experiences for the betterment of the future. To add another contradiction, how can each problem be essentially unique yet infinitely interconnected as both cause and effect of others? By taking this proposition too seriously, the point of this study would be undermined. Regarding the proposition that solutions have unintended and far-reaching consequences, it may be true in many cases. However, it can be argued in the context of our conservation strategies that the bigger problem in Southern Africa is rather that our solutions have had too little effect. By accepting the proposition wholeheartedly, the effect of our region's efforts would be given too much credit, and current intelligence would be overestimated.

Although the debate on whether WPs can be solved or not is central to many articles, it falls outside the scope of this study, which rather focuses on how WPT can help us understand the conservation problem at hand. Despite this, some comments can be made about the ideas coming through in relation to the region's context. Literature focusing on resolution strategies indicates that participation, ethical considerations, flexibility and open communication are key. These suggestions, as great as they are, can be incredibly costly and time-consuming. Most of all, these strategies require a serious level of commitment by researchers, solvers and stakeholders at the core and periphery of the problem, and a tremendous organisational capacity. These methods may only be possible in regions not riddled with corruption and incompetence – a reputation Southern Africa has not been awarded. What can be taken forward are the confines of knowledge frames, as communication between actors from different frames may prove challenging.

In using WPT in this study: *Will it be appropriate to veer off from the exact confines of the original propositions?* The view here is that it is acceptable to do so. If one is to take the propositions too seriously, then the structured nature of this study would already undermine wickedness. What should be taken forward in the application of WPT are the valuable insights it offers into the shortcomings of policymaking and planning, and a new perspective on political conflict. As Crowley and Head put it, "...if researchers do not appreciate this, then they do not understand wicked problems at all" (2017:547). It can therefore be said that WPT holds potential value for framing this study, and this is yet to be done in the context of Southern African conservation.

#### 2.3.10. Wicked problem literature pertaining to Southern Africa

Leaving this section blank is visually the most effective way to illustrate the available literature regarding Southern African conservation and WPT. There is an abundance of literature reviewing conservation strategies and wildlife decline in Southern Africa, none of which mention any relation to WPT or classify the conservation issue of interest as "wicked" (Brashares *et al.*, 2014; Duffy, 2016). WPT literature is far scarcer; either briefly referring to wildlife problems in other regions of Africa (Mason *et al.*, 2018; Beck *et al.*, 2019), or examining "wicked" economic problems in Southern Africa (Govender, 2016). To describe these papers as WPT literature is also a stretch, as authors tend to abruptly label a problem as "wicked", mention one or two reasons why according Rittel and Webber (1973), and then move on to other areas of interest.

The handful of studies mentioning environmental WPs in Southern Africa mostly refer to water management (Muller, 2013), marine life (Blyth *et al.*, 2014), or architecture (Vogel *et al.*, 2016). However, in the last few years some researchers have connected some dots between wildlife management and wicked conflict, but only in two limited fields; Human-Wildlife Conflict (HWC)<sup>15</sup> and rhino poaching. Wicked HWC is mentioned by Nicole (2019) and Montgomery *et al.* (2019). Articles on rhino poaching as WPs in Southern Africa include Ison and Biggs (2017) and Collins *et al.* (2020). The articles show a limited understanding of WPT, as indicated by Nicole's (2019) use of quantitative methods to measure HWC mitigation success. Collins *et al.* (2020) focus on contradictions in South African law, leaving most elements of WPT untouched.

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<sup>15</sup> HWC refers to scenarios in which wild animals pose recurring threats to the safety or livelihood of people, such as the destruction of crops or hunting of livestock, causing humans to kill the animal (Treves, 2008:214). When an endangered species such as a lion or elephant is the culprit, HWC becomes wicked.

Montgomery *et al.* (2019) also note that WP elements are hardly exemplified in research. As they record, out of 249 articles on the lion bone trade between 1990–2015, only one is transdisciplinary (2019:83). Similarly, Ison and Biggs (2017:66) express their view regarding anti-poaching that operations would be more successful if framed as WPs. They explain that doing so would increase the likelihood of sponsors, and more considerations would be made towards local community engagement. It must also be mentioned here that of the handful of articles available, elephants and lions only receive attention regarding HWC, which is only one aspect of wildlife conflict. Rhinos are mentioned in terms of poaching and given the most attention, as usual. The only literature mentioning wickedness and vultures is on the apparent wicked nature of vultures.

As with papers outside of this study's scope, some labelling a conservation problem as "wicked" do so as an assumption more so than delving into what it really means to be tame, simple, complex, wicked or super wicked. The authors do not seem to grasp the weight of the original concept that the scholars dedicated to WPT do. Although these studies do mention some WPT notions like interdisciplinary work, the effects of poor legislation, or the need for social considerations, wicked theory is seldom kept in mind throughout. In other words, the use of the term "wicked" to describe conservation problems in Southern Africa has not been done correctly and cautiously, and the attempt to understand the nature of conflict over wildlife through the dynamics and relationships of stakeholders from a wicked perspective has not been made. It is then necessary to review literature that more adequately discusses wildlife conflict through the WP lens.

#### **2.4. Wicked Problems and Endangered Wildlife**

The focus now turns to literature tying WPT and NRC together. These fields have many correlations which should briefly be shared if not already clear. Both fields emerged from complexity theory during the 1970s as a critical response to scientific reductionism branding modernisation, and expressing the need for policymaking to address climate change and inequality. In explaining why conflict persists over access to resources and power, both fields move on from the narrow focus blaming population growth, and consider sociopolitical factors to be at the heart of policy problems. The concern for social dynamics is thus central, and the acceptance of complexity and uncertainty follow in the common understanding of complex adaptive systems. It is obvious that these fields share similar concerns, and the combination holds the potential to develop a new perspective on why conservation efforts in Southern Africa are struggling.

What still needs consideration here is an important element of WPT that NRC neglects regarding the intractability of wicked conflicts. While NRC research dedicates substantial energy to conflict solutions, pure WPT detests this. One might argue that NRC work is not too far off from describing wicked scenarios as most authors refer to conflict strategies as *resolutions* and not *solutions*. However, while this distinction is repetitively mentioned in WPT, it is not actually made in NRC literature. This shows that NRC theorists have not taken intractability to heart, and this remains the most significant divide in the respective approaches' understandings of difficult conflict.

An author drawing NRC and WPT together is Martin Nie in *Drivers of Natural Resource-Based Political Conflict* (2003) addressing the wickedness of conflict over wildlife. As an early theorist doing so, he demonstrates that while many policy problems are notoriously difficult to solve, NRC becomes intractable when endangered species are involved (2003:307). Since his article is significant to this study, an overview of his 12 drivers of NRC over endangered wildlife should be made and related to researchers in relevant fields. Many overlapping drivers can be grouped, and similar claims of other scholars taking on this challenging field will be mentioned.

#### 2.4.1. Drivers of wicked conflict over wildlife

##### a) *Sacredness and Science*

Two drivers illustrate the incompatibility of cultural values and scientific research. Nie's cultural driver is *the sacred, spiritual, and importance of place*. When environmental issues form part of larger religious or cultural debates, including sacred sites and species, they become wicked as human values and beliefs are at stake (2003:316). When environmental conflicts hold moral attachments, environmentalists have to use economic, scientific and spiritual language (2003:317). However, science cannot cater for the complexity of cultural values, and barely handles uncertainty in its own findings. This is Nie's driver of *scientific disagreement and uncertainty*. He shows concern here for the marriage of law and scientific ruling. There are often competing scientific claims made by contradictory analyses which serve to complicate environmental legislation. Uncertainty plays a role when policymakers are unsure of potential policy outcomes and their impact on cultural concerns. As a result, they call for further scientific research which continues to slow down the policy process and stall reluctant actors. This illustrates how science is used as a political tool to represent knowledge claims, question unfavourable decisions, and stall policy processes (2003:323). Using science to resolve cultural issues intensifies wickedness.

Literature linking WPT to conflict over wildlife resonates this argument. Many authors reiterate that dealing with environmental policy conflict requires a focus on value-based factors in NRM, and not science. As Crowley and Head put it, “scientific knowledge matters less in these circumstances than the ability to negotiate politically” (2017:544). Hughes *et al.* (2013:261) point out the irony in a Chinese example of coral reef decline, as while NRM initiatives have grown, reef declines have worsened. This is because the offshore territory is tangled in political disputes over resource extraction rights outside of the scientific scope. On policing wildlife crime in East Africa, Mwanika notes that science does not hold an objective understanding of the task, as it is not environmental conditions that determine the problem; it is the “social and political processes that have in time defined environmental security” (2010:1). Nie’s argument is present throughout.

#### *b) Policy Design and Implementation*

Three drivers illustrate problems in policy design and implementation. In *policy design*, Nie argues that many environmental policies were designed in historical contexts no longer applicable. Land distribution policies, for example, may have made sense then, but currently have damaging effects (2003:318). Contradictory or vague policy language results in incompatible budgetary mandates and disagreement. This occurs when politicians or key business stakeholders are behind policies neglecting other angles. This begs to ask if natural resource policies are designed to resolve value-based conflict. Nie argues that this is not the case, as policies are more concerned with keeping political and scientific domains separate, and doing so gives authority to scientists and scientific solutions (2003:319). The WPT stance states that attempting to separate science, politics and NRM only worsens conflict. In *adversarial governance*, Nie (2003:326) notes that institutions can be conflict-causing by nature and encourage disputants to take extreme stances. It then creates a type of ‘structural incapacity’ that polarises conflict. This can be seen in public hearings where resolute opinions, one-sided policy suggestions and heated debate occurs, rather than open discussion (2003:327). Another problem is the lack of transparency in the roles and jurisdictions of respective institutions. When institutions disagree, conflict forms over who has jurisdiction over the problem. This is seen in conservation strategies for endangered species, where attempts at collaborative, local, decentralised NRM have caused conflict with and between government institutions.

Additionally, *constitutional, statutory and administrative language* exacerbate conflict. Nie points out that vague legislation can transform value-based conflict into sustained legal-administrative

conflict. This is common as policies attempting to include pluralistic interests tend to present incomplete, non-specific and ambiguous guidelines (2003:328). Conflict is caused (or unresolved) because of how laws are written. By way of example, conservation laws in wilderness areas trying to include recreational facilities and local business into park mandates can cause conflict, as environmentalists can argue that it contradicts conservation mandates by compromising protected ecosystems (2003:329). Using overly optimistic language in legislation can also make too many promises. When stakeholders do not see the expected benefits, conflict may be spurred (2003:330). Vague guidelines also permit stakeholders to interpret the law for themselves, and in effect do as they please, undermining the law's purpose. Additionally, vague guidelines illustrate no measures for policy success, and decrease the incentive for managers to implement them.

Most scholars focus on overcoming these policy problems, which Nie (2003) does not. Within their solutions, regarding collaboration and participation as key, they indicate concerns. Davies *et al.* (2015:38) note that while stakeholder diversity in a participatory model is the most important strength, it is also the main weakness. This is due to the difficulty of trying to manage the plurality of interests and dynamics between participants. Similarly, Pryshlakivsky and Searcy (2013:110) mention with regard to sustainable development that such efforts have to address environmental, social and economic issues simultaneously, and doing so further complicates the matter. Agreeing with these points, Kreuter *et al.* (2004:441) and Hill *et al.* (2017:2) state that science alone cannot improve ecosystem health, as the process needs social systems thinking. Regarding government and policymaking mishaps, Levin *et al.* (2012:123) say that it is often those trying to solve the problem who are the ones creating it. In this sense, policies that incompletely grasp the problem they concern, or include vague language, do more to exacerbate the problem.

### c) *Political and Interest Group Strategy*

Five of Nie's drivers pertain to interest group strategies. *The policy surrogate* is one of these drivers. Relatively simple policy problems can become wicked when used by political actors as surrogates to debate larger topics (2003:314). Conservation issues become surrogates for problems such as resource extraction versus preservation, and rural versus urban values. While surrogates are important and should be debated, they exacerbate the larger problem (2003:315). Similarly, *policy frames* are characterised as competing structures of perception and belief (Schön & Rein, 1995:23). Nie explains that conflicts can be framed as part of larger policy stories with many

narratives. As Gray (2003:12) explains, when conflicts are framed, interpretations on the problem, party motivations, and resolutions form. Unlike tame problems where disagreement is settled by fact, framed problems are too controversial. Involved parties usually pay selective attention to evidence and disagree on the interpretation or relevance of certain facts. This becomes wicked as parties “disagree on what they disagree about” (Nie, 2003:320). The use of symbols is important in these political narratives, as they represent the larger story, appeal to emotions, increase the symbolic value of the problem, and thus increase the intractability of it (2003:322).

Nie also talks about *electoral politics and the wedge issue*. Political actors tend to use symbolic problems as a wedge to win or keep office. This may explain why environmental issues are brought up every few years in political campaigns. Political parties use wedges to reconstruct enemies, social problems and the role of leaders to gain support (2003:324). As a result, parties can restart conflicts previously settled, and consciously make issues controversial for short-term agendas. Overlapping this are *political and interest group strategies*. Political and environmental groups sometimes use certain issues or species to gain group membership for financial and popular support. Groups may orientate their agendas around crises, which abuse the issue or leave other environmental problems undetected. This leads to the loss of group credibility, which undermines the legitimacy of the environmental cause (2003:324). Such strategies tend to exaggerate problems and increase controversy. The competitive nature of this strategy attempts to draw support away from other interest groups to their own, so energy is mostly spent appealing to the public. In doing so, intergroup correspondence is neglected, and action towards solving the problem is neglected (2003:325). The dysfunctional and competitive nature between interest groups deepens conflict.

*Media framing* plays a role too. Although the media informs the public, Nie argues that it does more to complicate than clarify environmental issues because it covers them in a competitive story narrative between actors. Politicians also use the media for attention, and polarise issues to increase their newsworthiness. As a result, media coverage exaggerates conflict and fails to cover the ethics, motives, needs, and goals among stakeholders that could form common grounds (2003:326).

Some literature re-examines the political implications of group strategies. As Jarzombek realises, the use of environmental policy surrogates and frames have increased as a political strategy for many parties, and ‘green’ concerns are no longer stigmas attached only to left-wing environmental politics (2003:54). Although it seems like a good thing that interest groups are growing concern

for sustainability, the concept itself is still vague, and APs implementing sustainable measures are far from concrete or feasible (2003:56). Ghuman and Olmstead (2015:379) and Collins *et al.* (2020:2) indicate that a major problem in NRC is the interpretation of data that sets up contradictory conclusions according to the agendas of those involved. Muller (2013:4) concludes here that the ability to manipulate these issues creates many opportunities for campaigning.

#### *d) Scarcity and Distrust*

These two drivers are present throughout and do not need much more focus. An obvious one at this stage is *scarcity*. In Nash's (2001:249) concept of marginal valuation, as scarcity of a species increases and urban development expands, the economic value of remaining natural land rises. Conflict over untouched land and endangered species heightens as conservationists feel there is no longer room to compromise (Nie, 2003:312). Decisions made become highly controversial, and growing numbers of interest groups concerned create more sophisticated demands. Nie notes the tendency to grant more rights to resources than there are actual resources available. Scarce land with economic, symbolic and conservation value causes intractable disputes as conservationists can no longer compromise, and demands by stakeholders appear larger (2003:314). *Distrust* undermines public inquiry and constructive debate, and acts as an obstacle for collaborating or encouraging innovation (2003:332). These drivers serve to increase conflict throughout.

Scarcity is obviously mentioned throughout literature pertaining to threatened ecosystems, and at this stage it is considered as a given. For example, Levin *et al.* (2012:123) argue that political issues over climate change are super WPs because the time left to conserve remaining natural resources is running out. Not only is it essential for the environment, but also to avoid major future political conflict (2012:126). On this topic, Redford *et al.* (2013:1) stress that distrust and the lack of communication between the different research communities interested in conservation need to merge as a matter of urgency in saving endangered wildlife.

#### 2.4.2. Remarks on Nie's drivers for the Southern African context

In light of the gaps present in the limited WPT research conducted on Southern African wildlife, some final comments should be made on Nie's (2003) drivers, and how they are relevant to the Southern African context. As mentioned already, and ironically being mentioned again, there are many overlaps in Nie's drivers which should be grouped to avoid redundant repetitions.



Since there is already an abundance of resource scarcity literature, this driver is not monumental. It is also perhaps a needless driver for Nie to distinguish as he argues from the start that NRCs are wicked when an endangered resource (species or territory) is involved. Scarcity is a given, and how the conflict becomes wicked based on the political and social factors is more interesting. The scarcity of the endangered species in this study is already established by a magnitude of research done, so dedicating too much time to this is unnecessary. Although it is politically interesting in stakeholder relationships, *distrust* is already a given. Distrust, especially in motives, values and histories, is evident in Southern Africa. It explains why conservationists, for example, prefer “legislative hammers” that set research, and policy domains for environmental actors, and penalties for people or entities breaking the law (2003:332). It is an element common throughout the drivers of interest to this study, so distinguishing it is unnecessary.

Nie’s drivers concerning sacredness and science contribute significantly to the goal of grasping the relationship between cultural values and scientific judgment in conservation. A point made by Nie differing from the Southern African context is the sacred value of endangered species. He argues that when a species is culturally sacred, the need to protect it increases (2003:316). The opposite might be true in this context, the traditional values associated with the species in question encourage their extraction from nature (Trinkel & Angelici, 2016:46). Another interesting angle to take further is how conservationists have adopted economic positions to gain funding from investors, and increasingly taken on social considerations in their research and strategies. How these processes are often stalled by reluctant actors or institutional red tape is also noteworthy.

Nie’s contributions to the role of policy design and implementation are useful. His attention to historically-made policies may explain the conflict or disregard for the law present today in some situations. How contradictory or pluralistic laws serve more to undermine conservation is another point of Nie’s that should be taken forward. This could be seen in the rights of access to water granted to farmers, and the perceived depletion of that water by animals that are also protected by law (Ogada *et al.*, 2011:58). The concern throughout the literature that policies or APs can have unintended consequences is something to take forward, especially in the harmful impact that tardy elephant conservation has had on vulture poisonings (Ogada *et al.*, 2016:593). The presence of implementation guidelines for conservation managers should also be assessed in Southern African legislation, and an important question to ask here is: *Are these policies process- or outcome-based?*

The suggestion Nie makes that vague policy language could actually be a political strategy should be investigated further. This encourages research into how vague policies can reduce actor responsibilities, and how actors can interpret the law in accordance with their own interests.

Nie's drivers concerning group strategy pertains to the study. His work encourages further exploration into policy surrogates present in Southern Africa, such as conservation issues as part of larger value-based conflicts (African tradition versus Western science). Similarly, the investigation into policy framing and how the media has been successful in this regard affects NRC and conservation. An example to explore is the attention currently given to hunting in Botswana (Africa Geographic, 2019). Wedge issues in electoral campaigns should also be considered. Although taking on environmental issues is not a big part of electoral tactics in Southern Africa, strategies involving land reform could indeed have negative environmental effects and cause further conflict over land and its resources. Interest groups adopting environmental campaigns to promote business growth are a trend of interest in this study, and how these economically driven groups have assisted or undermined conservation. Examples to look into could include endangered animal bracelet campaigns, material shopping bags with endangered species printed on them, or alcohol products branding themselves through anti-poaching stances.

Nie's WP drivers cater for the shortfalls of NRC literature in Southern African wildlife. Through utilising the wicked perspective, an in-depth account of the political and social dimensions troubling Southern Africa's conservation efforts can be constructed. Doing so could bridge not only the lack of WPT research in Southern African wildlife, but also the gap that thoroughly examines the value-based factors determining conservation success from a political perspective.

#### 2.4.3. Developing the political perspective on conservation problems in Southern Africa

It is now necessary to identify from all the literature mentioned above what information is useful for this study, and how it will be used. The wicked drivers of natural resource-based conflict identified by Nie (2003) are most useful for the task of developing the political perspective on conservation problems in Southern Africa. This is because Nie's drivers combine the knowledge frames of WPT and NRC to illustrate why conservation problems are often so intractable. Nie's drivers also cover identifying elements of WPs which are based on Rittel and Webber's (1973) ten characteristics of WPs. In doing so, Nie develops the argument that conservation over endangered species is wicked, as the dominant use of science, the different interpretations of the problem and

solution, and the political manipulation of the conservation problem, all serve to complicate instead of resolve the conservation problem at hand.

For this project, Nie's drivers will be simplified into three WP drivers, namely *Sacredness and Science*, *Policy Design and Implementation*, and *Political and Interest Group Strategy*. The table below illustrates Nie's driver dimensions that are incorporated into the study's three drivers. Nie's drivers of *Scarcity* and *Distrust* are already considered as given from the starting point, and are present throughout. Identifying factors for the dimensions of the three drivers are also illustrated. The identifiers are infiltrated into Chapter 3 to contextualise the current situation in Southern Africa's NRC over endangered wildlife. Chapter 4 then analyses the context presented in Chapter 3 by use of the WP drivers to explain how the conflict is wicked, why current conservation strategies are not working in this intractable conflict environment, and place the conservation problem in the political perspective. The table thus illustrates the theoretical lens developed from the information presented in this chapter, and a simplified framework for the study going forward.

*Table 2: Wicked Drivers of Conflict over Conservation*

<b>Wicked Driver</b>	<b>Dimensions (Nie's Drivers)</b>	<b>Identifiers</b>
Sacredness & Science	The sacred, spiritual, & importance of place	Sacred/symbolic value of species/places Community resource management
	Scientific disagreement & uncertainty	The role of scientist as expert Scope of scientific analysis: technical conflict framing; inclusion/exclusion of social problems Community distrust towards scientists
Policy Design & Implementation	Policy design	Marriage of science & law Uncertainty in political decision-making Outdated historical policy context Incompatible budgetary mandates & legislation Lack of adequate communication, enforcement & accountability
	Adversarial governance	Institutional/constitutional factors: red tape Regional, state & provisional legislation
	Constitutional, statutory & administrative language	Vague/contradictory language in policy mandates
Political & Interest Group Strategy	The policy surrogate	Politicising conservation
	Policy frames	Political interpretation of evidence: the blame game Narrative policy stories & historical distrust
	Electoral politics & wedge issues	Conservation issues as political wedges in campaigns
	Political & interest group strategy	Campaigns to gain group membership & popularity Conservation campaigns for financial gain

	Media framing	Environmental crisis orientation Distrust between groups  Polarising conflict for newsworthiness The adversarial frame: creating simplified, narrow political perspectives that divide actors Encouraging extremism & confrontation
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Source: Adapted from Nie (2003:312)

## 2.5. Conclusion

This literature review has provided a summary of research available that grounds the topics of this study. Through discussing the arguments and concerns expressed within NRC and WPT literature, the inadequacies of scientific research in understanding the social and political dimensions of conflict have been shown. Nie's (2003) wicked drivers of NRC have been most compelling in illustrating a workable merging of NRC and WPT literature. Taking these drivers forward in a workable method has the potential to create a similar political perspective for the Southern African context. The useful research from this review has been identified, and how it will be used in Chapter 3 and Chapter 4 has been illustrated in an operational table that will guide the study. Additional research in this field has also illustrated the potential advances of viewing environmental policy analysis through the wicked lens. Two of the many researchers coming to this conclusion state that "environmental policy research thus highlights both the enduring challenge of WPs and the enduring significance of 'wickedness' as a frame for policy analysis" (Crowley & Head, 2017:544). The call for conflict research acknowledging the vital role that human values, and not scientific methodology, play in determining conservation success has been documented throughout. As Game *et al.* comment in this regard, "conservation is not rocket science; it is far more complex" (2013:271). In examining WPT in the context of Southern African NRC over endangered wildlife, it is clear that this remains a formidable research gap, and that the research found closest to the topic has also expressed the need for further qualitative research into the field. All of the literature unpacked in this review, along with the successful qualitative research methods used, will help this study contribute to the current literature gap. Creating a political perspective on the conservation problem is vital to help policymakers and conservationists in the attempt to protect Southern Africa's endangered wildlife.

### 3. CHAPTER THREE

## Context: Wildlife Declines and Conservation in Southern Africa

### 3.1. Introduction

The African continent, known for its abundant wildlife and unforgettable safari experiences, is a tourism hotspot for those seeking the great outdoors. Following South America, Africa is the second-richest continent in wildlife abundance and biodiversity. It holds the world's largest intact mammal population of over 1 100 species, and 2 477 bird species, of which 1 400 are endemic. Additionally, there are 1 248 Important Bird Biodiversity Areas (IBAs) covering 2 million km<sup>2</sup> – about 7% of the continent (UNEP-WCMC, 2016:13; BirdLife, 2018:3). IBAs are Protected Areas (PAs) dedicated to conserving naturally occurring fauna and flora within their limits. The Southern African region is the most visited destination for paying tourists who contribute large sums to the ecotourism<sup>16</sup> industry on which the region's economies rely heavily (Chiutsi *et al.*, 2011:15).

Much as the region wishes to celebrate its biodiversity with a paying audience, Southern Africa has a history of problematic trends facing conservation. The combination of human population growth and inadequate conservation efforts has led to the decline of species and habitats continent-wide. Africa has witnessed mammal declines of 59% since the 1970s (Di Marco *et al.*, 2014:2). As of 2018, over 10% of Africa's birds (276 species) are listed as globally 'Threatened', and 29 species are listed as 'Critically Endangered' (BirdLife, 2018:9). The activities and aftermath of human development in the 20<sup>th</sup> Century paint a troublesome picture depicting the rapid destruction of African ecosystems. Since the 1950s, the continent's human population has grown from 250 million to 1,3 billion. Population density is estimated at 45 people per km<sup>2</sup>. Projections show that by 2050, the population will increase to 2,5 billion. In these numbers, Southern Africa's population is currently around 67,5 million, averaging 25 people per km<sup>2</sup>, with projections indicating a rise to 87,4 million by 2050 (Worldometers, 2020). Along with all this growth in human numbers is the cultivation of natural land for urban development, agriculture, and resource extraction.

Between 40–50% of Africans live in rural areas. As Snyman describes, rural communities can be characterised by “remoteness, high levels of poverty and unemployment, low level of skills and education, and a high dependency on natural resources” (2012:395). As a result, pressure is placed

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<sup>16</sup>*Ecotourism* is a form of tourism geared towards conservation and sustainable development. The industry's revenue contributes towards conservation projects as well as economic benefits to local communities (Chiutsi *et al.*, 2011:15).

on wildlife for food and space. The biggest threat to many vulnerable species in Southern Africa is the illegal market for wildlife products. Much of this occurs in local black-markets, but the greatest demand comes from Asian countries. As Everatt *et al.* note, the illegal wildlife trade generates between US\$5–20 billion annually (2019:4100). This is a hefty, filthy and luxurious pie that the poverty-stricken and the megawealthy alike have their fingers in.

Interlinked in many ways, the context of lion and vulture population declines should be discussed to create a picture of how their conservation became so uniquely problematic. To reiterate, vultures and lions have been selected for this study because their respective and interrelated conservation is riddled with political problems that offer a rich variety of pointers towards the wicked nature of wildlife management. Vultures deserve the limelight because the political perspective has so far neglected their situation, and time is running out to protect them. Lions also deserve attention, especially in South Africa, as the legal lion bone trade has caused some serious political issues. This chapter will cover the most relevant features of the respective conservation problems that create a picture to be analysed through the WP lens. To contextualise the problem, population declines, threats, and a history of conservation legislation will be discussed.

## **3.2. African Lions**

### **3.2.1. Population Declines**

The African lion – leading member of the Big Five, apex predator, ‘king of the jungle’, and symbol of power, courage and passion. Behind the romanticised legacy, however, wild lions face the harsh reality of rapid habitat and population decline. In the last century the cats have lost 82% of their habitat to human encroachment, and their population has declined by 90%. In the last 30-odd years alone, numbers have decreased by 43%, and some project that the species will be extinct by 2050 (Trinkel & Angelici, 2016:46; African Impact, 2019; African Wildlife Foundation, 2020). Since 1996 the International Union for Conservation of Nature (IUCN) Red List has declared the species globally ‘Vulnerable’, and ‘Critically Endangered’ in West and Central Africa (Bauer *et al.*, 2015:14894). To date, lions are extinct in 26 countries, and only six countries have populations of over 1 000 (Panthera, 2020). Most populations today reside in Tanzania, Kenya and Southern Africa. The current population estimation of wild lions is 20 000 – 30 000, of which 30% (around 7 000 – 11 000) are in Southern Africa (EIA, 2017:3; Everatt *et al.*, 2019:4100). Southern Africa is an important stronghold for the declining species facing many threats to their survival.

### 3.2.2. Threats to Wild Lions

#### a) *Human-Wildlife Conflict*

Human-Lion Conflict (HLC) is an ever-increasing trend with dismal consequences for wild lion sustainability. Currently, HLC is regarded as the greatest cause of human-inflicted deaths on the continent, and is certainly the case in Southern Africa (Panthera *et al.*, 2016:7). Researchers stress that it is due to the threats of human population growth and subsequent habitat encroachment (Creel *et al.*, 2016:22347). Human development has resulted in the expansion of land for housing, livestock and farming. Because these developments are reaching further into territories of roaming lions, increased contact with humans is inevitable. As Everatt *et al.* (2019:4100) explain, lions are killed mostly in retaliation for hunting livestock on which people economically depend. Lions are regarded as the most threatened carnivore in HWC because these large mammals are also perceived as a danger to human safety, reducing local community tolerance for coexistence (Seoraj-Pillai & Pillay, 2016:15; Karlsson & Johansson, 2010:170). Everatt *et al.* (2019:4100) note that the likelihood of continued growth in cattle herds will increase the rate of confrontation with lions, and as Panthera *et al.* (2016:7) estimate, by 2050 sub-Saharan Africa will experience a 21% increase in the cultivation of land, and a 73% escalation in livestock grazing in shared areas. HWC has resulted in the dependence of lions on Protected Areas (PAs) across their remaining range.

For the most part, PAs in Southern Africa have actually managed to stabilise lion populations when the areas have been fenced off – keeping lions in and livestock out. Fencing has, according to Bauer *et al.* (2015:14894), reduced HWC in Namibia, Zimbabwe, Botswana and South Africa. Mozambique remains the exception as PAs with lion strongholds have not been fenced. An example is the experience of Mozambique's Limpopo National Park (LNP) which contains 18 rural communities (7 000 people), an additional 20 000 people living on the periphery, and 36 000 cattle grazing throughout the PA. Everatt *et al.* (2019:4102) maintain that human encroachment has led to the 66% decline in LNP's lion population over five years (2012–2017) which remains the most threatened population in Southern Africa. Hwange National Park in Zimbabwe has experienced similar problems with poor fencing, where 95% of local community respondents in a survey conducted by Western *et al.* (2019) expressed their disagreement towards lion conservation. Only 5% showed support towards conservation and an increase in lion numbers (2019:213). It is reasonable to deduce that HLC is far greater in areas without adequate fencing.

b) *Bushmeat*

The illegal hunting and trading of bushmeat<sup>17</sup> is regarded as the second largest threat in PAs to lion sustainability. Firstly, preferred animals for hunting include large antelope such as zebra, buffalo and wildebeest, which has reduced the availability of lions' main food sources (USAID, 2018:2). Secondly, lions are often caught in snares for other mammals, unintentionally causing lion deaths (Panthera *et al.*, 2016:1; Everatt *et al.*, 2019:4100). This type of wildlife crime has expanded human encroachment on lion territories, depleted their prey base, and further threatened the availability of protected land (Bauer *et al.*, 2015:14895; Seoraj-Pillai & Pillay, 2016:5). As with HWC, bushmeat hunting is most problematic in PAs bordering rural communities (Panthera *et al.*, 2016:9). Community members hunt bushmeat for self-sustenance, although local and global commercial markets are growing.<sup>18</sup> While some may argue that the problem is not as bad in South Africa because of fencing (Everatt *et al.*, 2019:4099), Martins and Shackleton (2019:1) note that in the limited studies conducted so far, 30–60% of community members living next to PAs claim to consume bushmeat regularly. This is a worrying percentage for the sustainability of parks.

Snaring has become the greatest concern for many PAs, especially in Mozambique and Zimbabwe. In Zimbabwe's Save Valley Conservancy, an estimated 1 400 animals were left to rot in snares over nine years, while unintended lion snaring has accounted for 52% of lion mortalities in Niassa National Park in Mozambique (Panthera *et al.*, 2016:9). The notable losses in game have also shown damaging impacts on tourism, which is a vital source of funding for conservation efforts attempting to mitigate hunting (2016:10). Conservation studies in Mozambique have also noted a trend in bushmeat hunting in that the incidence rate increases in times of political instability. During the civil war in the 1960s and '70s, Gorongosa National Park (GNP) lost up to 99% of the park's wildebeest, buffalo and zebra (USAID, 2018:2). Everatt *et al.* (2019:4102) also noted this trend in Limpopo National Park (LNP) and Banhine National Park (BNP) in Mozambique, stating that in times of political instability and civil war, the parks were targeted significantly more by poachers hunting for bushmeat.<sup>19</sup> Bushmeat hunting is causing a decline in lion numbers in Southern Africa, particularly in unfenced and underpoliced areas.

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<sup>17</sup> *Bushmeat* refers to meat harvested from wild animals for mostly food purposes (Martins & Shackleton, 2019:1).

<sup>18</sup> The United States and parts of Europe are growing the international demand for Southern African bushmeat. It is estimated that 5 tons of meat from game is shipped to Paris every week alone (Everatt *et al.*, 2019:4108).

<sup>19</sup> Interestingly, during these times of instability, rhino and elephant poaching also increased, with poachers and traders taking advantage of the underpoliced illicit networks (Everatt *et al.*, 2019:4102).



### c) *Trophy Hunting*

Trophy hunting and its history pose a unique challenge to lion conservation. It includes the hunting of wild lions and captive-bred lions, or *canned hunting* lions<sup>20</sup> as this is commonly known. Trophy hunting generally refers to recreational hunting of animals under official government licence. The animal (its taxidermised body, skin or parts) is the trophy that a paying hunter takes home after the hunt (IUCN, 2016:1). While the threats mentioned above are explicitly illegal, trophy hunting is largely a legal sport drawing in international hunters willing to pay a lot of money to shoot a wild animal (Creel *et al.*, 2016:2348).

The hunting of wild lions for trophies has occurred for centuries. The sport has been associated with wealthy colonisers having the means to hunt expensive game, and in precolonial times, has also held the same elite status among powerful African leaders (Vig, 2016:178). Today, Southern and East Africa remain the most frequently visited destinations for foreign hunters, mostly from the US and Europe (Williams *et al.*, 2015:33). Before 2006 Asian hunters were rarely seen, but they have since increased considerably. For example, registered Vietnamese hunters entering South Africa increased from three in 2004 to 87 in 2010 (2015:34). Supporters of the sport argue that it brings in funding for the conservation of land, while opposers have for many decades argued that it threatens wild lion sustainability, and the ethics of canned hunting should take priority.

A study conducted by Loveridge *et al.* (2007:554) in Hwange National Park found that over four years, 63% of lion deaths resulted from trophy hunting. Most deaths occurred on the park's border (in which hunting is prohibited), indicating that the sport is not monitored effectively. Despite this, the sport generated 90–95% of CAMPFIRE<sup>21</sup> funds in Zimbabwe, and this economic incentive contributed to the formation of 70 000 km<sup>2</sup> of community conservancies in Namibia (Lindsey *et al.*, 2007:881). South Africa is the main trophy hunting destination, and, similarly to Zimbabwe's case, most wild lion hunts recorded have occurred in the Kgalagadi Transfrontier Park hunting concession and in reserves bordering Kruger National Park (KNP). Due to the substantially higher cost of hunting wild lions, the numbers remain relatively low at an average of 10 per year (Lindsey

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<sup>20</sup> *Canned hunting* refers to any form of hunting a predator in which the predator's ability to escape the situation is impaired either by fenced enclosures or drugs (Williams *et al.*, 2015:27).

<sup>21</sup> The Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) is widely established throughout Southern Africa, whereby income generated by safari businesses operating on communal lands is paid to local councils and then distributed to members of the community. Between 1989–2001, 89% of Zimbabwe's CAMPFIRE funds were generated from the hunting industry (Frost & Bond, 2006:10).

*et al.*, 2012:12; Williams *et al.*, 2015:28). However, the legal hunting or luring of lions out of PAs have resulted in conservationists arguing that trophy hunting threatens wild lion sustainability. Harvey (2020:7) warns that wild lions in unfenced reserves face the risk of extinction by 2030. The concern of animal welfare activists has also grown about the unnecessary killing of lions for the sake of trophies (Creel *et al.*, 2016:2347; Lindsey *et al.*, 2007:881).

Canned hunting, an industry only recognised in South Africa, developed as an alternative to wild lion trophy hunting. Canned hunts occur on smaller fenced properties in which the hunter is able to select a lion prior to the hunt. The lion is sourced from a breeding facility and released into an enclosure for the hunt, sometimes only days before.<sup>22</sup> Hunting operators facilitate the trip over the course of about three days, and then organise for the trophy to be taxidermised and shipped to the hunter (Blood Lions, 2015; Williams *et al.*, 2015:27). Although the trip is expensive, it attracts foreign hunters as the lion can be selected, the cost of a captive-bred lion is far cheaper than a wild one, the trip is shorter and easier, and the hunt has a 99% success rate (Blood Lions, 2015).

The practice of captive-bred lion hunting has been documented since the early 1990s. A number of events have occurred since 1991 that caused public scrutiny towards the industry and subsequent declines in hunting demands. The first event was a highly publicised hunting trip Nelson Mandela took to Mthethomusha Game Reserve. Although Mandela spent the trip discussing conservation with influential ecologists, the controversial method of conservation through hunting sparked some public debate on the practice (Koch, 1991:1). In 1998 the British Television broadcast the *Cook Report* (1998) which exposed the ethical debate of canned hunting to an international audience (PMG, 2018). The next event was the death of Cecil, a famous wild lion from Zimbabwe. In June 2015, Cecil was killed by an American hunter in a hunt that some say was legal (Aucoin & Donnenfeld, 2017:5), and some say was illegal (Panthera *et al.*, 2016:1). The hunt was the most publicised case ever recorded, resulting in mass outcry against Zimbabwe's conservation policies. A similar event occurred in June 2018 with the hunt of Skye, the leader of a popular pride in KNP. The hunt was highly controversial as the American hunter received permits from the Mpumalanga Tourism and Parks Agency, yet SANParks, KNP, and Umbabat (the reserve in which the hunt took

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<sup>22</sup> In May 2007 the South African Predator Breeders Association took the DEA to court over TOPS regulations to be implemented in 2008 that would enforce a 24-month release period of a captive-bred lion before the hunt. In November 2010, the Court ruled that hunting could continue without the 24-month release period. While the case was pending for over three years, the questioned practice could freely continue (Williams *et al.*, 2015:27).

place) did not approve the hunt. The lion was also believed to have been baited with meat to lure it out of an unfenced section of KNP (Conservation Action Trust, 2018:12; Pinnock, 2018).

As a result of these events, conservation-orientated NGOs started to increase pressure on Southern African governments to provide evidence of how hunting is benefiting conservation (IUCN, 2016:1). Regarding canned hunting, many critics started recognising that South Africa's captive-bred lion hunting has negatively affected 'Brand South Africa' and the country's ecotourism reputation (Trinkel & Angelici, 2016:60). It is projected that wealthy tourists will become more informed on the practices deemed unethical by the international media, resulting in further declines in tourism by conscientious tourists (Dalerum & Miranda, 2016:2; Harvey, 2020:6). This is also the case with many hunting associations worldwide. For example, all of the major North American and European hunting associations (where 93% of South Africa's international hunters came from in 2015) have expressed concern or given scrutiny towards canned hunting (Selier *et al.*, 2018:84). The history of trophy hunting has indeed witnessed growing contention towards the industry.

#### *d) Captive Lion Breeding*

Related to trophy hunting, the controversial captive breeding industry is said to threaten wild lion sustainability. South Africa holds over 300 breeding facilities concentrated in the Free State (4%), Eastern Cape (5.8%), Limpopo (22.3%), and North West (63.5%) province (Lindsey *et al.*, 2012:14; Williams *et al.*, 2015:34). An estimated 8 000 lions are in these facilities that are legally bred for various economic purposes. As cubs, breeding and viewing facilities (which buy or rent cubs) attract day visitors for petting, and paying ecotourists wishing to hand-rear cubs under the false pretence of conservation.<sup>23</sup> As the lions age, they may be used for interactive walks. Adults are then sold off to hunting facilities or the international bone and body part trade. The conditions of breeding facilities are also questioned by animal welfare organisations (Harvey, 2020:2).

Over the last decade, the public has become increasingly aware of the controversiality of captive lion breeding, and as with trophy hunting, the industry suffers reputational damage (Selier *et al.*, 2018:85). Panthera *et al.* (2016:14) indicate that about 1 000 captive-bred lions are legally hunted each year. It was argued by the South African Predator Association (SAPA) and other supporting

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<sup>23</sup> This form of ecotourism entails the volunteering of foreign travellers wishing to spend their money and time on conservation causes. They are often led to believe that the lion cubs will be released into the wild or that they had been rescued, when the lions actually get sold off to trophy hunters or the bone trade. CACH indicates that in 2015, one breeding facility earned between R3–4 million from paying foreign volunteers (CACH & SPOTS, 2018:31).

hunting/breeding associations that the industry generated R1.7 billion in 2015. Since the Cecil hunt, supporting associations have shown concern for the reputation of South Africa and a decrease in their own support base (Selier *et al.*, 2018:85). These organisations have now published research arguing that captive breeding is an effective conservation method protecting land from agriculture, and generating funds for community development. Businesses offering cub-petting and lion walks have also increased their mention and support for wild lion conservation, with some claiming to release their captive-bred lions into the wild (Ukutula Lodge, 2020; Wildthingz Lodge, 2017).

Critics in conservation say that the economic stance holds no grounds. In 2019, for example, the subsector only accounted for 0.96% of South Africa's tourism revenue (Harvey, 2020:7). These critics continue to argue that the effect the industry has on Brand South Africa is far greater than its economic contribution. The EMS Foundation and BAT (2018) estimate that South Africa may lose R54.1 billion in the next decade from tourism declines. Captive breeding and its relationship to trophy hunting and the bone trade have gained considerable scrutiny, with possible damages on Brand South Africa and lion conservation through tourism revenue losses.

*e) The Lion Bone Trade*

The legal lion bone and body part trade in South Africa has become one of the most concerning and contested contributors to wild lion declines. Since 1977 South Africa has permitted various categories of trading in lion (Williams *et al.*, 2015: ix). Although the trade has occurred for some time, since 2005 there has been a drastic increase in demands for bones in East and Southeast Asia. Lion parts are traded to supplement the illegal trade in tiger parts, as tiger numbers throughout Asia have decreased to an extent that poaching can no longer meet demands (Trinkel & Angelici, 2016:52). Before then, lions had never been used for Asian traditional medicine. Today, Vietnam, Laos, Thailand and China are the biggest importers of lion skulls, skeletons, claws, teeth and skin (EIA, 2017:4). CITES CoP17 decided that only South Africa, with its hundreds of breeders, could trade lion parts internationally according to strict quotas and regulations (CITES, 2019:10).<sup>24</sup> The logic in opening this trade, according to hunters and breeders, was to take the pressure off wild lion populations being poached (SAPA, 2016). Breeding facilities are also sitting with lions that no longer have a purpose in tourism, and so entering the bone trade makes economic sense.

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<sup>24</sup> There is also a local black-market in Southern Africa selling lion parts for medicinal purposes, but this market is far less substantial than the international market with East and Southeast Asia.

What complicates the matter is the presence of illicit lion bones being traded alongside legal bones. Illegally traded items do not possess CITES permits to trade internationally, and are derived from poached wild lions, or illegally traded captive lions (Williams *et al.*, 2015: xi). Since it is incredibly difficult to differentiate legal and illegal parts, many are able to pass border controls. Some reports indicate that the trade is fairly straightforward from breeder to exporter in South Africa, but less transparent entering Asian markets (2015: xii). There have also been discrepancies regarding the export quota. While the quota was set at 800, it was reported that 870 permits were issued by the DEA, of which, some had been used more than once. This indicates that over 870 skeletons had crossed the border in 2017 with permits, with some estimates reaching three times the permitted amount (EMS Foundation, 2019:20). The DEA had then decided in 2018 to re-examine the quota, which was set at 1 500 skeletons without adhering to the research process in place to confirm that figure. A quota was then never set for 2019 (RSA, 2018; de Waal, 2019; Respondent 3a).

Unsurprisingly, the trade has met opposition from numerous governments, animal welfare groups, conservationists, economists and academics. Such critics reject the conservation claim that the market protects wild lions and tigers, and argue that it is purely economically driven. They expose the disregard of the Environmental Affairs Minister in keeping to quotas, and present evidence that the trade actually encourages the demand for wild lions (Macdonald *et al.*, 2017:250). An example of this is presented by Everatt *et al.*'s (2019:4110) study examining HWC-related lion deaths in LNP. They show that 48% of the lion carcasses were missing claws and teeth, suggesting that the illegal trade in lion parts is incentivising HWC deaths. Animal welfare activists also expose the poor treatment of lions in captivity being sold straight into the bone trade. Since only the bones are important, the malnourishment, overpopulated enclosures and unhygienic conditions are not important to the breeder. This was evident in a report by the DEA indicating that 40% of the country's breeding facilities did not comply with the Threatened or Protected Species (TOPS) Regulations (de Waal, 2019). Some have also shown concern for how the legal trade creates pathways for other illicit wildlife products such as ivory or rhino horn, and how the trade places greater pressures on the remaining wild tigers in Asia (EIA, 2017:4). The controversial industry has thus in recent years been seen to pose a serious threat to wild lion sustainability.

While some campaigns focus on creating inclusive sustainable development programmes, most focus their attention on trophy hunting, captive breeding and the bone trade. There are numerous

noteworthy campaigns targeting international audiences and travellers wishing to visit South Africa. Organisations, including Campaign Against Canned Hunting (CACH), Four Paws, Born Free Foundation (BFF), Lion Aid, Big Cat Rescue and Claws Out, aim to raise awareness on the ethics of captive breeding, and discourage cub-petting and lion walks. Campaigns have also formed online petitions against captive breeding, gaining support in the millions. The Global March for Lions which started in 2014 has protested against the industry in 62 cities worldwide (CACH & SPOTS, 2018:9). On the academic and investigative front, influential contributors include the EMS Foundation, BAT, EIA, the EWT, Panthera and the IUCN. Their papers have influenced trophy import bans set by 45 airlines operating internally (HSI, 2020). Further declines in the support of canned hunting have emanated from hunting associations worldwide, notably from the US and Europe, as well as tourism bodies exposing the questionable ethics of volunteer tourism (CACH & SPOTS, 2018:38; Conservation Travel Africa, 2019).

Visual media from news and documentaries is important in informing the public. These include *Carte Blanche*, *50/50*, BBC, CBS News, *60 Minutes*, and *Dateline* reports, as well as films such as *The Cook Report* (1998) and *Blood Lions* (2015). Books have been published, including *Canned Lion Hunting – A National Disgrace* (2005), *Dying to be Free* (1998), *Cuddle Me, Kill Me* (2018), *With the Heart of a Lioness* (2015), and *Making a Killing* (2000) to name a few. Social media would be impossible to assess, but it is fair to say that millions of people worldwide have been exposed to lion campaigns. Campaigns regarding the demise of African lions are almost endless.

### 3.2.3. The commodity value of a captive and wild lion

Estimating the economic value of both wild and captive lions is important to consider in assessing the economic incentives and stakes behind lion declines. There are many factors and phases of a lion's life that influence its value on the market. Starting with captive-bred lions, their economic role begins at birth. Harvey (2020:5) estimates that volunteer tourists pay an average of US\$624.79 per week, and some agencies expect them to stay for at least two weeks. They receive about 360 volunteers each year. This means that a conservative estimate on the income received for the average breeding facility from volunteers alone is about US\$224,924. The next stage in a working lion's life is in public petting and walks. Harvey (2020:4) shows that the average prices per person to pet or walk with a lion is US\$33.65, and these facilities may receive 100 visitors per day. Assuming 300 working days per year, on petting and walks alone, facilities can earn US\$1.5

million per year. As the lion gets older, the breeder then has the option to sell it off to trophy hunters, keep it for breeding, or sell it in the bone trade.

The price of hunting a wild lion is on average US\$76,000, while canned hunts cost US\$20,000 (Panthera *et al.*, 2016:14; Stolton & Dudley, 2019:30). Prices for captive-bred lions alone (excluding taxidermy and accommodation) range between US\$16,800–17,900 per male, and US\$3,150–4,200 per female. These prices make lion trophies the second-highest hunting commodity in Southern Africa after the rhino (Williams *et al.*, 2015:32). Between 2007–2010, lion hunting accounted for 20% of the total mammal hunting revenue in South Africa (2015:28). Many foreign hunters then take up trophy insurance for the taxidermy and shipping of the trophy, which then generates significant income for the trophy insurance niche industry.<sup>25</sup> There are also various permits required for hunting and shipping, including TOPS and NEMBA permits on the national level, and provincial permits which generate further revenue.

If the landowner or taxidermist then decides to sell the remaining skeleton (the skull is taken as part of the trophy) to importing agents, the owner can receive about US\$1,560 per skeleton. If an adult skeleton is sold straight from the breeder with the skull intact, the breeder can receive up to US\$3,330 depending on its size (EMS & BAT, 2018). This averages out to be around US\$130 per kg. The agent responsible for shipping the commodity then makes an average of US\$10,000 profit per skeleton, as the skeleton from a captive-bred lion is valued at around US\$15,000 as it enters Asian markets (Williams *et al.*, 2015:62). Per kilogram, the importer is selling the bones at US\$700–800 per kg (SAIIA, 2018). On the black-market which is often fed by poached wild lion, the average price per kilo to the customer is US\$800–1,200 (Big Life, 2020).

For the smaller parts, there is still money to be made. For lion teeth, a poacher can make up to US\$70 per canine, which is then sold for about US\$700 on the black and legal market (Big Life, 2020). For lion claws, a poacher can make up to US\$55 each, which then fetches up to US\$186 depending on the quality. Lion pelts, even from females, can easily fetch US\$4,800 on legal markets.<sup>26</sup> The international market is far more profitable for poachers and traders, as these smaller

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<sup>25</sup> One such company offering trophy insurance is Ambition Financial Services in which the value of a trophy (and its insurance) is measured by the quality of the taxidermy, its size, its accompanied legal documentation (NEMBA and TOPS permits), the species' IUCN status, and the value of the hunt.

<sup>26</sup> These figures were found both on research papers exploring the trade in various lion items, as well as websites such as Safari Works Décor that ship the products internationally.

items do not fetch the same prices in local Southern African markets. Williams *et al.* (2015:70) show that claws only receive US\$1,2–3 each in muti<sup>27</sup> shops.

The lion pet trade has declined, probably due to strict regulations in the transport of live animals, or the ability to buy specimens from foreign black-market breeders (Trinkel & Angelici, 2016:52). Although this may be a relief for wild lions, the value of the prominent industries above are more worrying. As Trinkel and Angelici note, “lions are one of the most economically valuable species in Africa’s trophy hunting industry and are therefore most prone to over-harvesting” (2016:60). Dalerum and Miranda add that the price hunters or traders pay for game has nothing to do with the animals’ biological role in ecosystems (2016:3). The economic value is determined by the species’ IUCN status, population size, and cultural value. Multiple researchers further question how much of the money generated by the hunting industry actually goes back into conservation (Economists at Large, 2013:5). Another worrying factor regarding the high cost of receiving hunting permits is that it may increase the incentive to rather poach wild lions throughout Southern Africa as this is far cheaper than taking the legal route (Global Nature Fund, 2020). The high economic value attached to lions is thus possibly threatening the sustainability of Southern Africa’s wild lions.

Beyond economics, lions hold symbolic value in cultures which both increases human tolerance for lions, as well as harming them. Lions play this complicated role in Southern African societies. For many cultures, including the Tsonga and Sepedi in South Africa and the Shona in Zimbabwe, lions are sacred symbols of love, wisdom, strength and majesty. In some parts of Mozambique, men are believed to transform into lions after their death (Stolton & Dudley, 2019:70). However, hunting lions is also a traditional practice believed to transform boys into men. The symbolic value attached to lions may indeed add to, or decrease, the human threat to lion sustainability. Coupled with their economic value, however, lions as a commodity are more likely to incentivise poaching.

#### 3.2.4. Conservation legislation related to lions in Southern Africa

Although numerous laws affect Southern African lions, the most influential are mentioned here. Intergovernmental legal commitments made by all five states are the 1973 UN CITES and the 1979 Convention on the Conservation of Migratory Species (CMS) agreements, and SADC law

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<sup>27</sup>*Muti* or *muthi* refers to African traditional medicine practices that combine the use of animal and plant parts, rituals and superstition in the healing process. Although less common, human parts are also used. This seems more common in Swaziland and northern KZN, accounting for many murders of adults and, more often, children (Steyn, 2005:279).



enforcement and anti-poaching strategies directed by CITES. Lions have been listed under CITES Appendix II which prohibits the export of bones, bone products, claws and teeth of wild lion under a zero annual export quota. An exception are South African captive-bred lions, whereby exports for commercial purposes are allowed under strict regulations, with an export quota communicated to the CITES Secretariat annually (CITES Appendices, 2019:10). Regarding CMS, the Agreement focuses on conserving species straddling state borders (CMS, 2018). A joint CITES and CMS strategy, the African Carnivore Initiative, gives special attention to the loss of habitat for carnivore species under which lions are protected. The Initiative is committed to financially aiding projects regarding the listed species, which the member states are committed to implement. The Initiative also aims to assist community development projects to reduce HWC costs, and to drive research in knowledge gaps plaguing conservation. Encouraging synergy between states with TFCAs is crucial in this task (IISD, 2018). Relating specifically to lions, the Guidelines for the Conservation of the Lion in Africa (GCLA) is geared towards implementing CITES and CMS conference decisions (CMS, 2018). The region's countries are also subject to the SADC Law Enforcement and Anti-Poaching Strategy, which only focuses on rhinos and elephants (SADC, 2020). There are a number of other interstate agreements – TFCAs treaties, the Lusaka Agreement, Bern Convention, African Convention, Convention on Biological Diversity (CBD), World Heritage Convention and the Ramsar Convention – covering lions under general relevance (Trouwborst *et al.*, 2017:88).

State-specific laws should be mentioned. Under Botswana's Wildlife Conservation and National Parks Act 1992 (Chapter 38:01) lions are listed as a 'Partially Protected Game Animal'. General Provisions for Hunting state that hunters require permits from the Botswanan Government. Within a week of the hunt, the licence holder must produce the skull to a licencing officer for inspection. Failure to do so can result in a P500 fine, or imprisonment of up to six months. Under Order 3(3) of 2005, offenders may be fined up to P1,000 or imprisoned up to one year. Private land owners with lions will also need a permit as the species is listed as 'Partially Protected'. For the export of trophies and lion parts, permits are subject to CITES regulations (Government of Botswana, 1992:39; Mauck, 2013:13). In 2014, however, the Minister of Environment, Wildlife and Tourism implemented a hunting ban that prohibited the hunting, capturing and removal of all wild animals or parts listed in Parts I and II of the Act (including lion) (Blackie & Casadevall, 2019:3). Under the new President Masisi, the ban has been lifted, and so the original Act still applies.

In Mozambique's legislation, lions fall under Forestry and Wildlife Law No. 10 of 7 July 1999. In Article 12 the law prohibits all forms of hunting in national reserves of declining species. Although not explicitly stated, this should include lions. Under Article 20, hunting licences for subsistence, sport and commercial reasons must be obtained. The use of snares, traps and poison is strictly prohibited as means of hunting. Article 28 states that HWC-related killing may only be performed by authorised personnel after an investigation indicates a threat to human life. In Article 44, hunting under licence is prohibited for protected species, the young of any species, and pregnant or mothering females. The transportation of trophies requires permits under Article 74 (Republic of Mozambique, 1999; Mauck, 2013:45). Hunting, trade or transport of animals outside these and CITES regulations is considered poaching and trafficking. Fines range between 2–100 million MT, and 10 times that amount for endangered species. Prison sentences are only explicitly stated in the law when financial offences (money laundering) are committed in the process (Mauck, 2013:6).

A number of Namibian conservation laws pertain to wild lions. Under the Animals Protection Act 71 of 1962, selling animal traps without permits, or poisoning an animal without reasonable cause, are criminal offences to which fines not exceeding N\$8,000 are payable, and/or imprisonment of up to two years. The Nature Conservation Ordinance of 1975, prohibits persons in a nature reserve or game park to injure, capture, remove or disturb any animal (or part thereof) without permission. Offenders may be liable to a fine up to N\$500 and/or imprisonment of up to six months. Regarding hunting in these areas, no person without a permit may kill an animal, with the exception of a dangerous animal killed in defence of a human life (Juta & Company Limited, 2003). Fines for such offences go up to N\$20,000 and imprisonment up to five years.<sup>28</sup> Under Section 36 dealing with trophy hunting, permits may be granted by the Executive Committee of up to two animals per species per permit. Only licenced persons or businesses may produce, export and sell trophies, which are also subject to CITES regulations (MEFT, 2020). Money-laundering laws apply to the illegal sale of lion parts under the Financial Intelligence Act (No. 3 of 2007), and criminals may be charged up to N\$100 million in fines or up to 30 years imprisonment (Mauck, 2013:57).

Numerous South African laws apply to the hunting, captive breeding and trade of lions and lion parts. Regarding penalties for poaching and trafficking, fines of up to R10 million may be issued or prison sentences of up to 10 years (although these heftier penalties are usually only issued to

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<sup>28</sup> If the offence includes rhino or elephant, a fine up to N\$200,000 is payable and/or imprisonment of up to 20 years.

rhino and elephant poaching). Money laundering offences may get equal or higher fines, with prison sentences anywhere from three years to life (Mauck, 2013:64).

Regarding the captive breeding, trophy hunting and lion bone trade, the National Environmental Management: Biodiversity Act (NEMBA) 10 of 2004 provide the state's national legislation. Since lions are considered as Vulnerable by IUCN and CITES, permits to do with the use of lions are regulated through the Threatened or Protected Species (TOPS) Regulations of 2007.<sup>29</sup> TOPS Regulations state that registration for captive breeders, commercial exhibitors (owning zoos or cub-petting facilities, sanctuaries or rehabilitation centres), or lion traders is compulsory. TOPS Regulations are aimed at facilitating provincial legislation in areas that may be lacking or outdated (Cousins *et al.*, 2010:2). Provincial legislation may hold stricter laws than TOPS requirements where necessary. Mpumalanga and the Western Cape provinces do not implement TOPS Regulations regarding lions. CITES agreements are integrated into NEMBA and TOPS permits when it comes to the legal and regulated trade of lion specimens. Under CITES Appendix II, South Africa is the only state that may legally export lion bones or other parts from captive breeding facilities, and so South African authorities must adhere to CITES protocols and agreed-upon export quotas. The process can become complicated as each province holds its own regulations, some of which date back to 1994 (Williams *et al.*, 2015:21). An interesting law established by the Northern Cape provincial legislature does not issue lion hunting permits to hunters from Vietnam or China, as these countries are trafficking hotspots (2015:34). What may complicate matters further is a statement under NEMBA Section 97 which allows the Environmental Affairs Minister to change various norms, regulations and standards.<sup>30</sup>

In a Colloquium<sup>31</sup> held by the Portfolio Committee on Environmental Affairs on the effects of the captive breeding, hunting and bone trade industries, criticism was directed at the DEA from animal rights, conservation and hunting NGOs, as well as political parties. Concerns raised were based on the export quota of skeletons, the effect of the industry on Brand South Africa, and the conservation benefits claimed to justify the industries. Resolutions from the Colloquium instructed the DEA and Committee to conduct full audits of the size of the industry, evidence of how trophy hunting

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<sup>29</sup> TOPS Regulations were updated in 2019, but changes regarding lions have not been significant.

<sup>30</sup> It should be noted that South Africa, despite a significant tiger breeding presence, has no regulations regarding the breeding, hunting, trading or disposal of dead tigers and their parts (EMS Foundation & BAT, 2018:28).

<sup>31</sup>“The Colloquium on Captive Lion Breeding for Hunting in South Africa: Harming or promoting the conservation image of the country”, 21-22 August 2018.

benefits conservation, and to produce progress reports on how the government was systematically closing the overwhelmingly scrutinised industry (PMG, 2018). Sanctions and import bans from other countries worldwide also impact the movement of lion trophies and the productivity of canned hunting facilities. Trophy import bans were placed on Southern Africa by four countries, including Australia in March 2015, France in November 2015, and the Netherlands in April 2016. The United States banned lion trophy imports in December 2016, unless permits and justifications as to why the hunt had ecological benefits were produced (CACH & SPOTS, 2018:22).

Zimbabwe has a number of applicable laws that score various offences in levels determining the incurred penalty. The Parks and Wild Life Act 14 of 1975 prohibits the hunting, removal or sale of any animal or plant or part thereof in national parks, as well as the entry of domestic animals. Failure to adhere to these laws may be scored up to level 7 (US\$2 million fine) and imprisonment of two years. The same applies for these offences in an animal sanctuary or a “safari area”, or the use or possession of unlawful traps under the Trapping of Animals Act 34 of 1973, unless a permit is granted. If the offence includes a protected species, offenders may pay up to a level 8 fine (US\$3 million) or face imprisonment up to three years. Animal trophies need permits for manufacturing, transport and sale. If offences include rhino horn or ivory, they are level 14 offences with fines (US\$50 million) or imprisonment of up to 20 years. The Parks and Wild Life (General) Regulations 1981 may also be relevant, dealing with the falsification or failure to produce necessary permits for the above activities. Fines may not exceed US\$500 or imprisonment of nine months (Mauck, 2013:98). Zimbabwe is also subject to CITES regulations, prohibiting the export of lion parts.

This contextualisation of wild lion declines, threats to their survival, their values as dead and live commodities, and legislation protecting them, serve as a foundation for further analysis. The purpose of this contextualisation, therefore, is to provide the analysis with evidence and trends that will assist the creation of a new perspective on the political nature of conserving lions.

### **3.3. Southern African Vultures**

#### **3.3.1. Population Declines**

Despite the unsavoury nature vultures often depict in Western culture, the specialised birds play a crucial biological role that cannot be replaced by any other animal. In an unfortunate twist of fate, it is within their ecological strength that they are so vulnerable to population declines. As Buechley *et al.* (2019:857) and Ogada *et al.* (2011:57) explain, vultures are the only known obligate

terrestrial scavenger birds. Their ability to find carcasses quickly (through flight and sharp eyesight) and to digest carrion (with their extremely low stomach pH level) makes them specialised feeders. Their role as the clean-up crew is crucial, as they stop the spread of diseases such as anthrax, and control disease-carrying populations of other scavengers and insects (Markandya *et al.*, 2008:199). Their special diets, combined with their slow maturity and low reproductive rate, means that these birds are unable to adapt to changes, and remain particularly “extinction-prone” (Buechley *et al.*, 2019:864). Their ability to fly over man-made borders also makes it difficult to contain populations in PAs designed for their protection (Ogada *et al.*, 2011:58).

Based on reports by BirdLife International (2018), Ogada *et al.* (2016) and others, the IUCN have recently evaluated the population status of Southern Africa’s vultures.<sup>32</sup> Two species, Cape and Lappet-faced, are listed as ‘Endangered’, and the other three, White-backed, White-headed and Hooded Vultures, are ‘Critically Endangered’. Although it is tough to produce accurate statistics, Ogada *et al.* (2016b:593) conservatively estimate that African vultures have declined by 63–80% in three generations (about 50 years). White-backed Vultures, with an estimated global population of <270 000 have declined by 90%. They are nearing extinction throughout their range, especially in West and Central Africa. They are extant and breeding in Southern Africa (IUCN, 2018). White-headed Vultures, breeding residents in Southern African countries excepting Mozambique, have declined by 96% with only 2 500–10 000 remaining (IUCN, 2017a). Hooded Vultures are also resident breeders, with a global population of <197 000, which has declined by 83% (IUCN, 2017b; Ogada *et al.*, 2016a:91). Restricted to Southern Africa, Cape Vultures are extinct in Namibia, and no longer breed in Zimbabwe. They have declined by 90% and there are <9 500 mature individuals remaining. However, some populations are steadily increasing (IUCN, 2017c; Allan, 2015:175; Benson, 2015:31). Lappet-faced Vultures, extinct almost throughout its Middle East and West African range, are breeding in all Southern African countries. Their population sits at <8 500 with a decline of 80% (IUCN, 2019; Groom *et al.*, 2013:7).

Future projections are equally bleak, with the exception of Cape Vultures if their strongholds are maintained. A conservative estimate by Murn and Botha (2018:552) is that White-backed Vultures will be extinct in <60 years. Conversely, McKean *et al.* (2013:33) estimate that White-backed and

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<sup>32</sup> Bearded and Palm-nut Vultures are not included here, as their range, habits or diet differ, or are not as threatened by sentinel poaching. The study also excludes Rüppell’s and Egyptian Vultures as they are vagrants to the region.

White-headed Vultures are likely to be extinct by 2040, and if conservation does not maintain Cape Vultures, they will be extinct by 2066. If conservation measures drop, all three are likely to be extinct by 2025. Many researchers stress that all vulture populations' chances of survival depend on the effective regulation of local and international wildlife commodity markets, and the strict protection of strongholds in PAs such as KNP (Burton, 2016:5; Murn & Botha, 2018:553).

### 3.3.2. Threats to Vultures

#### a) *Traditional Medicine*

Likely the oldest threat, muti markets have caused significant vulture declines in Southern Africa, and particularly South Africa. Vulture parts are used in muti for clairvoyance, intelligence and foresight (McKean *et al.*, 2013:15). All species are traded, and have mainly been sourced from locations around Lesotho, KwaZulu-Natal, Swaziland and southern Mozambique (2013:19). Although muti has existed for centuries, the use of vultures in South Africa has increased alongside the National Lottery in the past 20 years, as superstitious customers are known to buy vulture parts to gain foresight into the lucky numbers that will win them millions (Koenig, 2006:1592). The favoured species, as researched by McKean *et al.* (2013:23), are Cape or White-backed Vultures, but this is likely due to ease of accessibility to breeding sites and the presence of larger numbers at carcasses. Although it is impossible to accurately size the traditional black-market because of its secretive nature, it is estimated that the trade has accounted for 29% of vulture deaths in Africa, placing it second to deliberate poisoning by farmers and poachers (Ogada *et al.*, 2016a:93).<sup>33</sup>

While muti has obvious implications for vultures, healthcare professionals and conservationists show concern for the safety of people consuming vulture parts. Their concern is not regarding the likelihood of evil being at play here, but rather the risk of consuming meat with zoonotic pathogens or poison. Researchers find that most people consuming animals from the black-market are not aware of the health risks involved (Respondent 2a; CPW, 2014:2). What may be positive news for remaining vultures is that in some parts of Southern Africa, the medicinal use of vulture parts has declined. In a study conducted by Craig (2017:52), she found that Namibian communal farmers generally had little knowledge of the perceived benefits of vulture parts, and that most respondents believed it was a practice of generations back. In contrast, however, a recent study on community

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<sup>33</sup> Although this seems low, muti places serious pressure on some colonies. Beilis and Esterhuizen (2005:18) calculate Lesotho's yearly Cape Vulture harvest at 35 individuals, which accounts for 7% of the country's resident population.

perceptions indicated that vulture parts are still commonly used in south-eastern Zimbabwe (Mdhlano, 2018:7). The muti trade still remains a formidable threat to vultures in some areas.

*b) Farming and HWC*

Agricultural practices are accountable for large vulture declines throughout Southern Africa. Some of these practices have killed vultures indirectly or accidentally, while others are deliberate. Indirect methods largely consist of reservoir drownings, consuming poisoned meats, getting caught in traps meant for predators, or consuming meat from dead farm animals that have previously been given medication lethal to vultures. Direct killings are often performed through shooting and poisoning vultures perceived as pests in day-to-day farming activities.

Drowning occurs in farm reservoirs and can kill a few vultures at a time. As Anderson (2000:29) explains, vultures routinely bathe in groups, and so one vulture at a reservoir may attract many more. As many as 38 White-backed Vultures drowned in a single incident in the Northern Cape in 1996. This, however, is not a big cause of accidental deaths on farms, and as NGOs working on this problem point out, it is easy to prevent with the placement of netting and floats (Monadjem *et al.*, 2004:105; SANParks, 2006). Killings related to reservoirs are intentional, however, when farmers believe that the vultures are drinking up their scarce water supply, or that the vultures are “fouling” their water when bathing (Vultures Namibia, 2016; Anderson, 2000:7).

Farmers perceptions greatly influence birds’ survival on farms. Many studies conducted globally indicate that the lack of education and misguided perceptions on vultures lead to deliberate killing beyond reasons of water supplies. A prominent perception is that vultures kill livestock and spread diseases. Vultures are in fact disease controllers, yet there is evidence globally of farmers believing this is not so. For example, a study on community perceptions of vultures indicated in south-eastern Zimbabwe that 22% of the respondents believed that vultures kill livestock (Mdhlano *et al.*, 2018:5).<sup>34</sup> Luckily, 58% knew that vultures are useful in combating the spread of diseases. In Craig’s (2017:51) study in Namibia, a lower 9% of respondents believed vultures kill livestock, while 88% knew that they only consume meat from dead animals. Ogada *et al.* (2011:7) notice that there are reports throughout Africa of vultures being killed for preying on lambs. They note,

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<sup>34</sup> The consequences of human ignorance extend as far as France. In Duriez *et al.*’s (2019:1) study, 18% of reported incidents show that vultures were believed to prey upon injured livestock. However, 95% of those complaining about this admitted that no-one was present to witness the event. Some 90% of those complaining had also not established supplementary feeding stations, which indicates that the farmers were unfamiliar with the habits of vultures (2019:2).

however, that this may be the given excuse to cover up deaths related to muti, so determining the exact cause is difficult at times. Either way, vultures are being deliberately persecuted by farmers, by use of a shotgun or poison, at a rate that populations cannot sustain.

The bigger problem here is actually the negative attitudes held towards predators hunting livestock. Pest predators on farms are usually killed by means of poisoned meat, which is often mistakenly eaten by vultures, or the vultures get poisoned from eating the poisoned predator (Mdhano *et al.*, 2018:8). This dates back to early European settlers in the Cape Colony, where the government actively supported and rewarded those poisoning predators – even in PAs (Ogada, 2014:3). Craig (2017:25) shows in her study that 73% of respondents held negative attitudes towards predators on their farms. 82% of them felt positively about the use of lethal means to control livestock-hunting predators. Retaliatory killing through poison is a problem throughout Southern Africa, and is estimated to be 12 times greater on commercial farms than communal farms (2017:51). Although veterinary prescriptions for arsenic and other lethal poisons have been outlawed, farmers are still able to use pesticides readily available at agricultural stores (Santangeli *et al.*, 2016:5). There is a clear disregard for the laws discussed earlier for the trapping and poisoning of predators.

Drastic predator poisoning campaigns in colonial Southern Africa between the years 1880–1900 have historically shown a rapid demise of wild predators, especially African wild dogs and lions. These dates also correlate to the population and range decline of Cape Vultures, which Ogada suggests, indicates that HWC-related predator poisoning was a prominent threat to Southern African vultures in earlier years (2014:3). A single poisoning can kill both animals in question, as a lion can consume poisoned meat, which can then kill the vultures feeding on the dead lion (Respondent 1d). These problem incidents, according to numerous studies published in the 2000s, indicate that the problems with lions are most acute in northern Namibia and the western boundary of Kruger (Monadjem *et al.*, 2004:196). A report published by the EWT stresses that this is still a major problem in Africa, where the retaliatory killing of lion and elephant due to livestock hunting and crop destruction results in numerous vulture deaths (2019:74).<sup>35</sup> Farmer perceptions and HWC are a serious threat to Southern Africa's remaining vultures.

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<sup>35</sup> This occurred in Tanzania in March 2018, where the retaliatory killing of a pride of lion hunting livestock resulted in the poisoning of 76 White-backed Vultures. Similarly, in Zambia in December 2017, vultures feeding on an elephant poisoned in retaliation to crop destruction resulted in 168 deaths (EWT, 2019:74).



Accidental deaths also occur in the prescription of toxic anti-inflammatory livestock medications. Vultures feeding on the medicated carcasses was a major problem in South Asia, responsible for killing 98% of vultures during the 1990s and 2000s (Burton, 2014:480; Cortés-Avizanda *et al.*, 2016:193). Luckily, this drug (diclofenac) was taken off the market and replaced by others less harmful to vultures. Due to this, Asia's vultures have a chance of recovering (Naidoo, 2018:81). Since there are many threats to vultures in Southern Africa, taking harmful medication off the market will only make a slight difference in alleviating the problems facing vultures, and this is an ongoing process. As illustrated in a safety and pharmacokinetics study conducted by Fourie *et al.* (2015), current medications on the market deemed safe still need testing on vultures. Doing this, however, is a challenging task, as standard procedures state that a sample size of >40 is necessary for sufficient statistical authority (2015:6). Since our population of vultures is so low, scientific studies cannot use such a large sample. Consequently, Fourie *et al.* (2015:9) could only experiment with eight Cape Vultures to test the toxicity of replacement drugs on the market. Although the alternative medications tested were only mildly harmful, final conclusions on their safety could not be confirmed with the sample size. This unfortunately means that alternative medications on the market may affect vultures over time, and so this threat may possibly continue.

On a brighter note, vulture restaurants (supplementary feeding stations) is an initiative many NGOs have supported in the region. These stations supply poison-free carcasses at designated feeding sites in the attempt to keep vultures from consuming contaminated meat, or facing persecution from intolerant farmers. As BirdLife Zimbabwe (2020) points out, these restaurants have become tourist attractions, providing the opportunity to educate the public and increase awareness.

*c) Collisions and electrocutions from wind turbines and powerlines*

While these threats have only been a problem since the establishment of electricity pylons and wind turbines, they have still caused many vulture deaths. Studies conducted between 1996–2003 on Eskom structures revealed that the North West province in South Africa is most affected. During the years, 19 Cape, 116 White-backed and 48 Lappet-faced Vultures were victims (Monadjem *et al.*, 2004:193). Green energy by use of wind turbines has brought on environmental problems of its own with bird collisions (Ogada *et al.*, 2011:7). The Poison Working Group on vultures noted that the same species affected by powerlines are prone to turbine collisions as these birds habitually scan agricultural fields for food (Monadjem *et al.*, 2004:65). Although Williams

*et al.* (2018:126) state that painting turbines can reduce bird mortalities, these methods are yet to be effective in Southern Africa. The same is true for powerlines, as although implementing visible marking devices reduces large bird collisions by 57%, implementing the devices is expensive, has human safety risks, and is not effective for all species (EWT, 2019:80). Attempting to overcome this, the Poison Working Group, the Eskom/EWT Partnership, and Bird Flappers are involved in tagging, ringing and surveillance of birds in studies to mitigate collisions with man-made structures (Monadjem *et al.*, 2004:7; EWT, 2019:30). VulPro has established rehabilitation centres and conducts multiple research studies and public educational programmes. In their *Annual Report 2018*, the NGO held the opinion that powerlines are the biggest threat to Southern African vultures. They recorded 62 vulture collisions that year, and suspected that only 10% were actually reported (VulPro, 2018:12). These numbers could therefore be higher than currently expected by most researchers, continuously posing a large threat to Southern Africa's vultures.

*d) Sentinel poaching*

The deliberate poisoning of vultures at mammal carcasses to avoid ranger detection has become the most severe threat to vultures. Evidence of sentinel poaching dates back to 1970, which a few years ago, accounted for 33% of vulture deaths in Africa (Burton, 2016:5; Ogada *et al.*, 2016b:59). Studies examining this are concerned about the severity of the crime. Just one poisoned carcass can result in hundreds of vultures congregating and dying, and especially at large carcasses such as rhinos and elephants (Murn & Botha, 2018:552). The EWT Vultures for Africa Programme note that the first recorded incident of sentinel poaching in Southern Africa occurred in 2011 from ivory poachers. Between then and the time of publishing, 3 500 vulture deaths have occurred in this manner, with the report suspecting plenty more (EWT, 2019:74). This reflects statistics from the Africa Wildlife Poisoning Database (AWPD) (2020) showing that there have been over 100 reported poisonings, with 7 000 vulture fatalities in Southern Africa alone.

The first highly publicised events of this nature occurred in June 2019. In just two weeks, poisonings occurred in KwaZulu-Natal, killing 27 vultures, then near Chobe National Park, killing 537, and another 50 vultures in Namibia and Kenya (Vulture Conservation Foundation, 2019). Less publicised in 2013 was the poisoning of 500 vultures in Namibia from one elephant (Bega, 2020). Researchers increasingly show concern for vultures breeding in PAs. Gore *et al.* (2020:5) note that 15% of reported vulture poisonings published by the AWPD have occurred in the Greater

Limpopo Transfrontier Conservation Area (LGTFCA) between South Africa and Mozambique. This is an alarming number from just one park in the region. Showing concern for KNP, Murn and Botha (2018:553) warn that poaching in vulture strongholds is extremely serious as one poisoning incident can lead to a significant portion of a subpopulation declining.<sup>36</sup> This also reflected in the poisoning incident in June 2019 in Botswana, as Botswana lost an estimated quarter of their White-backed Vulture population. Respondent 1 (d) points out here, that since this occurred at the peak of their breeding season, if abandoned eggs and nestlings are taken into account, the number of vulture deaths can almost be doubled. Research also indicates that the deliberate poaching of vultures is increasing in frequency (AWPD, 2020). As Gore *et al.* (2020:1) put it, poachers from the illicit wildlife trade are systematically targeting vultures. Conservationists on the ground are indeed concerned that the growing number of poisoned non-trafficking animal carcasses being found in PAs such as KNP, are placed deliberately for vultures. Anti-poaching task forces working with vulture conservationists on the ground believe that poachers are attempting to wipe out the remaining vultures before increasing their illegal operations targeting elephants, rhinos and lions (Respondent 1a). The advent of sentinel poaching indicates that wildlife poaching needs to be tackled holistically, recognising the variety of incentives and causes of vulture declines.

### 3.3.3. The commodity value of Southern African vultures

Economically speaking, vulture parts are relatively cheap on the black-market. This is certainly the case in comparison to the value of lion bone, pangolin, rhino horn, and ivory.<sup>37</sup> It is highly unlikely that current figures truly reflect the value of the vulture black-market in Southern Africa due to the secrecy and informal nature of the trade. McKean *et al.* (2013:15) estimate that in eastern South Africa, the muti trading hotspot, about 160–240 vultures are traded every year. The value of the trade per annum is worth about US\$120,000. In this region, about 1 250 hunters, traders and traditional healers are involved. The average price for vulture parts is US\$36.62 per kg at muti markets (McKean, 2013:27). Although all parts of the bird are used, the skull is the most valued part for medicinal healing (Ogada, 2014:12).

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<sup>36</sup> Murn and Botha (2018:553) note this to be particularly true for the White-backed, White-headed, Lappet-faced and Hooded Vulture populations breeding within the park.

<sup>37</sup> Pangolin meat dishes in restaurants in China can cost up to US\$1,000, and scales are worth US\$600 per kg (CNN, 2020). Rhino horn is worth up to US\$65,000 per kg (Gaworecki, 2020), and ivory can go for US\$2,132 per kg (Poaching Facts, 2020).

Driving the trade is the cultural value given to vultures. As mentioned, Beilis and Esterhuizen (2005:17) and McKean *et al.* (2013:15) document that customers wishing for clairvoyant powers and business success are driving the commodity's demand. Vultures are therefore traditionally valued for their intelligence, their perceived ability to see the future, and more morbidly, as omens of death (Craig, 2017:49). As with lions, it is the sacred value attached to these species in muti markets that is causing their demise.<sup>38</sup> The health risks involved regarding the human consumption of possible disease-carrying meat is largely not known by the traders, healers and consumers (Respondent 2a). The risks placed on humans in the poaching of vultures by means of poison is also disregarded by the poachers involved. As Gore *et al.* (2020:2) have pointed out, human fatalities have also been reported resulting from the poisoning of water sources. The cultural value attached to vultures seems to trump the value of animals as well as human lives.

It is also possible that humans will only start to notice the ecological value of vultures after their extinction. As mentioned, vultures play the role of the clean-up crew by disposing of dead animals. In doing so, they inhibit disease outbreaks such as anthrax that pass to other species from carcasses. This is incredibly helpful in rural Africa, as many farmers cannot afford to vaccinate their livestock from anthrax, and so vultures are critically responsible for disposing of disease-carrying carcasses (Craig, 2017:16; Santangeli *et al.*, 2016:3). As the apex scavengers in their large numbers at carcasses, vultures regulate the population of other scavenger species such as feral dogs. In doing so, vultures limit the spread of rabies to humans and other animals by controlling the population of rabid dogs. This was seen in India after the decline of 98% in their vulture population. It is estimated that the rapid increase of rabies in humans cost India US\$34 billion in medical services (Ogada *et al.*, 2016b:593). The potential for the same problem occurring in Africa is expressed by multiple researchers. As Buechley *et al.* stress, research is needed, particularly in South Asia and Africa, “not only to save the species from extinction, but also to preserve the critical nutrient cycling and disease regulating ecosystem services that vultures provide” (2016:864). The potential environmental consequences of dead vultures can therefore place an economic value on live vultures that way surpasses the illicit income generated by the muti market.

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<sup>38</sup>Respondent 2 (a) shared her experiences walking through the traditional markets in Durban. She mentions that vulture parts, as well as many other parts from protected species in Southern Africa, are openly on display for customers. When conservation NGOs confront the police about it, the police state that raiding traditional markets is a culturally sensitive ordeal that they would prefer not to get involved in. Not only are the muti traders disregarding the law, but the police are actively choosing to as well.

#### 3.3.4. Conservation legislation related to vultures in Southern Africa

Regarding international and state-specific legislation, much of what was mentioned under lion-related legislation applies to vultures. To avoid repetition, those laws will not be mentioned in detail. All five species are listed in CITES Appendix II, which is arguably an outdated judgment since Appendix II lists “species not necessarily threatened with extinction” (CITES, 2020). Since the IUCN Red List informs CITES, this makes little sense. Vultures can therefore be traded internationally, dead or alive, so long as state-issued permits are obtained. The Convention on Biological Diversity (1992) is a global agreement obligating member states to develop or maintain legislation relevant to protecting threatened species, including vultures (Thompson & Blackmore, 2020:3). The CMS also applies to vultures, and more specifically under the CMS Multi-Species Action Plan to Conserve African-Eurasian Vultures (Vulture MsAP). This transboundary AP, committed to by Southern African states, provides the essential framework for the coordination of actions geared towards restoring vulture populations, and specifically on the reduction of animal poisoning. TFCAs in which vultures live between the states are governed by SADC’s Protocol on Wildlife Conservation and Law Enforcement in which all neighbouring states are legally obligated to cooperate and coordinate conservation plans. Enforcing all transboundary and international APs rely on the support of NGOs such as BirdLife and the EWT to carry out their tasks.

Under Section 17 of Botswana’s Wildlife Conservation and National Parks Act 1992 (Chapter 38:01), all vultures are listed as Protected Game Animals (Government of Botswana, 1992:190). In addition to laws mentioned under lions that apply to vultures, Botswana’s laws on the use and distribution of agrochemicals are important. The Agrochemical Act of 1999 controls the use of pesticides nationwide, and prohibits the use of pesticides in poisoning animals. This however, does not include carbofuran-based substances which are lethal to vultures (BirdLife Botswana, 2020).

Together with the laws regarding lions in Mozambique, the National Biodiversity Strategy and Action Plan (NBSAP) of 2003 has some implications on birds. This AP was developed under the Convention on Biological Diversity (CBD). While the law states that animals on Mozambique’s own Red List includes birds of prey and vultures, the only species explicitly listed as a “bird species of special concern” is the Cape Vulture (Republic of Mozambique, 2009:24). The general Conservation Law (No. 16/2014), the Forestry and Wildlife Act (No. 10/1999), and the Regulation in Pesticides Management Law (Law No. 6/2009) state general regulations and offences regarding

the exploitation of natural lands and wild animals within them for commercial, conservational and agricultural purposes. These laws are general and do not explicitly mention vultures.

The same Acts in Namibia regarding the trapping, killing and poisoning of lions apply to vultures. Agricultural laws implemented in 2001 state that commercial farmers may no longer access lethal poisons on prescription from veterinarians to control pest predators. Poisoning any wild predator on commercial farmland is deemed a criminal offence. The import and sale of strychnine, a lethal pesticide to vultures, was outlawed in 2003. Aldicarb, also lethal, can still be bought commercially (Botha *et al.*, 2015:2). Although poisoning and trapping laws in place protect vultures on paper, the laws are largely unregulated (Santangeli *et al.*, 2016:7). The problem is particularly acute in central and northern Namibia, and the implementation of these laws depends on the initiatives of conservation NGOs such as the Rare and Endangered Species Trust (REST).

Most laws protecting vultures in South Africa are covered by provincial legislation, but national laws do apply. Under Section 24 of the Bill of Rights, the Environmental Right (b) protects vultures under the general prevention of ecological degradation and promotion of conservation. This is operationalised through NEMBA, as discussed under lion legislation. As with Namibia, strychnine is banned under the Hazardous Substances Act of 1973. Under Eastern Cape and Western Cape legislation, only Bearded Vultures are considered ‘Endangered’, and all five vulture species in question do not receive the same protection. It is odd that Cape Vultures are not given the same protection. However, all species are classified as ‘Protected Game’ in the Free State, Gauteng, Mpumalanga and North West provinces, and ‘Specially Protected’ in Limpopo. In KwaZulu-Natal, the only species of the five, the Cape Vulture, is considered a ‘Specially Protected Bird’, while the Northern Cape considers all species to be so (Thompson & Blackmore, 2020:4).

In Zimbabwe, vultures are protected under the Parks and Wildlife Act of 1975 Schedule 6. They are considered a “special protection” species, which stipulates that killing a vulture for any reason, even accidentally, is illegal (BirdLife Zimbabwe, 2020). Since elephant poaching is rampant in the country, with obvious implications on the vulture population, Environmental Minister Muchinguri announced the new “shoot-to-kill” policy throughout PAs in January 2018 (Commercial Farmers Union of Zimbabwe, 2018). As with the other Southern African states, the implementation of these regulations is ill-monitored by the state, and it relies heavily on the initiatives taken up by NGOs operating within and between Southern Africa’s borders.

Unlike African lions, vultures receive little attention from governments and the media, and so anti-poaching campaigns are geared by NGOs operating in the region. There are currently no popular books or films in circulation, and the biggest media coverage of vultures occurs on the International Vulture Awareness Day (the first Saturday in September every year). Notable NGOs operating in the region, some of which have been mentioned, include the EWT, BirdLife International and its various state branches, VulPro, 4Vultures, REST, and Wildlife ACT. These organisations work together, and with the region's parks and governments, to promote research, legislation, and conservation strategies. Such collaborative efforts have included the creation of Vulture Safe Zones in the region under the Multi-species Action Plan to Conserve African-Eurasian Vultures (Vulture MsAP). It provides the essential transboundary framework for the coordination of actions geared towards restoring vulture populations. The above-mentioned NGOs are involved in online awareness campaigning and fundraising for vulture conservation projects, and play a crucial role in leading research projects that assist the establishment of the various initiatives. BirdLife International and its country-specific branches is one of the leading NGOs in terms of vulture research, awareness, coordinated programmes, fundraising, and protection initiatives. They facilitate vulture counts across Africa, and are compiling a national Vulture Conservation Action Plan with the Zimbabwean Government. BirdLife is also the IUCN Red List authority on birds. Although vulture campaigns have not received the attention paid to lions, much work is still being done in the hopes of conserving Southern Africa's declining vulture populations.

### **3.4. Conclusion**

As a stepping stone between the Literature Review (Chapter 2) and the analysis and application of the theoretical framework (Chapter 4), this chapter attempted to outline the context of various elements that historically and currently shape the decline and conservation of lions and vultures in Southern Africa. This has been constructed in a systematic way in which the analysis can pick out identifying factors and trends of the wicked nature of politics over wildlife management. The dismal context set out here suggests that these threatened species are in desperate need of new mitigation strategies, and perhaps the political perspective can offer just that.

## 4. CHAPTER FOUR

### **Analysis: The Wicked Political Nature of Southern Africa's Conservation Problems**

#### **4.1. Introduction**

For the protection of lions and vultures, the context of Chapter 3 paints a troublesome picture. Many problems facing conservation such as human population growth, urban development, poverty, globalisation, and the depletion of natural habitats have for decades unsettled NRC and WPT (Rittel & Webber, 1973:156; Tamas, 2003:11). These concerns over time are more serious, as there is less and less resources to compromise over (Peters, 2017:388). Time is certainly running out for these species as some estimate the extinction of wild lions within 30 years, and vultures within 5–20 years in the region (McKean *et al.*, 2013:33; Murn & Botha, 2018:553).

The role of scientific research in identifying the region's conservation problems has played an instrumental role in policymaking. While conservationists at the forefront certainly deserve praise for their tireless efforts, the WP theorist would have to criticise their intrinsic role as conservationist by scientific nature. This is because, as discussed in Chapter 2, human behaviour and values are at the core of environmental issues, making such political problems controversial and impossible to understand within the confines of the scientific scope (Lubell *et al.*, 2000:5; Gausset & Whyte, 2005:13). Although such problems can never be solved (only resolved again and again), the important step in the right direction is accepting the highly dynamic and complex nature of planning problems. Only when this is acknowledged, and the attempt to simplify the problem is abolished, can conservationists possibly work towards resolutions.

Based on the context of Chapter 3, this chapter aims to explain how current conservation problems regarding lions and vultures are wicked. This will unfold by describing the context in three analytical categories (as discussed in Chapter 2) according to Nie's (2003) WP drivers. These three categories; *Sacredness and Science*, *Policy Design and Implementation*, and *Political and Interest Group Strategy* will form the sections of this chapter. Within these analytical categories, the various identifiers illustrated in Table 2 (p.43) will be addressed within the context provided in Chapter 3. How these conservation problems become so intractable will then be answered through Rittel and Webber's (1973) 10 propositions, as illustrated in Table 1 (p.25). This chapter will thus



attempt to analyse Southern Africa's conservation problems using the case of lions and vultures, subsequently forming a political perspective of the problem through the wicked lens.

## **4.2. Sacredness and Science**

### 4.2.1. Symbolic value of species and places

According to WPT, symbolic sentiment attached to resources increases controversial debate over its management. As Nie describes, when sacred dimensions are involved in conflicts, the problem is entangled in moral, religious, and cultural beliefs. Debates on sacred objects become intractable political conflicts as human values are at their core, and scientific reason is secondary (2003:316). As a result, common ground between groups is lost as the debate moves towards the possessive maintenance of one's own customs and values – whether spiritual, secular or scientific. The views people form on the use or preservation of lions and vultures is influenced by their symbolic value. In Asian cultures, lions have historically held no significance, yet they supplement culturally significant tigers (Stolton & Dudley, 2019:70). While traditional belief is mentioned in Chapter 3 as an incentive for harvesting lions, many in opposition argue that it is the greed of economically incentivised traders that is the bigger problem. Hence leading to Trinkel and Angelici's statement that the high economic value of a lion makes it "most prone to over-harvesting" (2016:60).

While some environmental issues may be religious, others attract ethical debate. In South Africa's consumptive lion industries, the lion as icon is juxtaposed with enclosures and routine harvesting. What should symbolically be free, and biologically be the apex predator, is unnaturally confined, deprived and overtaken by man. The juxtaposition has sparked international outcry against the industries' morality, contesting that the unethical nature of human greed is causing the suffering of should-be wild lions (Watts, 2016:24). Also jumping on the morality bandwagon are hunting and breeding supporters, often making the argument that captive breeding and hunting is morally justifiable. SAPA (2020) provides countless emotive examples. For instance, in justifying that captive breeding is ethical, they contrast enclosures against harsh conditions in the wild:

A wild lion is born into a severe competition which will last its entire life...the struggle only ends when it loses...It has many lethal enemies in other predator species and scavengers...For a lion there is no shelter against rain or hail and no defence against disease and injury. If it is too weak or too slow to hunt, it starves...Life in a pride sets a lion perpetually on edge...don't bemoan the life of properly maintained ranch lions. In lion terms they are living the good life.

SAPA (2020) also resort to religion to call out public ignorance. They draw from the Old Testament: “My people are destroyed for lack of knowledge” (Hosea 4:6, NKJV). Animal welfare activists detest this stance, of course. As Nie (2003:316) points out here, such ethical debates exceed the confines of state borders, becoming part of global debates on ethics, environmentalism, economics, and policy. This is illustrated in *Blood Lions* (2015) when Ian Michler, environmental photojournalist, states that “the best way to tackle the issue is to go outside the country and hit the problem at the source”, which in this case refers to foreign trophy hunters. He continues, “...if the hunter cannot bring his trophy home, you will find out very quickly what the industry is about”. Politicians also refer to ethics or emotive language in decision-making. As the film shows, the Australian Minister of the Environment announces that “Australia is committing to be a leader in ending the insidious practice of canned hunting”. The morality stance has evidently been adopted by the airlines and countries mentioned in Chapter 3 banning trophy imports, indicating that moral values act as powerful justifications for chosen conservation initiatives (HSI, 2020). The moral stance has so far trumped any ecological or economic argument opposing the industries.

As many conservationists mention, the hapless reputation of vultures has reduced public interest in their important ecological role and their protection (Duriez *et al.*, 2019:11). It is perhaps difficult for the public to form moral opinions against the poisoning of supposedly repulsive creatures.<sup>39</sup> Because of this, a technique of some NGOs and ecotourism operators is to stress that viewing a pride of lions over a kill would never be authentically “African” without the heaps of vultures surrounding the event (BirdLife, 2020; Wilderness Safaris, 2016). This illustrates how the positive symbolism of a lion is strategically used to assist vultures. And, where there are positive symbolic values, vultures are being exploited. The religious and cultural views behind superstitions are justifying the extraction of endangered species, the growth of Southern Africa’s muti market, and the subsequent economic value of the dead specimen. While Craig found that traditional beliefs regarding vultures are declining, there is the likelihood of statistics being skewed by respondents’ dishonestly (2017:15). Ogada *et al.* (2011:7) and Beilis and Esterhuizen (2005:17) stress the same for Zimbabwe and Lesotho respectively. This point contrasts with Nie’s (2003:316) argument that people are more likely to conserve endangered species with symbolic attachments. Even positive sentiments can negatively influence a species’ vulnerability to exploitation.

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<sup>39</sup> A BirdLife survey revealed that 75% of people worldwide consider vultures “dirty and disgusting” (2020).

What also complicates conservation efforts is the attachment – sacred and nostalgic – to nationally important land. Southern Africa proudly holds a reputation of having some of the last remnants of untouched natural lands. These places are crucial for conserving endangered species, heightening the sacred value of the place. National parks including Kruger (South Africa), Chobe (Botswana), Gorongosa (Mozambique), Etosha (Namibia), and Hwange (Zimbabwe), are important areas for lion and vulture strongholds alike (Habitat Info, 2017). As Nie (2003:313) points out here, there are constantly conflicts over these “last frontiers” and the resources they contain. For sacred parks protecting vultures and lions, a great deal of pressure is placed on park management which is quick to receive criticism from a sentimental audience (Gausset & Whyte, 2005:18). Examples from Chapter 3 notably include the hunting of Cecil and Skye, and the wave of mass vulture poisonings in June 2019. For Cecil and Skye, both hunters were shamed by an ethically concerned public (Loveridge, 2018; Steyn, 2018; 4Vultures, 2019). The sacred importance of the remaining PAs thus generates conflict over the management of the land and its resources.

#### 4.2.2. Community resource management: the urban-rural divide

On a similar note, incompatible opinions between rural and urban values lie in how these sacred resources should be managed. Nie (2003:313) states that urban individuals and organisations are more likely than rural communities to support the preservation of important places. Sites tend to hold a higher sacred value to affluent urbanites who, deprived of wilderness, tend to flock to these expensive sites for holidays. Nie’s writing partly explains why national parks in Southern Africa are mostly frequented by urbanites (local or foreign), and why environmental NGOs tend to be founded in larger cities.<sup>40</sup> Despite communities relying heavily on PAs and ecotourism for jobs, rural support towards the conservation of these areas is much lower.

NRC concepts in Chapter 2 explain this phenomenon. To reiterate, *political scarcity* is a situation where a group is deprived of a resource by another (Gausset & Whyte, 2005:20). And, the more dependent a country or community is on a primary resource, the higher the chance of conflict over it (Theisen, 2008:801). Chapter 3 explains how communities rely on natural land for hunting and livestock grazing. When these areas become protected, or even worse, fenced, communities feel deprived and become less likely to support legislation (Trinkel & Angelici, 2016:3). The problem

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<sup>40</sup> Southern Africa’s NGO head offices are mainly located in big cities such as Cape Town and Johannesburg, while larger international NGOs operate from cities such as London and Geneva.

worsens when communities employed or funded by ecotourism feel they are not benefiting from it.<sup>41</sup> For Nie, the relationship between availability, sentimental attachment, and the economic value of an endangered resource acts as a formidable conflict driver (2003:318). Consequently, attempts in sustainable development are ignored, the poverty-stricken become incentivised to poach, and hunting and grazing in PAs continue without regard for the law.

Why community disregard towards environmental law is so difficult to mitigate can be explained by geopolitical factors. PAs and their resources can be classified as *distant resources* as they are located further from large policing centres, and are closer to political boundaries. Protected animals within PAs can be considered *diffuse resources* as the animals are spread out across their range, and can be harvested easily (Le Billon, 2001:570). Both factors make our endangered resources more difficult to monitor, and make it easier for poachers to avoid detection. As Respondent 1 (d) notes, poaching and poisoning incidents are far more frequent in PAs alongside communities or those in difficult-to-monitor areas – especially TFCAs. When incidents occur, it can take days before a project manager is on site, and by then, little can be done to rescue struggling vultures or trace the smuggled commodities into neighbouring countries. Adding to this, the sacred value of some PAs and species means that much is at stake, and tensions can quickly rise from a concerned public. Subsequently, park management may become secretive about sensitive information, and hinder researchers' and policymakers' abilities to respond effectively to the problem.

From the context utilised in Chapter 3, WP identifiers are rather rich in this section. As NRC and WPT exhibit, much is at stake with sacred species and places. NRM is exceedingly difficult to objectively achieve, and exacerbates political divisions between urban-rural values, the rich and poor, resource access and deprivation, preservation and extraction, recreation and extraction-based economies, and the value of live and dead animals. These divisions are entrenched in human values that govern stakeholders. Conservationists sit between conflicting groups and cannot please either. What complicates these sensitive issues further is the role of science.

#### 4.2.3. Scientific superiority and its limitations in conservation research

For WPT, the dominance of science is worrying as the scope of NRM is limited to its domain. Concerned, Nie (2003:323) observes that NRCs entering the judicial system tend to be ruled upon

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<sup>41</sup> Wage-related disputes between SANParks and employees have occurred for years. In 2019, three worker unions took up these grievances with the Commission for Conciliation, Mediation and Arbitration (CCMA) (Mabuza, 2019).

scientific judgment. Or, as NRC theorists put it pessimistically, “policymaking relies heavily on theories which are reductionist and oversimplifying” (Gausset & Whyte, 2005:13). Scientific bodies are often called upon to settle disputes. Chapter 3 shows this on multiple decision-making levels. Internationally speaking, CITES regulations class each species by their IUCN status. The IUCN Red List in turn reflects research conducted by independent task forces.<sup>42</sup> CITES and IUCN data then influence each states’ wildlife regulations. Influential scientific studies also prompt airlines and foreign countries to initiate trophy import bans (CACH & SPOTS, 2018:23).

Researcher expertise and NGOs behind influential work are overwhelmingly based in hard scientific academic fields.<sup>43</sup> Prominent authors in conservation mostly have qualifications in biological sciences, and to a lesser extent, economics. Academic journals where their research is published are predominantly scientific.<sup>44</sup> However, some are social science journals with authors with backgrounds in sociology and security studies.<sup>45</sup> Multidisciplinary reports are created by the Institute for Security Studies (ISS), Interpol and some UN committees – respected in the field dominated by science. This does at least show some interdisciplinarity in wildlife management.

However, methodologies for obtaining data are almost entirely quantitative, including surveys, statistical analyses, population mapping (atlassing), and the economics of the trade (Bauer *et al.*, 2015). For example, Everatt *et al.* researching threats to lions in PAs sought to “quantify the nature and relative extent of this threat” (2019:4100). For the WP theorist, this is virtually impossible. Complexities of culture, ethics, and religion are neglected by the scientific scope. Such factors are misunderstood if reduced to numbers. Lubell *et al.* (2000:15) thus argue that reductionist measures cannot handle heterogeneous and geographically diffuse resource users, the various dimensions of environmental degradation, and aspects crossing political or administrative boundaries.

For the critic, scientific research creates technically framed problems and solutions. Such solutions governed by efficiency lack the scope for social values and morality. Its capabilities are thus inadequate (Rittel & Webber, 1973:155). An example of quick fixes in Chapter 3 is Bauer *et al.*’s

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<sup>42</sup> Predominantly including BirdLife, Panthera, EIA, and WildCRU.

<sup>43</sup> In taking a look at jobs available at conservation-oriented organisations, academic requirements favour BSc degrees. While asking members of a Southern African NGO in a public webinar about careers in conservation, panellists were indeed adamant that a BSc degree was crucial, and not anything in the softer sciences. The logic of this was that conservation requires scientific research and methodologies. However, experts in the field are starting to acknowledge that there is a place for Political Science, as conservation issues come down to human behaviour.

<sup>44</sup> These include *Oryx*, *Biological Sciences*, *Global Ecology and Conservation*, *PER*, and *Nature Conservation*.

<sup>45</sup> Such as *Cogent Social Sciences* and *Sustainability*.

(2015) study on lion declines and mitigation methods. Their study identifies human population growth as a major threat, and they even mention political stability in Mozambique's case. However, their solution to lion declines (fencing) is acknowledged as the easiest short-term fix currently on offer.<sup>46</sup> While countless studies acknowledge government incapacity, corruption, poverty and lack of political will as challenges facing their proposed solutions, the majority do not take the political considerations much further than a quick mention (Creel *et al.*, 2016:2347; Buechley *et al.*, 2019:866). Another way of putting this perhaps is that the scientific frame perceives political factors as a challenge to solutions, and not as the problem itself. The scientific approach to NRM cannot cater for the complexities and uncertainties of sociopolitical factors, and so proposed solutions favouring technical fixes are likely to be ineffective in the long run.

While scientific problem framing proved useful in the context of Asia's vulture crisis, the same cannot be said for Southern Africa. This is because Asia's problem was poisoning from livestock anti-inflammatories (Ogada *et al.*, 2016a:89). The problem definition was well within the scope of scientific research, and so was the solution in outlawing and replacing diclofenac. For Southern Africa's vultures, toxic medications are but one small threat. Our vultures face the muti market, farmers, structures, an apathetic audience, and poverty-stricken poachers feeding the black-market operating locally and internationally (Murn & Botha, 2018:552). Mitigation efforts have to operate through multilevel interdisciplinary teams capable of expanding their problem scope (Gore *et al.*, 2020:2). Technical problem framing simply cannot cater for the array of NRM problems stemming from interconnected and transboundary social, political, and economic factors.

This suggests for Southern Africa that regulations currently in place are too general in their one-size-fits-all problem-solving approach. For Aucoin & Donnenfeld, qualitative researchers are of the "most valuable resources for developing a rounded picture of the wildlife crime spectrum" (2017:4). However, sensitive information tends not to be shared, so authority is still given to easily available statistics and technical solutions. What comes up repeatedly in NGO progress reports is that poverty and the lack of community education are some of the greatest challenges facing conservationists in getting communities on board (BirdLife, 2018:25; EWT, 2018:10). For lions, Western *et al.* show that communities are likely to tolerate lions if they benefit economically in

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<sup>46</sup> They do indicate that governance capacity and the effective management of wildlife and its budgets play an essential role in the success of conservation, but the politics seem too daunting to tackle, and remain untouched.

sustainable development programmes. If the value of a live animal is seen, they will likely have more positive attitudes towards its protection (2019:213). Likewise, a report by BirdLife shows that communities dependent on ecosystem services in PAs are likely to retaliate against conservation (by setting fires, encroaching with livestock grazing, and hunting in PAs) if they do not benefit. Until socio-economic realities improve, endangered species in PAs will continue to decline (2018:25). The needs of communities have to be acknowledged in policy planning.

These studies illustrate the WP stance that the lived experiences of stakeholders hold valuable insights into understanding the social problems involved, and form an essential influencing factor in policymaking (Paquet, 1999:41; Nie, 2003:310). While science may be useful to grasp some threats to vulture and lion survival, its role is limited to identifying and mapping species population trends. In other words, science might be able to show there is a problem at hand, but it is ill-equipped within its scope to understand what exactly the problem is and how it should be resolved.

#### 4.2.4. The role of the scientist as expert

Scientific thinking has maintained its authority over other domains for decades, and is unlikely to budge (Nie, 2003:323). The irony here is that the scientists' ego as expert undermines the professionalism of their task. As McCloskey puts it, "the expert as expert... cannot by his nature learn anything new, because then he wouldn't be an expert" (1988:406). The ego unwittingly allows human judgments and pride to lead scientific claims influencing political decisions.

This may sound petty, but Southern Africa's context has shown this repeatedly. Regarding lion conservation, Respondent 3 (b) brings up the term "scientism" to describe academics in policy. Scientism, as defined by Gasparatou, is the "idealisation of science and scientific method [which is] partly the reason why we feel we need to impose the so-called scientific terminologies and methodologies to all aspects of our lives" (2017:1). This kind of thinking entrenched in NRM has done more to harm conservation than produce good (Respondent 3a). "Science wars" continually plague decision-making as each party provides evidence for their contradicting claims. While SAPA's research shows that captive lion-breeding and hunting protect wild lions, Blood Lions, EMS Foundation, CAT, and BFF (to name a few) provide research indicating that these activities actually reinforce the demand for both wild and captive lions. Despite opposing parties claiming to use 'good science' which somehow offers counter-conclusions, neither party will ever willingly budge, as their personal incentives – economic, political, religious or moral – drive their so-called

scientific claims. In political decision-making, WPT argues that “scientific knowledge matters less in these circumstances than the ability to negotiate politically” (Crowley & Head, 2017:544).

Similarly, conservationists attempting to convince muti users to quit their habits do so by pushing science. Vulture ‘science bashers’ are quick to either debunk their beliefs, or to speak about the ecological role of vultures. It would not come as a surprise if farmers and communities, upon seeing conservationists walking door-to-door, hastily whisper to each other, “Quick! Close the blinds and don’t answer the door – Darwin’s Witness is here to ask if we’ve found Conservation”. According to WPT, social problems are immune to the expertise of scientific problem-solving. This perhaps explains why it is easy to mitigate vulture reservoir drownings by use of nets as that is a simple technical solution to a culturally insignificant problem. It also explains why muti use is impossible to stop with scientific debunking, as cultural sentiments are at stake. While Swilling and Annecke (2012:3) state that Southern Africa’s sustainability scholars should embrace complexity and uncertainty, by the scientists’ very nature, uncertainty cannot be accepted.

#### 4.2.5. Community distrust towards scientists

For reasons likely related to the law and the conservationist as expert, community distrust toward scientists hinders successful NRM. This is a key factor in WPT, and so too for Southern Africa’s researchers. As mentioned already, survey respondents are not likely to tell the whole truth, or remain unwilling to engage with researchers they distrust. Respondent 1 (a) resonates this point in long-term projects monitoring nesting birds of prey on farms.<sup>47</sup> Research also indicates that there is a great lack of trust from some communities who historically had access to PAs, or engaged in outlawed consumptive activities involving endangered species (Blackie & Casadevall, 2019:8). Respondent 1 (d) accounts in his experience:

It is certainly a long process to gain the trust of a community, working through and getting approval from the traditional councils and respecting these authorities. One community we wanted to work with discovered our project was affiliated with the provincial conservation agency, and given their present frustration and anger with them, quite politely asked us to never return and that they could not ensure our safety. Some communities plain and simply do not want you there and have no interest in conservation. This is all down to being lost in translation though, I’d say.

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<sup>47</sup> Interestingly, one strategy used to encourage farmers to support their monitored resident birds is to name the bird after the farmer. Doing so is a useful technique to create a sentimental connection between the farmer and the species.



Hunting associations and lion breeders, often the first targets of vocal critics, remain defensive and unwilling to engage with researchers. In this study, none of the breeders or SAPA employees approached were willing to engage, while opposing activists and NGOs were overwhelmingly willing to participate, and showed a keen interest in the advancement of political research in conservation. However, park management is sometimes less likely to share information about endangered species as their information is almost as protected as the species. Overcoming distrust requires a delicate balance between science and sensitivity.

#### 4.2.6. Sacredness vs science: how wicked is the problem?

What makes NRC over sacred species and places so controversial are all the competing values at stake. As Head (2008:106) stresses, researchers ought to acknowledge that problems and solutions are determined by social values. The superiority given to science only adds fuel to the religious fire to which the fate of sacred species belongs. For Nie (2003:316), conflict is already wicked at the point where endangered species get involved in political debate, but it will be fascinating to see if the original propositions of wickedness (Table 1, p.25) exist in this contemporary case.

For starters, the *sacredness and science* driver meet the 1<sup>st</sup> and 6<sup>th</sup> of Rittel and Webbers' (1973) propositions. They state that the scope or definition of a problem cannot be definitively formulated, so solutions cannot be either. While Southern Africa's researchers are viewing NRC through the scientific lens, the problem is erroneously defined as such. Problem-solvers consequently form solutions that cannot cope with the complexity and uncertainty of the social values caught up in the conflict. Since vultures and lions are still declining at alarming rates, current solutions are clearly not working, and have thus not managed to maintain a grip on the situation.

Entangled here are the 9<sup>th</sup> and 3<sup>rd</sup> propositions where various interpretations of problems regarding conservation compete. There is the rural-urban divide, science versus religion, and competing claims in the ethics and biological importance of captive lions. These interpretations influencing policy result in "better or worse" policy options. While putting up fences around PAs may be better than nothing, it has not solved any problems. Fences may even worsen the problem when denying community access, which lessens the prospects of collaboration with conservationists. Solutions can therefore never be right or wrong, but only better or worse.

The 7<sup>th</sup> and 8<sup>th</sup> propositions also exist. Every threat to vultures and lions is unique. Communities along PAs hold different opinions, and each country has threats differing in significance. The

standard policies and procedures dished out from science-prone judgments do not recognise this, and are proving ineffective. What makes these problems so complex is that despite their uniqueness, they are still interrelated and symptoms of other problems. Eradicating sentinel poaching depends on the effectiveness of rhino, elephant and lion anti-poaching. The legalisation of the lion bone trade in South Africa is in part (on the supply side) a result of the reduction in trophy hunting demands and the consequent overproduction of breeders sitting with purposeless lions, and also (on the demand side) a result of Asian traditional values attached to tigers.

Regarding problem resolutions, the 4<sup>th</sup>, 5<sup>th</sup> and 10<sup>th</sup> propositions are clear. Researchers studying conservation problems cannot control all variables. In field work, factors influencing research can include cultural differences, language barriers, religion, morality, respondent expertise, egos, and distrust. The more lucrative threats of poaching, illicit networks, muti markets and Asian demands are impossible to control. While VulPro can run tests on vultures to determine livestock medication toxicity, they can only use a fifth of the standardised sample size. Limitations on scarce resources designed to protect them can thus undermine research validity even well within the scientific scope. Policies or mitigation methods based on these inconclusive studies have no opportunity for trial-and-error testing as they are implemented directly into the public domain. The effect of Botswana lifting its hunting ban on poaching, or the effect of South Africa's legal lion bone trade on wild lions cannot be tested, and so potential consequences are unknown. Since the stakes are higher with sacred attachments, the problem-solver has no right to be wrong. Park managers are quick to receive criticism on poaching incidents, and so too are the policymakers behind those decisions. Resolutions may potentially be as wicked as the problems they attempt to solve.

Finally, the 2<sup>nd</sup> proposition – the absence of stopping rules - occurs as conservation problems are never definitively solved. Even if one party thinks that methods have made positive effects, others are quick to point out where they have fallen short. As analysts assessing mitigation methods state repeatedly, obstacles including the lack of funds, political will, capacity and coordination are usually the deciding factors ending research and APs. Conservation fizzles out before proving its worth, effectively undermining the time, expertise and finances invested in the efforts.

Sacredness and science thus play a troublesome role in influencing the rise of conservation concerns, resolution strategies, and the support or lack thereof from various parties involved. While sacred values may drive the desire to conserve a species or place, attachments may also

undermine attempts. While the role of science has been central in understanding the problem and formulating its solution, it also plays a pivotal role in causing conflict between those with sacred attachment. Because of the role sacredness and science play, controversial planning problems are unmanageable. Since they cannot be solved, they are wicked by nature and design.

### **4.3. Policy Design and Implementation**

This section attempts to assess the presence of WP identifiers in legislation, decision-making processes and relevant institutional procedures and domains. The purpose here is to create an idea of how extensively policy design and implementation processes cause or resolve conflict, and help or undermine conservation in the region.

#### 4.3.1. The marriage between law and science in political decision-making

Since the role of the scientist has been discussed, this section focuses more on the role of science in political institutions and legislation. In WPT, science and modernisation are serious obstacles for sustainability, as their simplistic mechanisms cannot cater for complexity. Resultant policies from this limited scope neglect complex social behaviour, and are often met with resistance. While this happens, environmental damages continue (Swilling & Annecke, 2012:11).

In South Africa's consumptive lion industries this is obvious. In the Colloquium mentioned in Chapter 3, the Minister's decision to increase the 2017 quota of 800 skeletons to 1 500 was based on an interim study by the Scientific Authority (SANBI). While researchers provided no opinion on the quota, and clearly stated that the study did not have a representative research sample, it was still claimed by the Minister to back up the decision. Opposition argued that the quota could not scientifically be justified. Resolutions from the Colloquium instructed the DEA and Committee to conduct a full audit on the size of the industry, and provide scientifically sound policy decisions (PMG, 2018). Science is claimed to be important to the critics, supporters, and legislation.

However, the significance of ethics in policy design is contested. For the Confederation of Hunting Associations of South Africa (CHASA), the government should not legislate on emotion, as such laws would never hold up in the Constitutional Court. CHASA also suggest that, since Brand South Africa is all about the positive features of the country, only the good news regarding the criticised industry should be told. Despite legislation, campaigns and court rulings show an overwhelming concern for ethics. Representing concerned hunters, the International Council for Game and Wildlife Conservation (CIC) state that while captive breeding is legal, it neglects moral and

ecological boundaries (PMG, 2018). In August 2019, the Gauteng High Court ruled that the export quotas were illegal and unconstitutional, and that animal welfare and conservation are inseparable. Since captive breeding violates TOPS Regulations on welfare, the DEA had no grounds on which to endorse an industry that had no conservation value, or to establish a quota (Venter, 2019).

Some actually say ethics is scientifically proven to affect conservation. Recent studies estimate that South Africa may suffer R54.51 billion in losses in tourism revenue in the next decade if canned hunting continues (EMS Foundation & BAT, 2019). So, even if supporters argue that ethics is irrelevant, statistics on global perceptions validate the rise in ethical tourism which cannot be ignored.<sup>48</sup> It may, therefore, be said that there is a need for social consideration as it is scientifically proven to be important. Since science and law seem inseparable, how do you approach an ethical problem with a scientific solution? For the WP theorist, you do not; you just frame the problem as such. The solution then becomes more about reframing the problem than it does about solving it.

#### 4.3.2. Uncertainty in political decision-making

Uncertainty can be a crafty tool to stall political decision-making. For Nie, when policymakers are unsure of potential policy outcomes on conservation, economics and culture, they call for further scientific research to delay policies and reluctant actors (2003:323). In the captive lion debate uncertainty exists in all positions. Supporters are unsure about the loss of jobs, or what to do with all the captive lions if the whole industry closes. Activists are unsure about the extent of damages to Brand South Africa or tourism, and the ability for illicit lion and tiger operations to grow via the industry's channels if it continues. Political decision-makers having to decide which way to go are uncertain about the political repercussions of legislation, and the possible loss of jobs either way. As the SANBI Chairperson stated in the Colloquium, alternative policy options have political and economic consequences that cannot be predicted, and so the safest thing to do is to allow the industry to continue as is (PMG, 2018). Consequently, uncertainty leads to “science wars” and policymaking delays. When controversial decisions must be made, stakeholders often question the evidence used by opposition parties, and push their own as “good science” (Nie, 2003:323).

An example is SAPA taking the DEA to court and questioning the evidence used to enforce new welfare regulations in the lion industry. Doing so effectively postponed the decision by two years,

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<sup>48</sup> Research also rejects the economic justifications, as the industry only contributed 1.8% of tourism revenue with minimal trickle down from a handful of wealthy owners (Harvey, 2020:7; Selier *et al.*, 2018:85).

during which the industry continued. Based on uncertainty, legislative plans were later scrapped (Williams *et al.*, 2015:27). Another example is the Colloquium update meeting. The whole point was to assess the progress of resolutions from the previous year and the Committee's fulfilment of its responsibilities. The resolutions set out were to start the abolishment of the industry, to audit the industry, and to deliver progress reports on these commitments (PMG, 2018). Instead, the Committee speaker claimed that since she was unfamiliar with the industry, she could not deliver adequate responses on behalf of the Committee, and so the meeting should be postponed (PMG, 2019).<sup>49</sup> Present at the meeting, Respondent 3 (c) comments that he did not buy the completely underprepared facade of the Committee. It was a tactic to postpone the steps towards ending the industry. He thus held the opinion that it must have taken a lot of intelligence to behave so ignorantly. This illustrates Nie's point on how uncertainty is used as a political tool to represent knowledge claims, question unfavourable decisions, and stall policy processes (2003:323).

What results is criticism towards decision-makers, postponement of policy, and sustained wildlife declines. Critics will argue that policies eventually made are based on objectives in favour of the government officials involved,<sup>50</sup> and selective scientific judgments. Tardiness in pressing matters illustrates a disregard for protecting endangered species. This is not only a problem for the region, as a global study by Rose *et al.* (2018:4) shows that uncertainty and scientist-policymaker miscommunication rank in the 10 greatest obstacles for conservation legislation. The irony here is that, while governments usually favour the least uncertain decisions and quick fixes, the decision-making process to form policies can take longer than the implementation and termination process.

#### 4.3.3. Outdated historical policy contexts

According to Nie (2003:318), policies that made sense historically may have damaging effects on conservation in current contexts. As said in Chapter 3, poisoning was encouraged by colonial authorities to rid the land of pest predators. Lions were a big target, and people killing them were rewarded by the government. Vultures were then poisoned indirectly (Ogada, 2014:3). Although such policies no longer exist, the effect they had on decreasing wildlife and natural land is presently felt by conservationists trying to reclaim land for conservation and stabilise affected populations. Craig (2017:51) and Santangeli *et al.* (2016:5) argue that Namibian farmers are still able to use

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<sup>49</sup> Committee Members complained that they should have received the information beforehand. Dr Harvey confirmed that everyone had been emailed. The Chairperson then admitted to this, but said the information was too bulky to read.

<sup>50</sup> In this case, the ANC, as the meeting Chairperson and the Committee are members of the governing party.

outlawed poisons from stockpiles collected before legislative changes occurred. Even though poisoning is outlawed, the mindset in favour of killing pest animals still exists.

Land reform legacies are troubling. In South Africa, apartheid laws issuing the forced removal of black communities and granting land to white owners effectively restricted community access to primary resources and sacred sites (Annecke & Masubelele, 2016:196). Many white-owned areas became PAs or game ranches from which owners profited greatly. Although the policies were abolished, much land is still white-owned or restricted. Today, this translates into negative sentiments towards PAs in which communities still feel they have been deprived. As Margulies puts it, “the exclusion of people from conservation spaces remains one of the foundational conflicts in contestations over and through nature” (2018:183). Leonard calls this “environmental injustice”, shaping the relationship between the environment and people vocally resisting conservation since the 1990s (2013:3).<sup>51</sup> Conservation is largely seen as a *white people’s problem* by communities more concerned about their deprivation of basic services. Until stakeholders are able to engage on equal levels, sustainable development cannot succeed (Turner, 2004:170).

Zimbabwe’s attempt to rectify historical injustice through land reform has severely affected conservation and shows worrying projections for South Africa.<sup>52</sup> The (better never than) late President Mugabe radicalised land reform in an attempt to rid the legacy of the Land Tenure Act of 1969 securing white appropriation of fertile agricultural land. The legacy of these racial policies in Southern African countries, as Degeorges and Reilly describe, has pushed the abolishment of “white pockets of prosperity surrounded by black poverty” (2007:571). Under the Land Acquisition Act of 1992, the government mismanaged both agricultural and protected land taken from white owners. Conservation was simply not a priority. Poverty-stricken communities started receiving close to zero CAMPFIRE benefits because of the lack of tourism and hunting, further declining community support for conservation, and increasing encroachment on PAs. The 90% drop in land ownership unfortunately shows how much wildlife depends on private management (Williams *et al.*, 2016:2; Williams, 2017). Dismal conservation is largely attributed to historical reforms, the mismanaged attempt to rectify it, and priority handed over to agriculture.

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<sup>51</sup> Despite efforts across racial groups, they have fallen short. The Environmental Justice Networking Forum (EJNF) formed for the purpose of coordinating environmental justice advocates and conservation NGOs, collapsed in 2006 due to racial tensions that affected the productivity of the Forum (Leonard, 2013:6).

<sup>52</sup> Authors also show concern for Namibia’s potential violent land grabs (Degeorges & Reilly, 2007:582).

It may even be argued that IUCN Red Lists and CITES Appendices are outdated. As shown in Chapter 3, the status of lions as ‘Vulnerable’ in Africa is based on 2016 data. For vultures, White-headed, Cape, Lappet-faced and Hooded were last assessed in October 2016, not taking into account the poisonings since then that have drastically increased pressures on remaining populations. It is worrying that three of these species are already ‘Critically Endangered’, and two ‘Endangered’ without accounting for recent years. The IUCN status of protected species in question are thus based on outdated data, and so is CITES legislation (and state-specific legislation) which it influences. This means that regional and state policies may be neglecting the urgency of curbing population declines, and illustrate a lack of priority given to important species.

#### 4.3.4. Incompatible budgetary mandates and legislation

As vital as sustainability and conservation strategies sound, there are major feasibility concerns. Such efforts requiring collaboration are time-consuming, costly, and rely on voluntary dedication. This is unattractive for developing countries leaning towards cheaper, short-term solutions (Lubell *et al.*, 2000:156). The lack of priority, attention and understanding of WPs lead to incompatible legislation budgets (Nie, 2003:318). Since the scientific approach is geared towards efficiency and cheap solutions, budgetary mandates fall short of what is needed to fully implement legislation.

Budgetary limits are indeed concerns for governments and NGOs in conservation. An example is South Africa’s National Integrated Strategy to Combat Wildlife Trafficking which states that the AP’s success “solely depends on the sufficient medium- to long-term funding” (2017:21). While this is stated, significant budget cuts are implemented in departments responsible for coordinating relevant policies, including the DEA (DEA, 2018:2). Mozambique’s “BioFund” for conservation actually saw budget increases over 2019–2020, but still remains low compared to the task at hand (Lusa, 2019; BioFund, 2019:19). Volunteer NGOs rely on funding from a variety of donors.<sup>53</sup> Respondent 1 (d) holding the position of Birds of Prey Project Manager remarks that his job is rather “professional begging”. As he puts it, “I have developed a sore knee, a kind of tennis elbow in the knee region, for the time I spend bending down on one knee praying for funds”. Constant searching for funds and competing with other NGOs for it takes time away from conservation.

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<sup>53</sup> NGO donors largely include zoos, conservation trusts, banks, mines, academic institutions and other private companies or individuals from predominantly developed countries. One of the biggest funders for vultures in the region is Eskom (VulPro, 2018:21; EWT, 2018:120; BirdLife, 2017:39; Monadjem, 2004:88).

Collaborative funding is essential for all regional initiatives. However, the problem in achieving this depends on the quality of communication, research and decision-making, which produces a catch-22 situation. While Gore *et al.* (2020:13) stress that collaboration is needed for likely chances of funding, BirdLife warns that “financial constraints and ecological differences may limit partner participation” (2017:18). So, conservation only attracts investment if collaboration is effective, but collaboration may only be effective if its mechanisms receive funding.

Budgetary constraints mean that the simplest problems cannot be solved. Regarding poaching and HWC, Mozambique struggles to fund fencing around PAs (Bauer *et al.*, 2015:14894). Similarly, while fencing on farms can reduce livestock predation, poison is a cheaper option (Santangeli *et al.*, 2016:19). As a result, poachers can operate freely, predators are killed rather than deterred, and vultures are poisoned in the process. Regarding their recommendation to end trophy hunting, the IUCN states that only once initiatives are fully funded will new legislation take on any positive effect (2016:1).<sup>54</sup> Voluntary NGOs with tight budgets are unable to fund these initiatives themselves, and so the implementation of conservation legislation does not match the necessary scale. Incompatible budgetary mandates therefore undermine conservation legislation, and fuel conflict between NGOs competing for funding, and with governments showing a lack of priority.

#### 4.3.5. Lack of adequate communication in political decision-making

Unfeasible legislative mandates neglect communication and enforcement (Nie, 2003:319). This reality contrasts sharply with the *complex adaptive systems* concept in which authorities embrace conflict resolution and remain open to stakeholder concerns (Ratner *et al.*, 2013:198). For solutions to work, they depend on appropriate inclusion, learning from experience, and quality interaction (Swilling & Annecke, 2012:11). Questions from Chapter 2 should thus be considered here; asking *How transparent are authorities*, and *How well do authorities consider stakeholder needs?*

For the first question, the South African Government’s role in captive lion decision-making shows a serious lack of transparency. This is evident in the exclusion of important actors and research on the problem, as seen in the Colloquium. Resolutions instructed the DEA to provide reasons why 870 permits were issued, and how three times the amount left the country (PMG, 2018). Not only did the Committee fail to provide evidence, but it illustrated a blatant disregard for what had been

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<sup>54</sup> Although critics of the industry argue that sometimes none of the revenue actually goes into it (IUCN, 2016:7).



agreed upon collectively (EMS Foundation, 2019:20). The new quota verdict failed to comply with the process ensuring open communication and participation from a wider range of researchers involved.<sup>55</sup> The fact that no quota was set in 2019 or 2020 illustrates further the absence of public consideration (de Waal, 2019). This displays a lack of transparency and communication.

Regarding the second question, governments show little contact with community stakeholders. In Blackie and Casadevall's (2019) study on Botswana's hunting ban of 2014, the government stated that community organisations were consulted beforehand, while respondents felt it was only to inform them of the legislation. Botswana's centralised system of decision-making has perhaps decreased democratic debate in civil society (Maundeni *et al.*, 2007:26). As a result, stakeholders hold feelings of apathy for the law. The IUCN takes the concern up a notch by examining the effects of trophy import bans on benefiting communities in Namibia and Zimbabwe. They argue that external decisions have not consulted communities whose livelihoods depend on the trade (in jobs, CAMPFIRE, and other initiatives). This effectively takes away community decision-making power in how they manage their land or economically benefit from wildlife (IUCN, 2016:8). It suggests that legislation may only be sustainable and supported if stakeholders are appropriately included, and where alternative revenue strategies are simultaneously put in place.

Community perceptions on vulture conservation indicate the same thing. Mdhlanho *et al.*, studying communities alongside Zimbabwean PAs found that 66% of respondents stressed the need to educate communities on wildlife and showed willingness to engage in conservation (2018:5). Legislation and communication therefore go hand-in-hand. For WPT, participation of researchers, NGOs, communities and the public at large should be considered. As Ratner *et al.* (2018:809) and Head (2008:104) warn, the lack of public involvement is likely to lead to the disregard of legislation and conflict over resources involved. Disconnects in policy are able to provide one explanation for why Southern Africa is failing to protect endangered species.

#### 4.3.6. Lack of policy enforcement

The extent of legislation enforcement, according to the WPT and NRC framework, influences the success of conservation policy and sociopolitical stability in the management of natural resources. Failure of enforcement may lead to the lack of public compliance, strengthening of illicit networks,

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<sup>55</sup> It became clear that only SANBI was consulted, and the DEA was solely responsible for the quota (PMG, 2019).

species declines, and increased conflict (Nie, 2003:319; Conrad *et al.*, 2019:591). In assessing Southern African lion and vulture legislation it is obvious that there is a lack of enforcement. This is jointly related to short budgets, ill communication, and accountability.

This is clear with lion hunting. It is interesting how the IUCN disagreed with the sport despite stating that “with effective governance and management trophy hunting can and does have positive impacts” (2016:5). This is due to the region’s incapacity or unwillingness to sufficiently promote conservation and welfare. In the DEA’s assessment of breeding facility conditions, 40% did not meet TOPS standards (de Waal, 2019). Furthermore, short of 300 facilities were located despite there being near to 400. The estimation that three times the 2017 skeleton quota crossed the border also shows failure to police exports. Regarding the DEA’s obligation to end the industry, this too has not occurred. Deputy Director Tjiane stated that breeders could produce more lions than the 2017 quota permitted, and the resultant stockpile was reportedly a leading factor in the decision to double the quota (PMG, 2019). Not only do these examples show a lack of policy enforcement, but they also show a blatant disregard for the government’s commitment to conservation.

Where hunting and trading are illegal, the law is still absent. Chapter 3 saw this in Mozambique and Zimbabwe. Loveridge *et al.* (2007:554) showed that 63% of lion deaths along HNP borders are related to trophy hunting where it is prohibited, indicating a lack of law enforcement. During times of political instability, there is no capacity to monitor hunting, so hunting increases (USAID, 2018:2; Everatt *et al.*, 2019:4102). Conservation duties on a regional level are also inadequately implemented. As Trouwborst *et al.* put it, the lack of regional treaties producing law enforcement frameworks has led to such agreements being “sleeping treaties” (2017:155).

Creating heavy penalties is also not enough. Chapter 3 indicated that prison sentences and fines are in place, but some may argue that the low penalties for vultures encourage poaching. However, the increase in rhino and elephant poaching, for which the penalties are severe, indicates that even the heftiest of laws do not make a difference if unenforced. Inadequate anti-poaching strategies for mammals consequently lead to the rise of sentinel poaching of vultures (AWPD, 2020). As Conrad *et al.* (2019:597) show in Chapter 2, illicit operations in unmonitored areas easily cross borders, use multiple transport routes, travel over challenging terrain, access arms, avoid detection, and swiftly relocate if necessary. Despite heavy penalties, ineffective action allows the poaching and trading of wildlife to continue as a relatively low-risk, high-reward operation.

Muti markets provide another example. Multiple sources illustrate that despite the obvious display of illegal animal products at traditional markets, law enforcement services barely take action (McKean *et al.*, 2013:15; Koenig, 2006:1592). As Respondent 2 (b) mentions in Chapter 3, the South African Police Service (SAPS) are reluctant to raid markets for cultural reasons. Such an excuse is frustrating in the vulture trade, as both the supply and demand are contained within the region. Unlike lions, the region should be able to monitor the whole trade. This shows that even law enforcement for *proximate* resources near policing centres is culturally obstructed.

*Cultural sensitivity* could be an excuse for inadequate law enforcement, just as the “bone surplus” has raised export quotas and stalled the lion industries’ abolishment. By simply raising quotas, the government is able to set new standards determining the success of law enforcement, or lack thereof. By claiming cultural sensitivity, the government can say it is respecting people’s rights to freedom of religious practice. However, quota expansion, cultural concerns, and moving the target mark of achievement may just be a means of legitimising law enforcement shortfalls. Simply put, illegal hunting, poisoning, trapping and trading of lions and vultures is against the law in Southern Africa, yet they continue regardless of legislation. It is therefore not good enough to just create laws; the laws need to be enforced. Since government departments and agencies are largely responsible, they should also be held accountable for meeting their legislative commitments.

#### 4.3.7. Lack of accountability in policymaking and implementation

For the idealist, environmental policy integration (EPI) has open channels of communication, mitigates conflict, upholds high standards of professionalism, and holds all accountable (Pomeroy *et al.*, 2016:102). For the WP sceptic, failure to deliver this is unforgiveable. When the stakes are so high, policymakers receive criticism at the slightest glitch (Rittel & Webber, 1973:161). In Southern Africa, accountability is avoided at all costs, and actors are quick to point fingers.

Starting with communities and farmers, conservationists have a hard time trying to figure out why vultures and lions are dying on their properties. VulPro estimates that only 10% of vulture pylon collisions are reported (2018:12). According to Respondent 1 (d), farmers who shoot birds are very unlikely to confess. Likewise, Everatt *et al.* (2019:4110) suspect that community members claim to kill lions in self-defence, while it is actually motivated by body harvesting. Dishonesty and unwillingness by farmers and communities to engage with conservationists may often be an attempt to avoid responsibility and prosecution for illegal activities.

One of the most obvious examples of avoiding responsibility is the South African Government's involvement in the captive lion industry. In response to the public outcry against the conditions in breeding facilities, the DEA claimed that TOPS Regulations are within the DAFF's mandate, and not their responsibility. When the Colloquium Committee was confronted for being underprepared, the EMS Foundation was blamed for providing bulky information that the Committee could not be expected to go through (PMG, 2019). The Committee's only responsibility was to facilitate the research and decisions that needed to be made. The DEA has shown a history of this practice in Parliamentary meetings. When asked in 2015 if they had authorised the sale of lion bones to shady Asian trading companies linked to the trafficking of other wildlife commodities, the DEA stated that the question should be directed to the Provincial Legislatures, and that if the answer is expected at a national level, "it should be acknowledged and accepted that this will take longer, a period of up to more than six months" (EMS Foundation & BAT, 2018:105).

At a regional level, the role of SADC member states in fulfilling joint APs shows minimal initiative. Despite member states agreeing that intergovernmental and agency collaboration are needed, SADC assessments show the contrary. Researchers criticise governments for failing to share intelligence between them, or even within their own departments (SADC, 2016:27). Regarding the prosecution of persons involved in wildlife trafficking, judicial processes in the region remain weak. For this reason, SADC suggests that formal measures and procedures should be formed with mandates holding states accountable (2016:28). Perhaps only when this occurs will regional agreements on conservation be successfully executed. For the time being, however, the absence of stricter mandates holds no-one accountable for their responsibilities in conservation.

#### 4.3.8. Institutional red tape and contradictory policy mandates

Although institutions allowing public participation are necessary, WPT argues that problems tend to become more wicked in democracies. Roberts (2000:2) explains that this is because stakeholders are able to pause unfavourable decisions through lawsuits, judicial reviews, and voting people out of decision-making positions. Decisions taking all stakeholders into account are thus time-consuming and require serious resources. For developing democracies, democratic procedures can arguably make conservation legislation unfeasible, and open pathways for contradictions.

Warranting another thesis is the issuing of permits to field-based conservationists and researchers. To collect data samples, capture or transport wild fauna and flora, one must have the appropriate

permits. In South Africa, each province has its own legislation, so if an animal is transported across provinces it requires multiple permits (Williams *et al.*, 2015:21). Although intended to protect a species' well-being and deter illegal trading, it undermines conservation timeliness. For example, if there is a poisoning or collision and the vulture needs medical attention, no person without permits may transport it. Additionally, species crossing state borders that need to be translocated for protective reasons may sit at border posts for days on end before attaining permits to cross over (Respondent 1d). Since borders are so permeable, smuggling the animal-in-need is probably the cheaper, faster, and safer option at times. These permits can cost a transport team up to R75,000 per year, and the time it takes to process the applications is tedious. Because of the legislative burdens, it is estimated that 50% of translocations happen illegally (NAMC, 2006:29). Getting permits to transfer biological samples between academic institutions is notoriously difficult. The irony here is that it is easier to get a permit to extract samples from the field (which may necessitate the death of an animal) than to share samples wasting away in storage (Respondent 4a).

Mozambique illustrates how institutional distinctions and incompetence limit prosecutions. When a suspected poacher is arrested, the ranger on site must wait for government-employed rangers to arrive and write up the *Autos de Notícia* (formal complaint). This may lack exact facts on the crime, leading to the case being discarded (USAID, 2019:17). By the time the report is written, it may violate the accused's right to face a judge within 48 hours. The police tend to have little knowledge on wildlife law, leading to abandoned investigations.<sup>56</sup> Even worse, poor administration means that only community leaders may have residential records of criminals, and accessing these may be difficult bearing in mind the mistrust between communities and the police (2019:18). Poor evidence storage in police stations often leads to evidence loss, and without evidence, cases are dismissed. When guns are confiscated, they usually make their way back into poachers' hands (Massé, 2020:766). As with SAPA, the accused can 'play the system' by requesting jurisdictional changes, often leading to cases being dropped by apathetic or lenient judges (2020:769). If poachers are actually prosecuted, they are often released due to overcrowded and underfunded prisons. The government does not keep tabs on inmates, who often go straight back into poaching (USAID, 2019:19). Mozambique illustrates an exceptional case of institutional problems.

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<sup>56</sup> This has also led to unlawful detentions of permitted fieldworkers. Some notice that if they have cameras or South African number plates, the chance of being searched and fined by the police for arbitrary reasons is much higher. The police are often just looking for bribes, and use intimidation tactics to get them (Massé, 2020:760; Respondent 4a).

According to WPT, vague and contradictory legislation undermines efforts to curb wildlife population declines. Language is a crucial variable in defining both problems and solutions. When language is ambiguous, it may cause additional conflict or undermine the significance of a problem at hand. Such vague policies will offer little guidance for enforcement and receive minimal respect from the public and those responsible for enforcing them (Lewis, 2008:209; Nie, 2003:312).

While the use of violence towards suspected poachers is not technically legal, the vagueness of Mozambique's legislation around this sets no legal framework by which extremely violent policing forces can be held accountable (Massé, 2020:768). South African laws state that rangers may only shoot in self-defence, but to date, no anti-poaching rangers have been charged for using drastic punishment measures (Annecke, 2016:200). Attitudes of rangers experienced in this ordeal seem to widely accept extreme measures (Respondent 1c; Respondent 7a). Unfortunately, shoot-to-kill and more gruesome methods of deterrence<sup>57</sup> create an environment of intensified conflict which is becoming the norm in conserving endangered wildlife.

Anti-poaching performance targets reveal another contradiction in South African law. Units are encouraged to make as many arrests and reduce as many poaching incidents as possible, as this is obviously their primary purpose, and looks good on their records. However, the law creates another catch-22 situation in the jurisdictional domain of these units. While rangers strive to arrest poachers before they kill an animal, without a dead animal, there is little evidence to prosecute the accused (Respondent 7a). Consequently, potential poachers should legally be released without so much as a slap on the wrist. Surely, this encourages rangers to take the law into their own hands.

Laws on the use of poison in the region are also vague and provide loopholes for farmers. As mentioned, poisons such as arsenic have been outlawed, but equally poisonous herbicides are readily available at agricultural stores (Santangeli *et al.*, 2016:9). This provides legal avenues for farmers to break the law (Watts, 2016:22). When animals, particularly vultures, are killed by poisoning, farmers can escape charges. South Africa's Animals Protection Act (1962) covers

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<sup>57</sup> Some methods of deterrence reportedly used include "sending messages to other poachers". In doing so, captured poachers are tied to trees, covered in the entrails of an animal, and left overnight to deal with the possibility of attracting hyena and lions. If they are still alive in the morning, they are let loose to run back home. The torment experienced is aimed at scaring poachers off for good (Respondent 1e; Respondent 7a).

vultures within its legal framework, but accidental poisoning intended for vermin on farms is not within the law's framework, and in those cases the Act cannot protect vultures (Knobel, 2013:204).

Furthermore, there are no regulations holding anyone accountable for collisions. In South Africa, NEMBA states that environmental impact assessments (EIAs) or similar procedures must occur before new developments. This excludes structures built before 2004, holds no-one accountable for failing to install vulture deterrence mechanisms, and maintenance is voluntary (Knobel, 2013:205). Although laws in the region provide broad protection for listed species, they do not always translate into the protection of critical habitats.<sup>58</sup> Even more worrying are EIA practices. In some cases, agencies sign NDAs with developers to prohibit the sharing of data. If the EIA finds vulnerable species and advises against development, the developer can consult another agency until approved. This reportedly does not happen often, but some EIA agencies build “dodgy” reputations that keep conservationists in and out of government on their toes (Respondent 5a; Respondent 1c). So, one can be prosecuted for killing a listed species, but not necessarily for destruction of its habitat which will ultimately lead to population decline (2013:200).

The position of a captive lion is constantly disputed, with their classification sitting somewhere between a wild and domesticated (or farmed) animal. While the species is raised in captivity, it is not purely wild. However, the species does not serve agricultural purposes beyond the harvesting of bones, which is not globally accepted as an agricultural commodity. The laws on this are equally vague. For the industry's critic, all lions should be considered wild and protected under NEMBA. For the supporter, a captive lion should be an agricultural commodity, subject to laws covering the treatment of livestock. Court cases on this have only added to conflict over the industry's mismanagement and ill-treatment of lions (Watts, 2016:24). And, when breeders guilty of cruelty are confronted by animal protection services, breeders are quick to call upon private property laws that do not warrant their presence (*Blood Lions*, 2015). One should also be reminded here that, since tigers are not indigenous animals to South Africa, they are not strictly protected under TOPS or NEMBA legislation. This means that facilities breeding these cats may do so with few legal limitations to facility conditions, trading and hunting, and the proper disposal of their bodies. South

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<sup>58</sup> Interestingly, institutional tardiness in approving sustainable development projects becomes contradictory in urban areas. Respondent 5 (a), Biodiversity Coordinator for the City of Cape Town, explains that development sometimes takes so long to be approved that illegal settlements pop up on the site and halt plans altogether. Illegal invasion can be more damaging than the proposed development waiting on approval for environmental reasons.

African breeders are thus able to breed and supply the Asian bone markets through the loopholes present in the country's legal system (EMS Foundation & BAT, 2018:28).

Some legal activities provide legitimate channels in which illegal activities can prosper. This is evident in lion bone trading. Williams *et al.* (2015:5) point out that seizures of illegal skeletons at South African border controls increased at the time the trade was legalised under supposedly strict regulations. This is because traffickers will take chances at borders with illegally harvested lion bones as it is impossible for inspectors to tell the difference. Mismanagement within departments has also led to the over-issuing of permits, subsequently allowing the transport of more skeletons than the quota set (EMS Foundation & BAT, 2019). This manipulation of permits has also been seen in the hunting of wild lions. With Skye, permits were apparently bought from a neighbouring concession, and the land on which the hunt occurred had no permit. With Cecil, hunters lured him out of a PA and into a hunting concession. This manipulation called "quota swapping" occurs quite regularly (Wildlife Watch, 2018). Policy vagueness and contradictions thus create channels for illicit activities, and provide the opportunity for perpetrators to contest any cases against them.

The institutional and legislative factors stressed within the WPT and NRC framework are certainly present in the Southern African context. Because of these common problems, legislative conflict slows down the process of effective conservation, and encourages illegal operations. These factors, together with the evident lack of coordination between government departments, illustrates how Southern African governance undermines the making and implementation of conservation policy.

#### 4.3.9. Policy design and implementation: how wicked is the problem?

*Policy design and implementation* reveals the wicked legislative side of conservation problems. The identifiers discussed illustrate how a developing, resource-dependent region is prone to policy shortfalls that create more conflict than they solve. This brings us back to Menkhaus's distinction between complex and wicked problems based on attitude. Accordingly, tame problems occur when a government is willing, but unable to address its fragility, while WPs occur when a government is unwilling to do so (2010:86). The latter is clear in the region's context, and within this analysis, the original 10 propositions of wickedness resonate.

Science and uncertainty in problem-solving originate in the 1<sup>st</sup> and 6<sup>th</sup> proposition, and result in the 9<sup>th</sup> and 3<sup>rd</sup>. Disagreement on the size of the captive lion industry, and its effect on tourism and conservation, illustrate the 1<sup>st</sup> proposition that WPs cannot definitively be formulated. As a result,



definitive solutions cannot exist (the 6<sup>th</sup> proposition). Since WPs are debatable by virtue of their indefinite nature, there are competing interpretations of the problem and solution (9<sup>th</sup> proposition). This is in the activists, conservationists, breeders, economists and politicians persistently pushing competing perspectives. Legislative decisions eventually made then show the 3<sup>rd</sup> proposition that solutions are never right or wrong. Solutions simply cannot be right, as we have seen, as every policy to date has had some sort of resistance or criticism thrown its way. Although every scientist stands resolute behind their “good science” opinion, the opposition will do just the same.

Scientific shortfalls uncover the 4<sup>th</sup> and 5<sup>th</sup> proposition, and outdated legislation shows the 8<sup>th</sup>. As in the 4<sup>th</sup> proposition, Southern Africa does not have the luxury or time to test proposed solutions for protecting wildlife. The competing, evolving, and interchangeable variables working in the complex system are impossible to replicate, control, or fully grasp. Nobody knows for sure if shoot-to-kill strategies deter poachers, or how significantly community perspectives play a role. As a result, the 5<sup>th</sup> proposition (there are unforeseen consequences) unfolds. Nobody can confirm if legislative changes will protect wild lions, if legal channels allow illicit trafficking of a wider range of species, or if EIAs make any difference at all. The 8<sup>th</sup> proposition – every WP is a symptom of another – happened historically, and will continue. Colonial attitudes of intolerance linger in the treatment of predators, and political grievances on land distribution have lowered the priority of wildlife, attitudes towards PAs, and NRM. When communication and participation are slow, animosity and divisions between groups grow.

Problems from vague or contradictory policy language and institutional red tape highlight the 7<sup>th</sup> proposition that every problem is unique. The multitude of loopholes in EIAs, permits and poison, and slow legal procedures encourage both conservationists and criminals to operate outside the law. The use of extreme anti-poaching methods is borne out in both frustration towards, and abuse of, botched legal systems. The failure to respond effectively to each case proves the system’s inability to accept problem uniqueness. Consequently, conservation is slow and illegal operations prosper in a legal system unable to adapt to evolving circumstances.

Incompatible budgetary mandates, and the lack of law enforcement and accountability show the 2<sup>nd</sup> proposition that there is no stopping rule. From the lack of enforcement and accountability, problems are never solved, and APs dissolve regardless of this. The limited resources fed into the attempt to curb wildlife declines means that management can never keep up with rising threats,

which causes competition between those trying to gain funds. Solutions stop, not because the problem is solved, but because the attempt runs dry.

It is clear that the region is missing the mark for effective EPI, but do the decision-makers have no right to be wrong? For the 10<sup>th</sup> proposition, the answer is ‘yes’ and ‘no’. Yes, in the case of captive breeding, poaching, hunting and trading. The global size of campaigns and trophy import bans on Southern Africa’s hunting illustrate this well. Park managers and anti-poaching units also bear the brunt of public scrutiny in publicised cases. When the number of remaining wild lions and vultures remains so low, the swift action of these rangers is crucial. They have no right to be slow. Although governments are criticised about their decision-making or inactive roles, they are seldomly held accountable. As with SADC, the absence of strict intergovernmental mandates allows governments to continue thinking that wildlife law enforcement is purely voluntary. Uncertainty and the lack of priority allows decision-makers to stall decisions, and contribute further to the problem. This, together with the presence of the other propositions, indicates that policy processes in Southern Africa are wicked by nature, and unable to solve the WPs in which they lie.

#### **4.4. Political and Interest Group Strategy**

Uncovering how intricate group dynamics in conservation become WPs can be explained in terms of strategies and intentions. Strategies operate in accordance with the values and interests of actors which usually compete with one another. According to NRC theory, the heterogeneity of political, economic, and social factors involved in a natural resource debate heavily influence policymaking and conflict over access to it (Nilsson & Persson, 2003:335). Psychological factors such as group identity or historical relations play important roles in dividing groups and strengthening stubborn policy standstills (Sclee, 2004:137). WPT then questions the role of authority here, as the competing values, interests and economic incentives at play add to the complex, uncertain and arbitrary nature of the problem. WPs cannot be solved by a single institution or sector, as the focus, interest and strategy of groups change continuously (Sachs *et al.*, 2010:57; Termeer *et al.*, 2015:681). This section will look into examples of this complicated interplay between groups in Southern Africa to show how competing strategies create or exacerbate WPs. While this section distinguishes groups into three categories, the relationship between them is fluid.

#### 4.4.1. Political actors and politicising conservation

Political actors in this context refer to those wishing to gain control over the allocation of a natural resource. According to Nie, environmental planning problems become wicked when a political actor uses the problem as a surrogate to debate larger political topics (2003:314). When it involves something symbolic or sacred, a political party may use the problem as a wedge to gain attention and support, and to win or keep office (2003:322). For the most part, political parties in Southern Africa have been slow to jump on heated environmental problems. This is likely due to the region's Third World status prioritising economic development over endangered wildlife. But, economic development can become political when involving environmental concerns.

There are some cases in Southern Africa where political parties glance at lions and vultures. The Botswanan poisoning in June 2019 was the first time the region's vultures received massive attention. Since it happened shortly after Masisi's inauguration, it is obvious why vultures were suddenly getting attention. Hunting is a serious political debate in the Botswana Democratic Party (BDP). While Khama strongly supported conservation and the hunting ban, Masisi's election campaign took on the needs of rural farmers. Since many had been victims of the destruction from elephants, his campaign centred on rural farmers and opportunities to benefit economically from reintroducing hunting (McKenzie & Swails, 2019; McKenzie *et al.*, 2019).<sup>59</sup> In the incident, journalists were quick to call vultures a by-product of elephant poaching (de Greef, 2019; Pinnock, 2019). Through the WP lens, vultures are a surrogate for an international audience debating hunting and the plight of African elephants – a symbol of the African wilderness in its final safe haven.<sup>60</sup> Elephants are also a surrogate for larger debates around Khama and Masisi, and extraction versus preservation. For politics, the hunting ban on destructive wildlife is the perfect wedge to debate rural needs and gain popularity. If the poisoning had happened at a different time in Botswana's political history, it is likely that the issue would not have caused so much conflict. But then again, the plight of the region's vultures would probably have been ignored.

Regarding the captive lion industry in South Africa, political parties have voiced some concern. At the Colloquium, members from the IFP, DA and EFF all took a moment to comment on the ethics and economic risks of the industry. They also criticised the ANC-led Parliamentary

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<sup>59</sup> Hunting in Namibian communal conservancies has also raised management debates. Hunting supporters are quick to criticise their opposition for framing hunting as an ethical, ecological and political issue (Damm, 2019).

<sup>60</sup> About 58.9% of Africa's elephants live in Botswana (Blackie & Casadevall, 2019:3).

Committee over the mismanagement of quotas (PMG, 2018; PMG, 2019). The Colloquium, based on a highly contentious industry gaining international attention, is an easy platform for opposition parties to call out government incompetence. In effect, government decision-makers stall. In the WP lens this is a strategy in itself to avoid future conflict, but also because actors are inclined to make decisions favouring their political party, and strategising takes time. The DA have also raised concerns about the management of Kruger Park facilities. The party questions why the Park has been so secretive about its spending of public money, and why it is so defensive towards public criticism (Lorimer, 2020). Problems combining sacred species or places, and the mismanagement of public money, are a two-for-one for a political party stirring the pot.

Land reform and invasion is a politically motivated problem affecting economically viable land. For the EWT, land reform is one of the biggest factors causing donor declines (EWT, 2019:9). Fear of land invasions and its destructive ecological consequences are felt in urban areas as well. As Respondent 5 (a) comments on Cape Town's sustainable development goals, the politics of land invasion and illegal settlements have serious economic consequences for poor communities. According to him, housing is not the problem in and around the city, but rather job availability. As mentioned, illegal houses set up on economically viable land have a knock-on effect for communities, as the inability to develop businesses on those lands, specifically designed to bring jobs closer to poorer communities to reduce travelling costs, cannot happen. Land invasions not only lead to environmental damage, but also hinder job creation, adding to the political nature of conflict over NRM. Although these cases may not apply directly to vulture and lion conservation, they still politicise the management of land and biodiversity, encourage political drama, intensify conflict, and add to the workload of conservationists trying to mitigate the problem.

What results from this is unfortunate. Encouraging debate over controversial problems for political gain can create conflict by resurrecting issues that were diffused some time ago, or exacerbating problems already in circuit (Nie, 2003:315). In doing so, it creates further divisions, polarises and politicises people and environmental problems. Referencing species or places with symbolic importance in political narratives is a useful tool for appealing to emotion, increasing the value and stakes of the problem, and creating a political narrative in which the conservation problem is representing a larger political story (Nie, 2003:320). In drawing attention to a problem, the goal is rather to exacerbate the problem for short-term wins than to solve it. Consequently, the process

undermines conservation problems that actually deserve attention, and the human values attached to the problem intensify to a point where the problem becomes impossible to solve.

#### 4.4.2. Businesses and economic interests in conservation

Economic actors in this context are those wishing to benefit economically from the controversy over environmental problems. By framing certain problems, actors can draw positive attention to them and take advantage by benefiting economically from the problem. As the WP theorist warns, however, energy is focused on appealing to the audience more than solving the issue it campaigns for (Nie, 2003:325). Actors with economic agendas in conservation here include political parties, businesses, governments and conservation NGOs. Communal conservancies profiting from ecotourism and hunting, and poaching syndicates profiting from the black-market, have more straightforward economic incentives in conservation, so time will not be spent on that.<sup>61</sup>

Political parties are likely to benefit economically by stirring conservation problems. Through the strategies mentioned above, parties are able to attract funding in membership fees and donors supporting their environmental cause, and businesses have a tendency to do the same (Schön & Rein, 1995:23). Numerous campaigns for endangered wildlife are founded or sponsored by large corporations. As previously mentioned, examples include species-specific bracelet campaigns, alcoholic product branding, car accessories, and attractive shopping bags depicting the animals. The idea is for consumers to buy the product in which case some or all of the profits are donated to the cause. Although it may create awareness on the plight of a species, it is likely to benefit the brand more. This explains why beloved species such as elephant, rhino and lion are often the face for these brands, and not vultures. As Ndoo comments in this regard, “it has been a challenge to convince governments, donors and industries to support vulture conservation” (2013). A company is less likely to profit from unpopular animals, and therefore unlikely to sponsor them.

However, sceptics warn that many campaigns have been fraudulent. Attention was drawn to this shortly after the hype on rhinos started. As reports from 2012 show, many campaigns were not actually linked to charities. According to News24 (2012), out of the 272 rhino fundraisers, only 15% were credible. Such cases, and rightfully so, have created a sceptical public more cautious in choosing where to donate money. If the effects have been felt by funds for popular species, vultures

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<sup>61</sup> Their non-economic incentives puzzle conservationists. For Respondent 1 (e), “drivers of poisoning aren’t always clear-cut... In some cases, it seems simply to be destructive, revealing a more malicious, sinister face to poisoning”.

face an even graver chance.<sup>62</sup> What this results in, according to WPT, is the undermining of conservation initiatives (Nie, 2003:322). Species may at least gain attention even if the business profiting off its campaign donates little to its alleviation, but it stands an equal chance of undermining the initiative and creating sceptical customers for other needy campaigns.

Accusations of capitalising on conservation extend beyond business and into government. Critics of the South African Government have voiced their complaints about payable permits associated with endangered animals. These include PA access, photography permits, capture/transport/release permits, trading permits, and of course, hunting fees and licences. A study in 2006 values transport permits alone at R750–900 million per annum (NAMC, 2006:28).<sup>63</sup> Government officials are often criticised for being too permit-happy. *The Extinction Business* (EMS Foundation & BAT, 2018) goes into greater detail on this point, showing how the Government is profiting off its position as the only legal lion and tiger bone exporter in the region. It is worth questioning, as the study does, why the Government has issued CITES permits to the Vinasakhone, Xeosavang, and Vannaseng Trading Companies (to name merely a few), all known players in the illicit wildlife trafficking arena (2018:94). There is clearly money to be made in issuing trading permits, and the more endangered the species on the IUCN Database, the higher the permit value.

The dynamic between NGO conservation goals and the interests of their donors is intriguing. As much as NGOs rely on the generous donations of big corporations, as without them they could not operate, many are contributors to the environmental damages the NGOs are trying to reduce. In Southern Africa, these donors include Eskom and numerous mines who profit off the depletion of natural resources. When NGOs are funded by these corporations, the debate begins as to where the economic interests of the donors meet the environmental concerns of the NGOs. On the one hand, yes, destructive businesses should donate millions to conservation to make up for the damages they cause and to put their profits to good use. But on the other hand, big donations can quickly turn into big bribes. If there are conditions attached to large cheques, the organisation may need to make some compromises. Conservationists should be cautious when accepting donations from influential corporations, for reasons set out by Kessler (2016):

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<sup>62</sup> Then again, who would knowingly donate to a “vulture fund”?

<sup>63</sup> This includes the value of the animal, however, as the capture operators become the owners during the transit.

Conservation groups – big and small – can't survive without money. Whether it is a major grant from a sympathetic foundation, or funding from a government, or big money from one of the world's largest corporations ... But how far should they go for donations? How much should they bend? And how much influence do donations buy – especially the really big ones?

NGOs receive criticism for turning a blind eye to environmental damages caused by their donors. Some of these arrangements raise concerning questions, like: *Are conservationists buckling their goals under donor generosity?* After all, donors surely should have some say in how their money is spent. This is another catch-22 situation in that NGOs can only operate if they receive large donations, but they may have to compromise their goals and effectively endorse the presence of environmentally destructive corporations, as without their money, conservation cannot happen. Such a delicate situation has led to critics arguing that corporate partnerships are unethical, environmentally irresponsible, and politically dangerous (Kessler, 2016). The lines between environmental and economic agendas become blurred in these partnerships, as NGOs still have to operate to an extent like a business. As an employee within such a corporate partnership states, “at the end of the day, we have salaries to pay” (Respondent 1b). Not only can this drive divides between the public and NGOs, but also between NGOs competing for funding.

This extends into the interests of anti-poaching security companies. As Respondent 7 (a) explains, competition exists between companies providing security services to private game reserves. Not only do they compete to secure contracts, but they also view their own strategies as intellectual property or a trademark of the business setting them apart from others. Consequently, economic interests of competing anti-poaching services resist communication and collaboration.

When economic agendas are caught up in the interests of conservation, the results are dismal, and the context discussed from Southern Africa illustrates this point in WPT. Stakes that are already high become higher, the competing values, interests and numbers of stakeholders behind them intensify, and effectively exacerbate conservation problems. Even when the incentives are pure, economic interests add to the wicked nature of the politics of conservation.

#### 4.4.3. The media and crisis orientation

Although the plight of endangered wildlife deserves public attention, the way the media frames the problem adds to its wickedness. According to Nie, the media covers environmental issues in a competitive narrative between the actors involved. Politicians or businesses with vested interests

take advantage of the media for attention, helping to polarise the problem for newsworthiness. The media's frame creates simplified, narrow political perspectives dividing actors, and encourages confrontation and extremism in conservation approaches and perceptions (2003:326).

Botswana's vulture poisoning of June 2019 demonstrates how the media politicises environmental issues. A photo taken by Respondent 6 (a) at a previous poisoning is a case in point (See Figure 1, p.138). As he recalls, the photograph depicting a heap of dead vultures did not receive much attention from the incident. In the June poisoning, however, his photo became the leading image on news articles covering the incident. While the original incident barely got attention, at the next poisoning, the picture received over 10 million hits. As he agrees, the reason why the event received so much attention is because of Botswana's political climate at the time, and so the incident was a surrogate for the media to debate political issues. Vultures were thus a surrogate to debate Botswana's political climate, and in a horserace-like manner that focuses rather on the wins and losses of political actors than on the wider range and dynamics of stakeholders involved.

Critics concerned with the media's role in covering conservation issues draw attention to the tendency to create crises. It makes sense for the media to polarise topics for newsworthiness, but the problem this causes is polarising perspectives. Perspectives encouraged can include extreme responses to poaching crises. As Annecke and Masubelele show, supporting militarised anti-poaching strategies may normalise violent extremism and further historical divides of race in South Africa. Violent strategies likely lead to violent responses that worsen the problem (2016:197). Massé (2020:770) resonates this caution with Botswana's shoot-to-kill policies and Mozambique's use of violence, warning that supporters may be failing to understand the wider factors of humanity and social positioning of rangers, communities and poachers. There is more to the problem than the media shows, and there is more at stake than the media can account for.

Polarised coverage is indeed a problem felt by political, economic and conservation groups involved. Environmental activists are sometimes accused of taking advantage of the media in creating crises, as *Blood Lions* (2015) had been accused of doing by hunting supporters. Some even argue that creating such a hype around the plight of a species actually drives the black-market value of the species, and thus incentivises more poaching. News24 (2012) show this concern regarding the value of rhino horn. Political parties are also constantly accused for taking advantage of the media for gaining publicity during environmental events. Due to the criticism actors receive,



some become cautious in their involvement with the media. In this study, every respondent representing a party, corporation or NGO expressed some concern about the media – a leading factor encouraging many to remain anonymous. As one mentioned, advocacy is a delicate balancing act between stakeholders, the matter, and the media.

The results for conservation are bitter-sweet. On the one hand, species deserve publicity to grow awareness and support for their protection. On the other hand, the media's ability to manipulate, mislead, polarise, and simplify events and perspectives undermines conservation. By creating crises, people no longer take the issue seriously. The story-telling narrative may cause people to become more interested in the competition between actors involved, rather than in the plight of the surrogate species. Media coverage fails to cover the ethics, needs, and goals among stakeholders that could form common grounds (Nie, 2003:326). The result is just as wicked.

#### 4.4.4. Political and interest group strategy: how wicked is the problem?

*Political and interest group strategy* drives the wicked nature of Southern Africa's problems in conserving vultures and lions. The situation indeed fits the complex systems depicted by NRC theorists, as the interests, agendas, frames, and relationships within and between active groups are constantly changing. Businesses are interested in the media for advertising, and conservation for campaign profits. Political parties have interest in business for funding, conservation for wedges, and the media for political coverage. NGOs have interest in the media for coverage, business for funding, and politics for reform. The media then has varying levels of interest in the interest groups depending on the newsworthiness of events in which they involve themselves. Since these interests are constantly changing, so too are the relationships between the groups, making this a complex system indeed. In terms of the WP propositions, group strategies match them as well.

Complex systems reflect the 9<sup>th</sup> proposition (there are multiple and competing interpretations of problems and solutions). Opposing interests of the groups are clear in the framing of conservation problems, crisis orientation for attention and funding, and all the campaigns operating throughout the region. On this point, the 1<sup>st</sup> (WPs cannot be defined) and 6<sup>th</sup> proposition (there are no definitive solutions) are clear. In competition, disagreement is almost the incentive of the groups. Creating disagreement causes divisions, makes the work of each group stand out from the rest, distinguishes group identity, allows short-term political or financial wins, allows economic agendas to become important to conservation, and the polarising perspectives are, of course, newsworthy. This then

means, as the 3<sup>rd</sup> proposition informs, solutions cannot be right or wrong. Since multiple interpretations are created to secure group identities and agendas, solutions formed in this context cannot be universally accepted. They can only be better or worse than other suggestions, and judgments on this vary according to the chosen agenda reflected in resolution.

Solutions created in this system cannot, as the 4<sup>th</sup> and 5<sup>th</sup> propositions state, be tested in controlled environments, and have unforeseen consequences. Concern for violent anti-poaching tactics makes this clear. Such methods are impossible to control in experimental environments, as the test subjects – humans – will certainly be affected by any method chosen. Concern over the possibility of normalising violence in conservation or resurrecting racial divides is always present. The 10<sup>th</sup> proposition then comes in where decision-makers have no right to be wrong. The media and vocal interest groups are constantly watching. When something goes wrong in a sacred place, political parties are quick to criticise the management of its natural resources. When political parties and businesses are seen to have too much involvement in conservation decisions, the media is quick to criticise. When an NGO fails to meet its goals, donors withdraw their sponsorship. Such a daunting environment explains why trust is constantly a hurdle for collaborative conservation.

What becomes clear is the 2<sup>nd</sup> proposition (problems are never definitively solved). Implemented solutions usually fizzle out too early as a result of the complex system. Donors, political parties and the media constantly shift focus, and in the process, funding, support and awareness are withdrawn. Political parties withdraw support after elections, and business withdraws funding as soon as the project is no longer profitable. Even if some problems are solved, we are unlikely to hear about it, as the media loses interest quickly and moves on to the next crisis.

Such dynamics indicate the 7<sup>th</sup> and 8<sup>th</sup> propositions that every problem is unique, while also being a symptom of another. Conservation problems are clearly unique, and are unfortunately shown in the damaging effect the media has in simplifying, generalising and framing situations. By simplifying the identity of a lion to an agricultural commodity, activists are up in arms. In debating the most appropriate anti-poaching strategies, the unique relationships between each park, its communities and other factors need to be considered. Once again, Botswana's vulture poisoning is an unfortunate symptom of elephant poaching, and is exacerbated by the conflict in politics over the hunting ban. In South Africa, muti markets continue to thrive while law enforcement claims

that the problem is culturally too sensitive. Problems unique to each context are troubling for law enforcement, and create obstacles for those trying to collaborate throughout the region.

#### **4.5. Conclusion:**

This section has provided an analysis of the context of Chapter 3 through a joint WPT and NRC framework. For the theory's sake, only once the highly complex planning environment is embraced can efforts towards NRM be considered. So, instead of simplifying the role of stakeholders, their interests, and the institutional settings in which they operate, this chapter has rather, in a paradoxical sense, analysed Southern Africa's conservation problem in a way that illustrates just how messy, unstructured, arbitrary, and fluid the dynamics in the region are. The propositions of wickedness by no means attempt to clarify the problem, as doing so can unwittingly create another frame in which the problem is portrayed. This is perhaps a contradiction, as some sceptics point out, as using the WPT framework effectively frames the problem as such. This perhaps cannot be avoided, and trying to do so would then defeat the point of this study existing in the field of Political Science. Complexity in the system is thus embraced rather than clarified.

With this in mind, the role of science in attempting to analyse and solve the situation has been shown to cause more damage, as has the attempt of political actors, businesses, various campaigns, and the media, to frame the problem according to their agendas. Legislation throughout the region has proven to be ill-equipped in handling the complexity of social factors affecting conservation, and continues to operate through the narrow scope of scientific understanding. Regardless of this, however, the lack of accountability and enforcement perhaps means that the policy lens does not matter, as any frame operating in the current reluctant decision-making and law enforcement environment would perhaps make no difference if it were never acted upon. And, when policies are enforced, they have been shown to make the problem worse by creating vocal opposition or unintentional effects. As it currently stands, governments in the region are likely to receive criticism for the policies actually enforced, and for those it fails to enforce. Since they can never win, it is no wonder we live in an environment where nothing seems to get done.

## 5. CHAPTER FIVE

### Conclusion: Findings and Recommendations

#### 5.1. Introduction

All that is left to do is to sum up how exactly we got to this point, and where to go from here. The fundamental task of this study was to contextualise and analyse the political nature of Southern Africa's conservation problems with lions and vultures through the theoretical framework of WPT, which featured NRC. In the process it became obvious that current conservation legislation, APs and expertise are erroneously founded in Natural Science that has for too long underestimated and misunderstood the complexity and intractability of human values at the core of the problem. After all, the survival of species comes down to man's acquisition of land and how man intends to exploit its resources. Conservation, therefore, comes down to human behaviour, and human behaviour is in the scope of Political Science. In the process of concluding the study, this chapter provides an overview of the previous chapters, key findings, and recommendations for future research.

#### 5.2. Overview of the Chapters

Chapter 1 introduced the research problem of political wildlife-based conflict in Southern Africa. It introduced WPT (featuring NRC) as the theoretical frame utilised in the study, and provided a background to the troubling conservation of the region's vultures and lions. The problem statement and research questions for the task were set up, and a qualitative research method was chosen as the most adequate in gaining rich insight into actors' experiences, and because its flexible nature is open to the attempt to understand and embrace the complex nature of WPs.

Chapter 2 reviewed authoritative, relevant and thought-provoking literature in NRC and WPT. The review then combined these fields in conceptualising WPs over endangered wildlife, and narrowed down to the complexities anticipated in analysing the political problems of Southern Africa's conservation. The logic behind this literary path was that the scope of NRC (which views wildlife as a resource) and WPT (which analyses tricky public planning problems from a softer scientific perspective) are complementary, as seen in Nie's (2003) conflict drivers. This collaborative interpretation of the literature then created the theoretical framework for the following chapters.

Chapter 3 contextualised the cases selected that would later be analysed through the theoretical framework. Accordingly, it aimed to contextualise wildlife threats and conservation in Southern

Africa. The chapter did so by providing the context of lions and vultures separately, as the conservation problems they face are unique. Statistics on population declines, the prominent threats to their survival, their commodity and spiritual values, current conservation legislation pertaining to their protection, and campaigns on the plight of these animals were discussed. The collective result established the context of the research problem, ready for analysis.

Chapter 4 conducted the analysis of Chapter 3's context. By use of Table 2 (p.43) derived from Nie (2003), the analysis divided the context into three analytical categories; namely, 1) *Sacredness and Science*, 2) *Policy Design and Implementation*, and 3) *Political and Interest Group Strategy*. For each category, the 10 propositions of wickedness (Table 1, p.25) were drawn. This chapter fulfilled the task of analysing Southern Africa's conservation of lions and vultures from the wicked political perspective, in a way that embraces its complexities rather than clarifying or refining them. The resulting complex system depicting the intricate dynamics, relationships and values operating throughout was able to illustrate every property of wickedness originally set out. Since the wicked nature of Southern Africa's conservation has been established, the only task left in this study's scope is discussing the findings and voicing further research recommendations.

### **5.3. Research Findings**

For the sake of justifying why time has been spent on a long-neglected topic, findings drawn from this study should be discussed. To recap, the main research question guiding the study was: *How can the framework of WPT create a new political perspective on the complexities of conserving wild lions and vultures in Southern Africa?* After reviewing the research domains of NRC and WPT, Chapter 2 was able to propose that a combination of the two fields should be used to best describe and analyse the nested units of analysis. This became operational in setting the framework consisting of analytical tools and identifiers of NRCs and WPs. Since the WP identifiers and propositions are present throughout the context, Southern Africa's conservation problem is certainly wicked, if not, *super* wicked. Since the WP involves endangered species, some of which are critically close to extinction, the wicked scenario indicates that time is certainly of the essence. Even if the research that follows indicates that our conservation problem does not meet all wicked requirements, the theory still holds value as a reconceptualising tool.

Chapter 3 and 4 address the sub-question: *How does the relationship between sacredness and science in problem research and policy design affect the success of wildlife legislation?* It became

clear that scientific analysis dominates conservation, and cannot cope with complexities of social (traditional, religious, moral, and sentimental) attachments to the exploitation of vultures and lions. This discovery agrees with the WPT argument that science-based policies inevitably fail. When identifying the WP propositions of sacredness and science, it was shown that the relationship is indeed wicked as the hard scientific scope is incompatible and contradictory to complex social systems, and scientific solutions cannot solve the problems stemming from human values.

On the topic of science, it became clear that the role of scientists in problem-solving is more about reframing social problems into scientific ones than actually solving them. Rooted in the scientific need to create clarity, scientific solutions do not actually need to work; they just need to make sense. Such an inclination driven by efficiency is ironic when it comes to uncertainty. Scientists arguing over problem definitions and potential policy outcomes spend an absurd amount of time and money trying to come up with the most time- and resource-efficient solutions. Their need for clarity and inability to handle uncertainty undermine their primary goal of acting efficiently.

Chapter 4's analysis on policy design and implementation addressed the sub-question: *How do policy design shortfalls contradict conservation aims?* It was discovered in legislative processes that uncertainty stalls policy decisions, and undermines the urgency of problems. Historical policies, especially over land ownership, have served to politicise conservation. Developing countries have dropped the priority of protecting natural land, as land reform prioritises agriculture. The evident lack of funding discussed has also led to the declining success of APs.

The discussion then identified an important catch-22 situation that continuously hinders successful conservation. While healthy collaboration between actors is important to secure funding, the lack of funding means that such collaborative mechanisms cannot be funded within the limited budgets of conservation initiatives. What makes this worse are the findings that indicate the serious lack of policy enforcement and accountability in the region. Not only are initiatives underfunded; they are simply not supported by those pointing fingers and sidestepping responsibilities.

Regarding legislative shortfalls, institutional red tape and contradictions of the law were identified. The tedious process of obtaining permits, and the distinctive mandates of institutions and authorities, encourage both conservationists and poachers to operate illegally. The presence of vague legal parameters has the same effect, allowing criminals to manipulate animal protection laws, and encouraging political disputes over the position of protected species in the law.

Findings within group strategies addressed the sub-question: *How do interest group strategies create and exacerbate political conflict over wildlife?* Various groups driven by political, financial, moral and ecological incentives operate in the region and attempt to influence public action and policy in accordance with their goals. Such groups have been found to cause problems by politicising conservation, by taking advantage of threatened species for publicity and financial gain, and encouraging polarised public perceptions. Through crisis-orientation for short-term gains, the importance and support given to conservation is lost.

These research questions ultimately discovered the nature of complex systems described by NRC theorists and embraced by WPT. Stakeholders, decision-makers and policies avoid and interact in multiple ways that influence the fate of endangered species. It was found that the system operates with multiple contradictions; there is collaboration and competition, agreement and uncertainty, crisis-orientation and neglect, and action and dysfunction. Since much is at stake in this system, interactions are particularly prone to turning into political conflict on value-based disagreements.

Although the study intended to illustrate a fluid and highly dynamic system, the production of conservation policies and APs actually seems reluctant and slow. So, while group dynamics are fluid and complex, friction in the system causes slow outcomes, where actors and policies operate reluctantly. The molecular makeup of *high viscosity politics* is a typical result of scientific policy responses to complex social problems, where uncertainty stalls decisions, budgets halt action, and disagreement creates reluctant actors fearful of the microscope they are consistently placed under.

Regarding the role of governments, the study found that WPs undermine government authority. WPs are able to infiltrate political boundaries, institutions, business sectors and multiple levels of authority. This perhaps explains why poachers are able to stay a step ahead of law enforcement, why growing responsibility is placed on NGOs, and why grass-roots anti-poaching is increasingly favoured. It is thus difficult to decide on which level problems should be resolved, and since policies on neither level seem to work, would it even make a difference?

#### **5.4. Recommendations for Further Research**

The findings of this study have raised more questions than they answer. That said, anyone interested in taking this topic further has their work cut out for them. As one of the first attempts applying WPT to Southern Africa's conservation politics, this project is merely an initial step in opening such a frame of thinking.

Findings indicated that scientific superiority is indeed prominent, and its limited scope cannot cater for the social complexities that actually govern the complex system. It is recommended that future studies recognise this, and perhaps the best way to do so is investigating further into the damaging and inefficient effects the Natural Sciences can have in social problems. This is not to say that hard sciences are inferior or intrinsically deficient; it should just take a humble step back and stick to what it knows. It is therefore suggested that future research looks into conservation from the sociopolitical frame for further understanding the problem as such. Instead of trying to clarify the complex system in which conservation operates, studies should rather embrace it. On that note, the findings of this study urge future researchers to look into the idea of wicked conservation problems as *high viscosity politics*, examining internal frictions constantly acting within the messy system that result in minimal effect. This is yet to be done.

Since the shortfalls of hard scientific thinking have been central to the argument made here, future research should ask the question: *Can a social scientist cause less damage?* A social scientist, especially when dealing with communities, is better equipped to grasp the incentives, grievances and needs of communities prone to breaking conservation legislation. Taking to heart the softer, qualitative approach may help us get to the bottom of why people are choosing to kill wildlife and disregard the law. What could also be interesting is investigating how the role of conservationists and failed sustainable development initiatives have fatigued communities by coming and going, and making empty promises (Respondent 1d; Respondent 7c). Responsibility needs to be claimed at some point by those running conservation projects, as community apathy cannot be to blame in every scenario. On that note, one could ask: *Have conservationists managed to operationalise the ideals of sustainable development, and are they actually motivated?*

What also needs consideration going forward are some unfortunate realities that make sustainable development seem idealistic and intangible in developing countries. When communities are facing their own concerns over the lack of education and jobs, poverty and hunger, a developing region ironically has a lot on its plate and cannot really afford to spend much time on conservation. However, it is encouraged that someone looks into how conservation and social development can happen symbiotically, as without this approach, Africa's natural resources may have to run dry before the continent starts investing in its people and actually developing. Alternatively, scholars should perhaps use scare tactics to voice the dreadful long-term effects of declining vulture



populations by making the consequences of the spread of rabies and astronomical healthcare costs, as in the case of India, known to all. Ignorance in this regard is still astounding.

As said, this study merely scraped the surface of what needs to be known. Since this thesis focused more on South Africa, the other countries in the region (the continent, for that matter) deserve more attention. Participatory research, which was hindered by Covid-19 regulations, should also take place for a deeper understanding and ‘feel for’ the complexities of conservation politics. Because there are so many avenues that deserve discussion, Table 3 (p.139) provided in Appendix C summarises the research questions, additional findings and recommendations that have been discussed throughout this thesis. The recommendations refer to both policy changes and further areas of study that could indeed be useful for this field of research, but were not within the scope of this study. WPT should be utilised for understanding conservation problems in the region, as our efforts based on current understandings have not had much effect. Exploring new ideas, even if disproven later, is still worth pursuing. In this sense, there is room for error, just no time for it.

## **5.5. Conclusion**

To conclude this study at this stage seems somewhat weak and short-sighted. The project barely touched on a problem that urgently needs attention. So urgent, in fact, that time spent on tedious planning hurdles continues to exhaust our remaining wildlife, escalate social grievances, and weaken the tangibility of achieving sustainable development. Any attempt in alleviating some of the symptoms of the wicked political nature of Southern Africa’s conservation of vultures and lions can only take place when it is finally accepted that the fate of wildlife comes down to human behaviour and the social scientist’s field of expertise. In this complex and indistinct context, some things are perhaps clear. The region needs to control the elephant and rhino crises before vultures can stand a chance of survival. South Africa needs to deal with the captive lion industry’s bone surplus, the number of active breeding facilities, and alternative forms of profiting from sustainable development, before wild lions stand a chance of survival. The actors operating throughout the region need to learn to trust one another, communicate, and embrace collaborative action across borders and institutions before the region can embrace the complexities of conservation. For this end, perhaps the wicked lens could prove useful for the region in any attempt to conserve our remaining treasured wildlife.

## BIBLIOGRAPHY

- Abdalla, M.A. 2009. Understanding of the natural resource conflict dynamics: the case of Tuareg in North Africa and the Sahel. *ISS Paper 194*. Pretoria: Institute for Security Studies.
- Africa Geographic Editorial. 2019. *Catastrophic breaking news: 537 vultures found poisoned in dark day for Botswana conservation* [Online]. Available: <https://africageographic.com/blog/catastrophic-breaking-news-537-vultures-found-poisoned-in-dark-day-for-botswana-conservation/> [2019, November 28].
- African Impact. 2019. *Vulnerable and Endangered Species: African Lion*. [Online]. Available: <https://www.africanimpact.com/african-lion/> [2020, June 27].
- African Wildlife Foundation. 2020. *Wildlife Conservation: Lion*. [Online]. Available: <https://www.awf.org/wildlife-conservation/lion> [2020, June 27].
- African Wildlife Poison Database. 2020. *Poisoning Map*. [Online]. Available: <https://www.tgpcloud.org/wildlife/?c=&s=&submit=Locate+Filtered+Incidents> [2020, July 28].
- Allan, D.G. 2015. Cape Vultures *Gyps coprotheres*, in M.R. Taylor, F. Peacock, & R.M. Wanless (eds). *The 2015 Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland*. Johannesburg: BirdLife South Africa. 174-178.
- Anderson, M.D. 2000. Raptor Conservation in the Northern Cape Province, South Africa. *Ostrich*, 71(2): 25-32.
- Anderson, J.T., Forcey, G.M., Osbourne, J.D. & Spurgeon, A.B. 2002. The Importance and Use of Wildlife Management Plans: An Example from the Camp Dawson Collective Training Area, in *West Virginia Academy of Sciences*. Morgantown: West Virginia University: 8-17.
- Annecke, W. & Masubelele, M. 2016. A Review of the Impact of Militarisation: The Case of Rhino Poaching in Kruger National Park, South Africa. *Conservation and Society*, 14(3): 195-204.
- Anthony, B.P. & Szabo, A. 2011. Protected Areas: Conservation Cornerstones or Paradoxes? Insights from Human-Wildlife Conflicts in Africa and South Eastern Europe, in J. Lopez-Pujol (ed.). *The Importance of Biological Interactions in the Study of Biodiversity*. 255-282.

- Aucoin, C. & Donnenfeld, Z. 2017. Guns, poison and horns: organised wildlife crime in Southern Africa. *ENACT Research Paper 01*. Pretoria: Institute for Security Studies.
- Bauer, H., Chapron, G., Nowell, K., Henschel, P., Funston, P., Hunter, L.T.B., Macdonald, D.W. & Packer, C. 2015. Lion (*Panthera leo*) populations are declining rapidly across Africa, except in intensively managed areas. *Proceedings of the National Academy of Sciences of the United States of America*, 112(48): 14894-14899.
- Beck, J.M., Lopez, M.C., Mudumba, T. & Montgomery, R.A. 2019. Improving Human-Lion Conflict Research Through Interdisciplinarity. *Frontiers in Ecology and Evolution*, 7(243): 1-8.
- Bega, S. 2020. Dramatic decline in scavengers in southern Africa could affect spread of disease. *IOL*, 1 June. [Online]. Available: <https://www.iol.co.za/saturday-star/news/dramatic-decline-in-scavengers-in-southern-africa-could-affect-spread-of-disease-48816474> [2020, July 28].
- Beilis, N. & Esterhuizen, J. 2005. The potential impact on Cape Griffon *Gyps coprotheres* populations due to the trade in traditional medicine in Maseru, Lesotho. *Vulture News*, 53(2005): 15-19.
- Benson, P.C. 2015. A survey of Cape Vulture breeding colonies in South Africa's northern provinces (Transvaal Region) – an update 2013. *Ornithological Observations*, 6(2015): 31-36.
- BioFund. 2019. *Annual Report 2018*. Maputo: BioFund.
- BirdLife International. 2018. *State of Africa's Birds 2017: Indicators for our changing environment*. Nairobi: BirdLife International Africa Partnership.
- BirdLife Zimbabwe. 2020. *Conservation – Vultures*. [Online]. Available: [http://www.birdlifezimbabwe.org/b\\_conservation\\_7\\_vul.html](http://www.birdlifezimbabwe.org/b_conservation_7_vul.html) [2020, August 2].
- Blackie, I. & Casadevall, S.R. 2019. The impact of wildlife hunting prohibition on the rural livelihoods of local communities in Ngamiland and Chobe District Areas, Botswana. *Cogent Social Sciences*, 5(1): 1558716.
- Blood Lions [film]. 2015. South Africa: Regulus Vision & Wildlands.
- Blythe, J.L., Murray, G. & Flaherty, M. 2014. Strengthening threatened communities through adaption: insights from coastal Mozambique. *Ecology and Society*, 19(2): 6-15.

- Botha, C.J., Coetser, H., Labuschagne, L. & Basson, A. 2015. Confirmed organophosphorus and carbonate pesticide poisonings in South African wildlife (2009-2014). *Journal of the South African Veterinary Association*, 86(1): a1329.
- Brashares, J.S., Abrahms, B., Fiorella, K.J., Golden, C.D., Hojnowski, C.E., Marsh, R.A., McCauley, D.J., Nuñez, T.A., Seto, K. & Withey, L. 2014. Wildlife decline and social conflict: Policies aimed at reducing wildlife-related conflict must address the underlying causes. *Science*, 345(6195): 376-378.
- Buchanan, R. 1995. Wicked Problems in Design Thinking, in V. Margolin & R. Buchanan (eds.). *The Idea of Design*. Cambridge: MIT Press. 3-20.
- Buechley, E.R., Santangeli, A., Girardello, M., Neate-Clegg, M.H.C., Oleyar, D., McClure, C.J.W. & Şekercioğlu, Ç.H. 2019. Global raptor research and conservation priorities: tropical raptors fall prey to knowledge gaps. *Diversity and Distributions*, 25(6): 856-869.
- Burton, A. 2014. Vultures: a future foretold. *Frontiers in Ecology and the Environment*, 12(8): 480.
- Burton, A. 2016. Poaching with poison devastates African vultures. *Frontiers in Ecology and the Environment*, 14(1): 5.
- CACH & SPOTS. 2018. *Captive Lion Breeding, Canned Lion Hunting & the Lion Bone Trade: Damaging Brand South Africa?* London: CACH Press.
- Capra, F. 2001. *The Hidden Connections: A Science for Sustainable Living*. London: Harper Collins.
- Carter, P. 2012. Policy as Palimpsest: a case study of micro and macro policy and politics intersecting in local implementation resulting in unintended consequences. *Policy & Politics*, 40(3): 423-443.
- Catron, B.L. 1981. On Taming Wicked Problems. *Dialogue*, 3(3): 13-16.
- Chiutsi, S., Mukoroverwa, M., Karigambe, P. & Mudzengi, B.K. 2011. The theory and practice of ecotourism in Southern Africa. *Journal of Hospitality and Tourism Management*, 2(2): 14-21.

- CITES. 2019. *Cooperation and Partnerships*. [Online]. Available: <https://cites.org/eng/disc/coop.php> [2019, November 29].
- CITES. 2019. *Appendices I, II & III (26/11/2019)*. Geneva: CITES.
- CNN. 2020. *The most trafficked mammal you've never heard of*. [Online]. Available: <https://edition.cnn.com/interactive/2014/04/opinion/sutter-change-the-list-pangolin-trafficking/> [2020, July 27].
- Collaborative Partnership on Sustainable Wildlife Management. 2014. *Sustainable Wildlife Management and Wild Meat*. Bangkok: CPW.
- Collier, U. 1997. *Energy and Environment in the European Union*. Ashgate: Aldershot.
- Collins, A., Cox, C. & Marire, J. 2020. On the judicial annulment of the 'domestic' trade moratorium in South African rhinoceros horn: a law and economic perspective. *European Journal of Law and Economics*, 49(2):1-12.
- Commercial Farmers Union of Zimbabwe. 2018. "*Vulture restaurant*" to the rescue of Zimbabwe's last vultures [Online]. Available: <http://www.cfuzim.com/2018/02/20/vulture-restaurant-to-the-rescue-of-zimbabwe-s-last-vultures/> [2020, August 2].
- Conklin, J. 2003. *Dialogue Mapping: Building Shared Understanding of Wicked Problems*. Hoboken: Wiley.
- Conrad, J.M., Greene, K.T., Walsh, J.I. & Whitaker, B.E. 2019. Rebel Natural Resource Exploitation and Conflict Duration. *Journal of Conflict Resolution*, 63(3): 591-616.
- Conservation Action Trust. 2018. *Report: The Controversial Lion Hunt in Umbatati*. [Online]. Available: <https://conservationaction.co.za/wp-content/uploads/2018/07/Skye-Report-16718-def.pdf> [2020, July 10].
- Conservation Travel Africa. 2019. *Responsible Volunteering – 7 Ways to Choose an Ethical Volunteer Programme*. [Online]. Available: <https://conservationtravelfafrica.org/blog/wildlife-conservation/responsible-volunteering-7-ways-to-choose-an-ethical-volunteer-programme/> [2020, July 20].

Convention on International Trade in Endangered Species of Wild Fauna and Flora. 2020. *How CITES works*. [Online]. Available: <https://www.cites.org/eng/disc/how.php> [2020, August 1].

Convention on the Conservation of Migratory Species of Wild Animals. 2018. *The Guidelines for the Conservation of the Lion in Africa (GCLA)*. [Online]. Available: <https://www.cms.int/lions/en/publication/guidelines-conservation-lion-africa-gcla> [2020, July 30].

Cortés-Avizanda, A., Blanco, G., DeVault, T.L., Markandya, A., Virani, M.Z., Brandt, J. & Donázar, J.A. 2016. Supplementary feeding and endangered avian scavengers: benefits, caveats, and controversies. *Frontiers in Ecology and the Environment*, 14(4): 191-199.

Cousins, J.A., Sadler, J.P. & Evans, J. 2010. The Challenge of Regulating Private Wildlife Ranches for Conservation in South Africa. *Ecology and Society*, 15(2): 28.

Coyne, R. 2005. Wicked Problems Revisited. *Design Studies*, 26(2005): 5-17.

Craig, C. 2017. Assessing the anthropogenic threats to vultures in the communal farmlands of Namibia. Unpublished Master's dissertation. Cape Town: Percy FitzPatrick Institute of African Ornithology.

Creel, S., M'soka, J., Dröge, E., Rosenblatt, E., Becker, M.S., Matandiko, W. & Simpamba, T. 2016. Assessing the sustainability of African lion trophy hunting, with recommendations for policy. *Ecological Applications*, 26(7): 2347-2357.

Crowley, K. & Head, B.W. 2017. The enduring challenge of 'wicked problems': revisiting Rittel and Webber. *Policy Sciences*, 50(2017): 539-547.

Dalerum, F. & Miranda, M. 2016. Game auction prices are not related to biodiversity contributions of southern African ungulates and large carnivores. *Scientific Reports*, 6 (2016):21922.

Damm, G.R. 2019. *How The Truth On Community Wildlife Conservation In Namibia Is Twisted*. [Online]. Available: <https://www.conservationfrontlines.org/2019/04/how-the-truth-on-community-wildlife-conservation-in-namibia-is-twisted/> [2020, August 10].

Davies, K.K., Fisher, K.T., Dickson, M.E., Thrush, S.F. & Le Heron, R. 2015. Improving ecosystem service frameworks to address wicked problems. *Ecology and Society*, 20(2): 37-48.

- Davies, L. 2016. Wicked Problems: How Complexity Science Helps Direct Education Responses to Preventing Violent Extremism. *Journal of Strategic Security*, 9(4): 32-52.
- Degeorges, A. & Reilly, B. 2007. Politicisation of land reform in Zimbabwe: impacts on wildlife, food production and the economy. *International Journal of Environmental Studies*, 64(5): 571-586.
- DeGrade, P. & Stahl, L.H. 1990. *Wicked Problems, Righteous Solutions: A Catalogue of Modern Engineering Paradigms*. New Jersey: Prentice Hall.
- De Greef, K. 2019. 500 Vultures Killed in Botswana by Poachers' Poison, Government Says. *New York Times*, 21 June. [Online]. Available: <https://www.nytimes.com/2019/06/21/world/africa/vultures-poisoned-botswana-poachers-elephants.html> [2020, August 10].
- De Waal, L. 2019. *Objections to the Setting of a Lion Bone Export Quota*. [Online]. Available: <https://greengirlsinafrica.com/2019/06/17/objections-to-the-setting-of-a-lion-bone-export-quota/> [2020, July 13].
- Di Marco, M., Buchanan, G.M., Szantoi, Z., Holmgren, M., Marasini, G.G., Gross, D., Tranquilli, S., Boitani, L. & Rondinini, C. 2014. Drivers of extinction risk in African mammals: the interplay of distribution state, human pressure, conservation response and species biology. *Philos Trans R Soc Lond B Biol Sci*, 369(1643): 20130198.
- Duffy, R. 2016. War, by Conservation. *Geoforum*, 69(2016): 238-248.
- Duriez, O., Descaves, S., Gallais, R., Neouza, R., Fluhr, J. & Decante, F. 2019. Vultures attacking livestock: a problem of vulture behavioural change or farmers' perception? *Bird Conservation International*, 29(3): 437-453.
- Economists at Large. 2013. *The \$200 million question: How much does trophy hunting really contribute to African communities?* Melbourne: Economists at Large Pty Ltd.
- Emslie, R.H., Milliken, T., Talukdar, B., Burgess, G., Adcock, K., Balfour, D. & Knight, M.H. 2019. African and Asian Rhinoceroses – Status, Conservation and Trade, in *Conservation of and trade in African and Asian rhinoceroses*. Colombo: CITES. 1-38.

- EMS Foundation & Ban Animal Trading. 2018. *THE EXTINCTION BUSINESS: South Africa's 'Lion' Bone Trade*. [Online]. Available: <https://emsfoundation.org.za/wp-content/uploads/THE-EXTINCTION-BUSINESS-South-Africas-lion-bone-trade.pdf> [2020, July 12].
- Endangered Wildlife Trust. 2019. *Integrated Report 2017/2018*. Modderfontein: EWT.
- Environmental Investigation Agency. 2017. *The Lion's Share: South Africa's trade exacerbates demand for target parts and derivatives*. London: EIA.
- Evans, A. 2010. Resource Scarcity, Climate Change and the Risk of Violent Conflict. *World Development Report 2011*. Washington, DC: World Bank.
- Everatt, K.T., Kokes, R. & Pereira, C.L. 2019. Evidence of a further emerging threat to lion conservation; targeted poaching for body parts. *Biodiversity and Conservation*, 28 (2019): 4099-4114.
- Fahey, L. 2016. John C. Camillus: Discovering opportunities by exploring wicked problems. *Strategies & Leadership*, 44(5): 29-35.
- Fourie, T., Cromarty, D., Duncan, N., Wolter, K. & Naidoo, V. 2015. The Safety and Pharmacokinetics of Carprofen, Flunixin and Phenylbutazone in the Cape Vulture (*Gyps coprotheres*) following Oral Exposure. *PLoS ONE*, 10(10): e0141419.
- Frost, P. & Bond, I. 2006. *CAMPFIRE and payments for environmental services*. London: International Institute for Environment and Development.
- Game, E.T., Meijaard, E., Sheil, D. & McDonald-Madden, E. 2013. Conservation in a Wicked Complex World; Challenges and Solutions. *Conservation Letters*, 7(3): 271-277.
- Gasparatou, R. 2017. Scientism and scientific thinking: not on science education. *Science & Education*, 26(3): 1-14.
- Gausset, Q. & Whyte, M.A. 2005. *Beyond Territory and Scarcity: exploring conflicts over natural resource management*. Stockholm: Elanders Gotab.
- Gaworecki, M. 2020. Rhino poaching in South Africa declines for fifth straight year. *Mongabay News*, 7 February. [Online]. Available: <https://news.mongabay.com/2020/02/rhino-poaching-in-south-africa-declines-for-fifth-straight-year/> [2020, July 27].



- George, A.L. & Bennett, A. 2005. *Case Studies and Theory Development in the Social Sciences*. Cambridge: MIT Press.
- Ghuman, U. & Olmstead, W. 2015. Utilising flux and chaos: a case study of wicked problems in environmental management. *International Journal of Organisation Theory and Behaviour*, 18(4): 379-404.
- Gleditsch, N.P., Furlong, K., Hegre, H., Lacina, B., & Owen, T. 2006. Conflicts over shared rivers: Resource scarcity or fuzzy boundaries? *Political Geography*, 25(4): 361-382.
- Global Nature Fund. 2020. *Lion Bone Trade*. [Online]. Available: <https://www.globalnature.org/en/nature-conservation/lions-for-sale> [2020, July 26].
- Gore, M.L., Hübshle, A., Botha, A.J., Coverdale, B.M., Garbett, R., Harrell, R.M., Krüger, S.C., Mullinax, J.M., Olson, L.J., Ottinger, M.A., Smit-Robinson, H., Shaffer, L.J., Thompson, L.J., van den Heever, L., & Bowerman, W.W. A conservation criminology-based desk assessment of vulture poisoning in the Great Limpopo Transfrontier Conservation Area. *Global Ecology and Conservation*, 23(2020): e01076.
- Govender, I.G. 2016. Monitoring and Evaluating Service Delivery as a Wicked Problem in South Africa. *Journal of Human Ecology*, 55(2): 21-34.
- Gray, B. 2003. Framing of environmental disputes, in R. Lewicki, B. Gray, & M. Elliott (eds). *Making Sense of Intractable Environmental Conflicts: Concepts and Cases*. Washington, DC: Island Press. 11-34.
- Groom, R.J., Gandiwa, E., Zisadza-Gandiwa, P. & van der Westhuizen, F.H. 2013. A mass poisoning of White-backed and Lappet-faced Vultures in Gonarezhou National Park. *Honeyguide*, Habitat Info. 2017. *Saving Space For Africa's Vultures*. [Online]. Available: [http://www.habitatinfo.com/vultures/Vulture\\_A1\\_Poster\\_Artwork.pdf](http://www.habitatinfo.com/vultures/Vulture_A1_Poster_Artwork.pdf) [2020, August 9].
- Harvey, R.G. 2020. Towards a cost-benefit analysis of South Africa's captive predator breeding industry. *Global Ecology and Conservation*, 23(2020): e01157.
- Head, B.W. 2008. Wicked Problems in Public Policy. *Public Policy*, 3(2): 101-118.

Hill, C.M., Webber, A., & Priston, N.E.C. 2017. *Understanding Conflicts About Wildlife: A Biosocial Perspective*. Oxford: Berghahn Books.

Hossu, C.A., Ioja, I.C., Susskind, L.E., Badiu, D.L., & Hersperger, A.M. 2018. Factors driving collaboration in natural resource conflict management: Evidence from Romania. *Ambio*, 47(2018): 816-830.

Hughes, T.P, Huang, H., & Young, M.A.L. 2013. The Wicked Problem of China's Disappearing Coral Reefs. *Conservation Biology*, 27(2): 261-269.

Humane Society International. 2020. *More than 42 Airlines Adopt Wildlife Trophy Bans after Cecil the Lion's Death*. [Online]. Available: <https://www.hsi.org/news-media/42-airlines-adopt-wildlife-trophy-bans-082715/> [2020, July 20].

International Institute for Sustainable Development. 2018. *African States, CITES, CMS Establish Initiative to Protect Carnivores*. [Online]. Available: <https://sdg.iisd.org/news/african-states-cites-cms-establish-initiative-to-protect-carnivores/> [2020, Jul 30].

International Rhino Foundation. 2019. *2019 State of the Rhino Report*. [Online]. Available: <https://rhinos.org/2019-state-of-the-rhino-report/> [2019, November 27].

International Union for Conservation of Nature. 2016. *Informing decisions on trophy hunting*. Gland: IUCN.

International Union for Conservation of Nature. 2017a. *White-headed Vulture*. [Online]. Available: <https://www.iucnredlist.org/species/22695250/118632735> [2020, July 25].

International Union for Conservation of Nature. 2017b. *Hooded Vulture*. [Online]. Available: <https://www.iucnredlist.org/species/22695185/118599398> [2020, July 25].

International Union for Conservation of Nature. 2017c. *Cape Vulture*. [Online]. Available: <https://www.iucnredlist.org/species/22695225/118592987> [2020, July 25].

International Union for Conservation of Nature. 2018a. *White-backed Vulture*. [Online]. Available: <https://www.iucnredlist.org/species/22695189/126667006> [2020, July 25].

International Union for Conservation of Nature. 2019. *Lappet-faced Vulture*. [Online]. Available: <https://www.iucnredlist.org/species/22695238/155542069> [2020, July 25].

- Ison, R. & Biggs, D. 2017. “Frame” capture – why the war on poaching can never be won: about the John Hank’s book *Operation Lock and the war on rhino poaching*. *Natures Sciences*, 25(1): 63-96.
- Jarzombek, M.M. 2003. Sustainability, Architecture, and “Nature” Between Fuzzy Systems and Wicked Problems. *Thresholds*, 26(2003): 54-56.
- Juta & Company Limited. 2003. *Nature Conservation Ordinance 4 of 1975*. [Online]. Available: <http://www.met.gov.na/files/files/Nature%20Conservation%20Ordinance%204%20Of%201975.pdf> [2020, July 30].
- Karlsson, J. & Johansson, Ö. 2010. Predictability of Repeated Carnivore Attacks on Livestock Favours Reactive Use of Mitigation Measures. *Journal of Applied Ecology*, 47(1): 166-171.
- Kessler, R. 2016. How big donors and corporations shape conservation goals. *Mongabay*, 3 May. [Online]. Available: <https://news.mongabay.com/2016/05/big-donors-corporations-shape-conservation-goals/> [2020, September 16].
- King, N., Biggs, H. & Loon, R. 2007. Seeking Common Ground: How Natural and Social Scientists Might Jointly Create an Overlapping Worldview for Sustainable Livelihoods: A South African Perspective. *Conservation and Society*, 5(1): 88-114.
- Knobel, J.C. 2013. The Conservation Status of Eagles in South African Law. *P.E.R.*, 16(19): 160-230.
- Koch, E. 1991. Mandela Goes Green. *The Weekly Mail*, 5 April: 1. [Online]. Available: <https://madiba.mg.co.za/article/1991-04-05-mandela-goes-green> [2020, July 10].
- Kovacic, S.F. & Sousa-Poza, A. 2013. *Managing and Engineering in Complex Situations*. New York: Springer.
- Kramer, F.D. 2011. Irregular Conflict and the Wicked Problem Dilemma: Strategies of Imperfection. *PRISM*, 2(3): 75-100.
- Krampe, F. 2017. Toward Sustainable Peace: A New Research Agenda for Post-Conflict Natural Resource Management. *Global Environmental Politics*, 17(4): 1-8.

- Kreuter, M.W., De Rosa, C., Howze, E.H. & Baldwin, G.T. 2004. Understanding Wicked Problems: A Key to Advancing Environmental Health Promotion. *Health Education & Behaviour*, 31(4): 441-454.
- Lafferty, W. & Hovden, E. 2003. Environmental Policy Integration: Towards an Analytical Framework? *Environmental Politics*, 12(3): 1-22.
- Le Billon, P. 2001. The political ecology of war: natural resources and armed conflicts. *Political Geography*, 20(5): 561-584.
- Leonard, L. 2013. The Relationship Between the Conservation Agenda and Environmental Justice in Post-Apartheid South Africa: An Analysis of Wessa KwaZulu-Natal and Environmental Justice Advocates. *South African Review of Sociology*. 44(3): 2-21.
- Levin, K., Cashore, B., Bernstein, S. & Auld, G. 2012. Overcoming the tragedy of super wicked problems: constraining our future selves to ameliorate global climate change. *Policy Sciences*, 45(2): 123-152.
- Lewis, S. 2008. The Tissue Issue: A Wicked Problem. *Jurimetrics*, 48(2): 193-215.
- Lindsey, P.A., Frank, L.G., Alexander, R., Mathieson, A. & Romañach, S.S. 2007. Trophy Hunting and Conservation in Africa: Problems and One Potential Solution. *Conservation Biology*, 21(3): 880-883.
- Lindsey, P.A, Alexander, R., Balme, G., Midlane, N. & Craig, J. 2012. 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(1): 11-22.
- Lorimer, J. 2020. What's going on in the Kruger Park? *Democratic Alliance*, 1 September. [Online]. Available: <https://www.da.org.za/2020/09/whats-going-on-in-the-kruger-park> [2020, September 5].
- Loveridge, A.J, Searle, A.W., Murindagomo, F. & Macdonald, D.W. 2007. The impact of sport-hunting on the population dynamics of an African lion population in a protected area. *Biological Conservation*, 134(4): 548-558.

- Loveridge, A.J. 2018. *Lion Hearted: The Life and Death of Cecil & the Future of Africa's Iconic Cats*. United States: Regan Arts.
- Lubell, M., Schneider, M., Scholz, J.T. & Mete, M. 2000. Watershed Partnerships and the Emergence of Collective Action Institutions. *American Journal of Political Science*, 46(1): 148-163.
- Lusa. 2019. BioFund approves US\$8.4 million for Mozambican conservation, environmental protection. *Club of Mozambique*, 16 December. [Online]. Available: <https://clubofmozambique.com/news/biofund-approves-8-4-million-for-mozambican-conservation-environmental-protection> [2020, August 20].
- Mabuza, E. 2019. Three unions representing 5,000 workers lock horns with SANParks. *Times Live*, 24 July. [Online]. Available: <https://www.timeslive.co.za/news/south-africa/2019-07-24-three-unions-representing-5000-workers-lock-horns-with-sanparks/> [2020, August 14].
- Macdonald, D.W., Loveridge, A.J., Dickman, A., Johnson, P.J., Jacobsen, K.S. & Du Preez, B. 2017. Lions, trophy hunting and beyond: Knowledge gaps and why they matter. *Mammal Review*, 47(4): 247-253.
- Maphosa, S.B. 2012. Natural Resources and Conflict: unlocking the economic dimension of peace-building in Africa. *AISA Policy Brief no. 74*. Pretoria: Africa Institute of South Africa.
- Margulies, J. 2018. The Conservation Ideological State Apparatus. *Conservation & Society*, 16(2): 181-192.
- Markandya, A., Taylor, T., Longo, A., Murty, M.N., Murty, S. & Dhavala, K.K. 2008. Counting the cost of vulture decline – an appraisal of the human health and other benefits of vultures in India. *Ecological Economics*, 67(2): 194-204.
- Martins, V. & Shackleton, C.M. 2019. Bushmeat use is widespread but under-researched in rural communities of South Africa. *Global Ecology and Conservation*, 17(2019): 1-5.
- Mason, T.H.E., Pollard, C.R.J., Chimalakonda, D., Guerrero, A.M., Kerr-Smith, C., Milheiras, S.A.G., Roberts, M., Ngafack, P.R. & Bunnefeld, N. 2018. Wicked conflict: Using wicked problem thinking for holistic management of conservation conflict. *Conservation Letters*, 11(6): e12460.

- Massé, F., Gardiner, A., Lubilo, R. & Themba, M. 2017. Inclusive anti-poaching? Exploring the potential and challenges of community-based anti-poaching. *SA Crime Quarterly no. 60*. Cape Town: University of Cape Town.
- Massé, F. 2020. Conservation Law Enforcement: Policing Protected Areas. *Annals of the American Association of Geographers*, 110(3): 758-773.
- Mauck, G. 2013. *Wildlife legislation in Sub-Saharan Africa: Criminal Offences*. [Online]. Available: <https://conservationaction.co.za/wp-content/uploads/2013/11/Wildlife-Legislation-in-SS-Africa-Nov-13.pdf> [2020, July 21].
- Maundeni, Z., Mpabanga, D., Mfundisi, A. & Sebudubudu, D. 2007. *Consolidating Democratic Governance in Southern Africa: Botswana – EISA Report No 31*. Johannesburg: EISA.
- McCall, R. & Burge, J. 2016. Untangling Wicked Problems. *Artificial intelligence for engineering design analysis and manufacturing*, 30(2): 200-210.
- McCloskey, D. 1988. The Limits of Expertise: If You're So Smart, Why Ain't You Rich? *The American Scholar*, 57(3): 393-406.
- McKean, S., Mander, M., Diederichs, N., Ntuli, L., Mavundla, K., Williams, V. & Wakelin, J. 2013. The impact of traditional use on vultures in South Africa. *Vulture News*, 65(2013): 15-36.
- McKenzie, D. & Swails, B. 2019. Botswana's return to elephant hunting won't solve any problems, ex-President says. *CNN*, 2 June. [Online]. Available: <https://edition.cnn.com/2019/06/02/africa/botswana-president-hunting-ban-intl/index.html> [2020, 10 August].
- McKenzie, D., Formanek, I. & Hollingsworth, J. 2019. Botswana lifts ban on elephant hunting. *CNN*, 23 May. [Online]. Available: <https://edition.cnn.com/2019/05/23/africa/botswana-elephant-intl/index.html> [2020, 10 August].
- McNeish, J.A. 2010. Rethinking Resource Conflict. *World Development Report 2011*. Washington, DC: World Bank.
- Mdhllano, S.F., Gandiwa, E., Muboko, N. & Mashapa, C. 2018. Local knowledge and perceptions of vulture conservation in communities living adjacent to the northern Gonarezhou National Park, Zimbabwe. *Vulture News*, 47(2018): 1-10.

- Menkhaus, K.J. 2010. State Fragility as a Wicked Problem. *Prism*, 1(2): 85-100.
- Milojevich, A.K. 2014. *Interest Groups, Political Party Control, Lobbying, and Science Funding: A Population Ecology Approach*. PhD dissertation. Tennessee: University of Tennessee.
- Monadjem, A., Anderson, M., Piper, S. & Boshoff, A. 2004. Vultures in The Vultures of Southern Africa – Quo Vadis? in *Birds of Prey Working Group*. Kimberley: McGregor Museum: 156-220.
- Montgomery, R.A., Hayward, M.W. & Kissui, B.M. 2019. *How Prides of Lion Researchers are Evolving to be Interdisciplinary*. Lausanne: Frontiers Media SA.
- Muboko, N., Muposhi, V.K., Tarakini, T., Gandiwa, E., Vengesayi, S. & Makuwe, E. 2014. Cyanide poisoning and African elephant mortality in Hwange National Park, Zimbabwe: a preliminary assessment. *Pachyderm*, 55(2014): 92-94.
- Muller, M. 2013. The Wicked Challenge of Sustaining South Africa's Water Security, in *The Southern Academy of Engineering*. Wits University: SAAE: 1-11.
- Murn, C. & Botha, A. 2018. A clear and present danger: impacts of poisoning on a vulture population and the effect of poison response activities. *Oryx*, 52(3): 552-558.
- Mutia, E.F. & Herdiansyah, H. 2019. Application of Natural resource conflict management in resolving the Jakarta Bay reclamation, in *Second International Conference on Advance & Scientific Innovation*. Indonesia: IOP Publishing: 1-6.
- Mwanika, P.A.N. 2010. Eco-cop: environmental policing in Eastern Africa. *ISS Paper 215*. Pretoria: Institute for Security Studies.
- Naidoo, V., Taggart, M.A., Duncan, N., Wolter, K., Chipangura, J., Green, R.E. & Galligan, T.H. 2018. The use of toxicokinetics and exposure studies to show that carprofen in cattle tissue could lead to secondary toxicity and death in wild vultures. *Chemosphere*, 190(2018): 80-89.
- Nash, R.F. 2001. *Wilderness and the American Mind*. New Haven: Yale University Press.
- National Agricultural Marketing Council. 2006. Report on the Investigation to Identify Problems for Sustainable Growth and Development in South African Wildlife Ranching. *Report No 3*. Pretoria: NAMC.

- Ndoo, V. 2013. *A campaign to save African Vultures in the wake of new poisoning incidents*. [Online]. Available: <https://www.birdlife.org/africa/news/campaign-save-african-vultures-wake-new-poisoning-incidents> [2020, September 10].
- News24. 2012. Fundraising blitz to save rhino. *News24*, 7 May. [Online]. Available: <https://www.news24.com/news24/fundraising-blitz-to-save-rhino-20120507> [2020, September 10].
- Ney, S.M. 2009. *Resolving messy policy problems: Handling conflict in environmental, transport, health and aging policy*. London: Earthscan.
- Nicole, B.F. 2019. An Assessment of the Human-Wildlife Conflict across Africa, in M. Ferretti (ed.). *Wildlife Population Monitoring*. London: IntechOpen. 1-11.
- Nie, M. 2003. Drivers of Natural Resource-Based Political Conflict. *Policy Sciences*, 36(4): 307-341.
- Nilsson, M. & Persson, A. 2003. Framework for Analysing Environmental Policy Integration. *Journal of Environmental Policy & Planning*, 5(4): 333-359.
- Ogada, D., Keesing, F. & Virani, M.Z. 2011. Dropping dead: causes and consequences of vulture population declines worldwide. *Annals of The New York Academy of Sciences*, 1249(1): 57-71.
- Ogada, D. 2014. The power of poison: pesticide poisoning of Africa's wildlife. *Annals of The New York Academy of Sciences*, 1322(1): 1-20.
- Ogada, D., Shaw, P., Beyers, R.L., Buij, R., Murn, C., Thiollay, J.M, Beale, C.M., Holdo, R.M., Pomeroy, D., Baker, N., Krüger, S.C., Botha, A., Virani, M.Z., Monadjem, A. & Sinclair, A.R.E. 2016a. Another Continental Vulture Crisis: Africa's Vultures Collapsing toward Extinction. *Conservation Letters*, 9(2): 89-97.
- Ogada, D., Botha, A. & Shaw, P. 2016b. Ivory poachers and poison: drivers of Africa's declining vulture populations. *Oryx*, 50(4): 593-596.
- Ogutu, J.O., Piepho, H.P., Said, M.Y., Ojwang, G.O., Njino, L.W., Kifugo, S.C. & Wargute, P.W. 2016. Extreme Wildlife Declines and Concurrent Increase in Livestock Numbers in Kenya: What Are the Causes? *PLoS ONE*, 11(9): 1-46.



Panthera. 2020. *The State of the Lion*. [Online]. Available: <https://www.panthera.org/cat/lion#:~:text=Today%2C%20there%20are%20only%20about,contain%20more%20than%201%2C000%20lions>. [2020, July 10].

Panthera, WildAid, & WildCRU. 2016. *Beyond Cecil: Africa's Lions in Crisis*. London: Panthera Press.

Parliamentary Monitoring Group. 2018. *ATC181108: 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?* [Online]. Available: <https://pmg.org.za/taled-committee-report/3595/> [2020, July 20].

Paquet, G. 1999. *Governance Through Social Learning*. Ottawa: University of Ottawa.

Peters, B.G. 2017. What is so wicked about wicked problems? A conceptual analysis and a research program. *Policy and Society*, 36(3): 385-396.

Pierce, R. 2008. *Research Methods in Politics: A Practical Guide*. London: SAGE.

Pinnock, D. 2018. Outrage after Kruger lion baited and shot by trophy hunter in neighbouring reserve. *Daily Maverick*, 11 June. [Online]. Available: <https://www.dailymaverick.co.za/article/2018-06-11-outrage-after-kruger-lion-baited-and-shot-by-trophy-hunter-in-neighbouring-reserve/#gsc.tab=0> [2020, July 10].

Pinnock, D. 2019. Poachers poison hundreds of Botswana vultures. *Daily Maverick*, 21 June. [Online]. Available: <https://www.dailymaverick.co.za/article/2019-06-21-poachers-poison-hundreds-of-botswana-vultures/> [2020, August 10].

Poaching Facts. 2020. *Buyers of Elephant Ivory*. [Online]. Available: <http://www.poachingfacts.com/faces-of-the-poachers/buyers-of-elephant-ivory/> [2020, July 27].

Pomeroy, R., Parks, J., Mrakovcich, K.J. & LaMonica, C. 2016. Drivers and impacts of fisheries scarcity, competition, and conflict on maritime security. *Marine Policy*, 67(2016): 94-104.

Pryshlakivsky, J. & Searcy, C. 2013. Sustainable Development as a Wicked Problem, in S.F. Kovacic & A. Sousa-Poza (eds.). *Managing and Engineering in Complex Situations*. Berlin: Springer Science and Business Media. 109-128.

- Ratner, B.C., Meinzen-Dick, R., May, C. & Haglund, E. 2013. Resource conflict, collective action, and resilience: an analytical framework. *International Journal of the Commons*, 7(1): 183-208.
- Ratner, B.C., Burnley, C., Mugisha, S., Madzudzo, E., Oeur, I., Mam, K., Ruttinger, L., Chilufya, L. & Adriaola, P. 2018. Investing in multi-stakeholder dialogue to address natural resource competition and conflict. *Development in Practice*, 28(6): 799-812.
- Redford, K.H., Adams, W. & Mace, G.H. 2013. Synthetic Biology and Conservation of Nature: Wicked Problems and Wicked Solutions. *PLOS Biology*, 11(4): e1001530.
- Republic of Mozambique. 1999. *Boletim da República*. Government Gazette Series 1, Supplement 4 no. 27, 7 July.
- Republic of Mozambique. 2009. *The National Report on Implementation of the Convention on Biological Diversity in Mozambique*. Maputo: Ministry for the Coordination of Environmental Affairs.
- Republic of Namibia. Ministry of Environment, Forestry & Tourism. 2020. *Acts: Nature Conservation Ordinance 1975*. [Online]. Available: <http://www.met.gov.na/policies-legislation/acts/188/> [2020, July 30].
- Republic of South Africa. 2017. *National Integrated Strategy to Combat Wildlife Trafficking (NISCWT) February 2017 – Version 4*. Pretoria: Government Printer.
- Republic of South Africa. Department of Environmental Affairs. 2018. *Environment: 2016/2017 South Africa Yearbook*. Pretoria: DEA.
- Republic of South Africa. 2020. *Minister Edna Molewa establishes lion bone export quota for 2018*. [Online]. Available: <https://www.gov.za/speeches/minister-edna-molewa-establishes-lion-bone-export-quota-2018-16-jul-2018-0000> [2020, July 15].
- Rittel, H.W.J. & Webber, M.M. 1973. Dilemmas in a General Theory of Planning. *Policy Sciences*, 4(2): 155-169.
- Roberts, N. 2000. Wicked Problems and Network Approaches to Resolution. *International Public Management Review*, 1(1): 1-19.

- Roberts, N. 2018. Wicked Problem Territory and the Design Strategy, in *The International Public Policy Workshop on Wicked Problems and Agenda Setting*. Lyon: International Public Policy Association.
- Rose, D.C., Sutherland, W.J., Amano, T., González-Varo, J.P., Robertson, R.J., Simmons, B.I., Wauchope, H.S., Kovacs, E., Durán, A.P., Vadrot, A., Wu, W., Dias, M.P., Di Fonzo, M.M.I., Ivory, S., Norris, L., Nunes, M.H., Nyumba, T., Steiner, N., Vickery, J. & Mukherjee, N. 2018. The major barriers to evidence-informed conservation policy and possible solutions. *Conservation Letters*, 11(5): e12564.
- Ross, M.L. 2004. How Do Natural Resources Influence Civil War? Evidence from Thirteen Cases. *International Organisation*, 58(1): 35-67.
- Rowcliffe, J., de Merode, E. & Cowlshaw, G. 2004. Do wildlife laws work? Species protection and the application of a prey choice model to poaching decisions. *Proceedings of the Royal Society B: Biological Sciences*, 271(1557): 2631-2636.
- Sabel, C.F. & Zeitlin, J. 2011. Experimentalist Governance, in D. Levi-Faur (ed.). *The Oxford Handbook of Governance*. Oxford: Oxford University Press. 167-183.
- Sachs, S., Rühli, E. & Meier, C. 2010. Stakeholder Governance as a Response to Wicked Issues. *Journal of Business Ethics*, 96(1): 57-64.
- Sanginga, P.C., Kamugisha, R. & Martin, A.M. 2007. The Dynamics of Social Capital and Conflict Management in Multiple Resource Regimes: A Case of the Southwestern Highlands of Uganda. *Ecology and Society*, 12(1): 6-22.
- Santangeli, A., Arkumarev, V., Rust, N.A. & Girardello, M. 2016. Understanding, quantifying and mapping the use of poison by commercial farmers in Namibia – Implications for scavengers' conservation and ecosystem health. *Biological Conservation*, 204(2016): 1-37.
- Schön, D.A. & Rein, M. 1995. *Frame Reflection: Towards the Resolution of Intractable Policy Controversies*. New York: Basic Books.
- Sclee, G. 2004. Taking Sides and Constructing Identities: Reflections on Conflict Theory. *Royal Anthropological Institute*, 10(1): 135-156.

Selier, J., Nel, L., Rushworth, I., Kruger, J., Coverdale, B., Mulqueeny, C. & Blackmore, A. 2018. *An assessment of the potential risks of the practice of intensive and selective breeding of game to biodiversity and the biodiversity economy in South Africa*. South Africa: Conservation Action Trust.

Semcer, C. 2019. *Reopening Botswana To Trophy Hunting Depends On U.S. Support*. [Online]. Available: <https://www.conservationfrontlines.org/2019/04/reopening-botswana-to-trophy-hunting-depends-on-u-s-support/> [2020, August 9].

Seoraj-Pillay, N. & Pillay, N. 2016. A Meta-Analysis of Human-Wildlife Conflict: South African and Global Perspectives. *Sustainability*, 9(34): 1-21.

Snyman, S. 2012. The Role of Tourism Employment in Poverty Reduction and Community Perceptions of Conservation and Tourism in Southern Africa. *Journal of Sustainable Tourism*, 20(3): 395-416.

Southern African Development Community. 2015. *Law Enforcement and Anti-Poaching Strategy 2016-2021*. Gaborone: SADC.

South African Institute of International Affairs. 2018. *South Africa's role in the lion bone trade: a neglected story*. [Online]. Available: <https://saiia.org.za/research/south-africas-role-in-the-trade-in-lion-bones-a-neglected-story/> [2020, July 20].

South African National Parks. 2006. *Raptors and Reservoirs*. [Online]. Available: <https://www.sanparks.org/parks/karoo/news.php?id=376%3FPHPSESSID=0g98hu3jju3i28ev88hknu14a6> [2020, July 25].

South African Predator Association. 2016. *Unethical hunting practices or not?* [Online]. Available: <https://sapredators.co.za/a11.html> [2020, July 23].

South African Predator Association. 2020. *9 Myths about Captive-bred Lions*. [Online]. Available: <https://www.sapredators.co.za/p37.html> [2020, August 10].

Starman, A.B. 2013. The case study as a type of qualitative research. *Journal of Contemporary Educational Studies*, 1(2013): 28-43.

- Statistics South Africa. 2020. *Natural Capital Accounting*. [Online]. Available: <http://www.statssa.gov.za/?page.id=5992> [2020, February 3].
- Stephan, H.R. & Zelli, F. 2009. The Role of International Organisations in Global Environmental Governance, in C. Hartley, G. Jones, & A. Neale (eds.). *The Environment Encyclopaedia and Directory*. London: Routledge. 3-13.
- Steyn, L.L. 2018. Controversy over Skye the Lion. *The Mercury*, 19 September. [Online]. Available: <https://conservationaction.co.za/media-articles/controversy-over-skye-the-lion> [2020, August 15].
- Steyn, M. 2005. Muti murders form South Africa: A case report. *Forensic Science International* 151(3): 279-287.
- Stolton, S. & Dudley, N. 2019. *The New Lion Economy: Unlocking the value of lions and their landscapes*. Bristol: Equilibrium Research.
- Swilling, M. & Annecke, E. 2012. *Just Transitions: Explorations of sustainability in an unfair world*. Cape Town: UCT Press.
- Tamas, P. 2003. *Water Resource Scarcity and Conflict: Review of Applicable Indicators and Systems of Reference*. Paris: UNESCO.
- Termeer, C.J.A.M., Dewulf, A., Breeman, G.E. & Stiller, S.J. 2015. Governance Capabilities for Dealing Wisely with Wicked Problems. *Administration & Society*, 47(6): 680-710.
- Termeer, C.J.A.M, Dewulf, A. & Biesbroek, R. 2019. A critical assessment of the wicked problem concept: relevance and usefulness for policy science and practice. *Policy and Society*, 38(2): 167-179.
- Theisen, O. 2008. Blood and Soil? Resource Scarcity and Internal Armed Conflict Revisited. *Journal of Peace Research*, 46(6): 801-818.
- Thomas, G. 2011. A typology for the case study in social science following a review of definition, discourse, and structure. *Qualitative Inquiry*, 17(6): 511-521.

Treves, A. 2008. The Human Dimensions of Conflicts with Wildlife around Protected Areas, in M.J. Manfredo, J.J. Vaske, P. Brown, D.J. Decker, & E. Duke (eds.). *Wildlife and Society: The Science of Human Dimensions*. Washington, DC: Island Press. 214-228.

Trinkel, M. & Angelici, F. 2016. The Decline in the Lion Population in Africa and Possible Mitigation Measures, in F.M. Angelici (ed.). *Problematic Wildlife*. Switzerland: Springer International Publishing. 45-68.

Trouwborst, A., Lewis, M., Burnham, D., Dickman, A., Hinks, A., Hodgetts, T., Macdonald, E.A. & Macdonald, D.W. 2017. International law and lions (*Panthera leo*): understanding and improving the contribution of wildlife treaties to the conservation and sustainable use of an iconic carnivore. *Nature Conservation*, 21(2017): 83–128.

Turner, R.L. 2004. Communities, wildlife conservation, and tourism-based development: Can community-based nature tourism live up to its promise? *Journal of International Wildlife Law and Policy*, 7(3): 161-182.

Ukutula Lodge. 2020. *Guided Enrichment Walk with Lions in the African Bush*. [Online]. Available: <https://lodge.ukutula.co.za/ukutula/bushwalk/> [2020, July 11].

UNEP. 2019. *Structure and Leadership*. [Online]. Available: <https://unenvironment.org/ab-out-un-environment/why-does-un-environment-matter/structure-and-leadership> [2019, November 29].

UNEP-WCMC. 2016. *The State of Biodiversity in Africa: A mid-term review of progress towards the Aichi Biodiversity Targets*. Cambridge: UNEP-WCMC Press.

United States Agency for International Development. 2018. *Biodiversity, Livelihoods, and Counter Wildlife Trafficking*. Washington, DC: USAID Press.

United States Agency for International Development. 2019. *Conservation & Law Enforcement in Gorongosa & Niassa: a study of the criminal justice process for wildlife crime, from apprehension to incarceration*. Washington, DC: USAID Press.

United States Institute of Peace. 2007. *Natural Resources, Conflict, and Conflict Resolution*. Washington DC: UNIP.

- Venter, Z. 2019. High court rules lion bone export quota 'unlawful'. *IOL*, 6 August. [Online]. Available: <https://www.iol.co.za/news/south-africa/high-court-rules-lion-bone-export-quota-unlawful-30395958> [2020, September 4].
- Vig, P. 2016. Blood Lines: Cecil the Lion, Mandela, and Art in History. *Kronos*, 42(1): 174-194.
- Vogel, C., Scott, D., Culwick, C. & Sutherland, C.G. 2016. Environmental problem-solving in South Africa: harnessing creative imaginaries to address 'wicked' challenges and opportunities. *South African Geographical Journal*, 98(3): 515-530.
- VulPro. 2018. *VulPro Annual Report 2018*. Hartbeespoort: VulPro.
- Vulture Conservation Foundation. 2019. *Catastrophic blow for conservation: 600+ vultures fatally poisoned across Africa within two weeks*, 9 November. [Online]. Available: <https://www.4vultures.org/2019/06/21/catastrophic-blow-for-conservation-600-vultures-fatally-poisoned-across-africa-within-two-weeks/> [2020, July 25].
- Vultures Namibia. 2016. *Vultures and Water*. [Online]. Available: <https://www.vultures-namibia.com/living-with-vultures> [2020, July 30].
- Watts, S. 2016. Protection of the African Lion: A Critical Analysis of the Current International Legal Regime. *PER/PELJ*, 19(2016): 1-41.
- Weber, E.P. & Khademian, A.M. 2008. Wicked Problems, Knowledge Challenges, and Collaborative Capacity Builders in Network Settings. *Public Administration Review*, 68(2): 334-349.
- Western, G., Macdonald, D.W., Loveridge, A.J. & Dickman, A.J. 2019. Creating Landscapes of Coexistence: Do Conservation Interventions Promote Tolerance of Lions in Human-dominated Landscapes? *Conservation & Society*, 17(2): 204-217.
- Wilderness Safaris. 2016. *Southern Africa's Vultures Need All The Protection They Can Get*. [Online]. Available: <https://wilderness-safaris.com/> [2020, August 10].
- Wildlife Conservation Society. 2020. *Wildlife Management*. [Online]. Available: <https://www.wcs.org/our-work/solutions/wildlife-management> [2020, February 2].

Wildlife Watch. 2018. Exclusive: An Inside Look at Cecil the Lion's Final Hours. *National Geographic*, 3 March. [Online]. Available: <https://www.nationalgeographic.com/news/2018/03/wildlife-watch-cecil-trophy-hunting-andrew-loveridge/> [2020, September 4].

Wildthingz Lodge. 2017. *Walk with Lions*. [Online]. Available: <https://www.wildthingzlodge.co.za/activities/walk-with-lions/> [2020, July 11].

Williams, S. 2011. *The impact of land reform in Zimbabwe on the conservation of cheetahs and other large carnivores*. Doctoral Dissertation. Durham University.

Williams, V., Newton, D., Loveridge, A. & Macdonald, D. 2015. *Bones of Contention: An assessment of the South African trade in African Lion Panthera leo bones and other body parts*. Cambridge: TRAFFIC.

Williams, S.T., Williams, K.S., Joubert, C.J. & Hill, R.A. 2016. The impact of land reform on the status of large carnivores in Zimbabwe. *PeerJ*, 4(2016): e1537.

Williams, S. 2017. How badly implemented land reform can affect wildlife: a Zimbabwean case study. *The Conversation*, 28 June. [Online]. Available: <https://theconversation.com/how-badly-implemented-land-reform-can-affect-wildlife-a-zimbabwean-case-study-79282> [2020, August 25].

World Wildlife Foundation. 2018. *The status of African Elephants* [Online]. Available: <https://worldwildlife.org/magazine/issues/winter-2018/articles/the-status-of-african-elephants> [2019, November 27].

World Wildlife Foundation. 2020. *Building the Future of Biodiversity Conservation in Mozambique*. [Online]. Available: <https://www.worldwildlife.org/projects/building-the-future-of-biodiversity-conservation-in-mozambique>. [2020, August 20].

Worldometers. 2020. *Population of Africa (2019 and historical)*. [Online]. Available: <https://www.worldometers.info/world-population/africa-population/> [2020, July 9].



## **APPENDIX A: Key Informant Interviews List**

1. KII: Respondent 1 (a): wildlife conservationist and NGO project manager, 29-30 May 2020, Leoriesfontein (fieldwork participation).
2. KII: Respondent 1 (b): wildlife conservationist and NGO project manager, 18-20 June 2020, Karoo National Park (fieldwork participation).
3. KII: Respondent 1 (c): wildlife conservationist and NGO project manager, 16 September 2020, Cape Town (phone call interview).
4. KII: Respondent 1 (d): wildlife conservationist and NGO project manager, 25 September 2020, Cape Town (email correspondence).
5. KII: Respondent 1 (e): wildlife conservationist and NGO project manager, 25 September 2020, Cape Town (email correspondence).
6. KII: Respondent 2 (a): NGO representative in policy and advocacy, 6 July 2020, Durban (video interview).
7. KII: Respondent 2 (b): NGO representative in policy and advocacy, 11 September 2020, Durban (email correspondence).
8. KII: Respondent 3 (a): independent economist, author, academic, director of NGO, SAIIA consultant, 7 July 2020, Pretoria (phone call interview).
9. KII: Respondent 3 (b): independent economist, author, academic, director of NGO, SAIIA consultant, 21 September 2020, Pretoria (email correspondence).
10. KII: Respondent 3 (c): independent economist, author, academic, director of NGO, SAIIA consultant, 5 October 2020, Pretoria (email correspondence).
11. KII: Respondent 4 (a): researcher and NGO representative, 8 August 2020, Stellenbosch (phone call interview).
12. KII: Respondent 5 (a): Biodiversity Manager of the City of Cape Town, 16 September 2020, Cape Town (phone call interview).
13. KII: Respondent 6 (a): conservationist and safari specialist, 18 September 2020, Cape Town (phone call interview).
14. KII: Respondent 6 (b): conservationist and safari specialist, 19 October 2020, Cape Town (email correspondence).
15. KII: Respondent 7 (a): anti-poaching conservationist and game ranger, 8 October 2020, Paternoster (personal interview).

## APPENDIX B: Figures

Figure 1: Photograph depicting a heap of dead vultures at a mass poisoning (Respondent 6).



Source: Nic Proust (2019).

## APPENDIX C: Additional Tables

Table 3: Summary of Research Questions, Findings and Recommendations

Research questions:	Research Framework:	Case studies:		Findings:		Recommendations:
Sub-questions	Conflict Identifiers	Lions	Vultures			
1. Sacredness & Science	1. Symbolic value of species & places	Mostly positive symbolic value. Caprine vs wild debate. Ethical debate in consumptive industries. International trophy import bans.	Mostly negative symbolic value. Little public interest.	Vultures: both negative & positive values lead to exploitation. Lions: positive values encourage protection & exploitation. High economic values attached to dead animals; high conservation (& long-term economic) value attached to live animals. Poaching in sacred PAs: gains more public attention; spurs conflict; reduces trust & communication.	Conservation campaigns, especially for vultures, should work on the re-branding of vultures. By focusing on their gentle, timid & intelligent natures, a concerned audience may grow sympathy towards them. This may assist in growing public awareness to the potential consequences of their declines on ecosystems & human health.	
	2. Community resource management: the urban-rural divide	HWC: competition for hunting grounds & livestock grazing.	Sentinel poaching: easier in TFCA's.	Conservation NGOs mainly founded in big cities. Rural areas depend on PA & ecotourism income. Communities less likely to respect PAs if they do not receive benefits. TFCA's & distant resources: easy to exploit; difficult to police.	Conservationists & policymakers should acknowledge the political nature over issues affecting conservation. Bridging gaps between urban & rural; rich & poor; access & deprivation; preservation & extraction; recreation & exploitation; live & dead may be worth exploring further.	
	3. Scientific superiority & its limitations in conservation research	Fencing: technical short-term fixes favoured.	Anti-inflammatory: only a solution to simple poisoning problems. Beyond the scientific scope: traditional values; apathetic audience; poverty-stricken poachers & incentives.	Conservation NGOs: require BSc's; advocate scientific research. Research: attempts to quantify socially complex problems; technically frames policies & solutions; avoids political factors.	The lived experiences of stakeholders & their needs hold valuable insight. Should take priority over technical fixes. Until socio-economic realities improve, wildlife will continue to decline.	
	4. The role of the scientist as expert	Captive breeding & home trading: scientism; science wars; SAPA vs activists.	Science bashers & Darwin's Witnesses: debunk traditional belief	Scientists as expert are unlikely to budge or reform their thinking & methods. This only strengthens divisions between experts & exploiters.	Experts should: embrace complexity & uncertainty; be open to learning; accept that standardised methods & procedures cannot cater for complexity.	

	<p>5. Community distrust towards scientists</p>	<p>Communities unlikely to admit to killing lions for harvesting purposes.</p>	<p>Communities &amp; farmers unlikely to admit to deliberately killing vultures, or to supplying the meat market.</p>	<p>Scientists' egos still get in the way of solid judgement.</p>	<p>By focusing on the needs of exploiters, conservationists &amp; policy-makers may be able to communicate better, develop trust, &amp; build respect for conserving endangered species. If their needs are met, the likelihood of killing endangered species may decrease.</p>
	<p>WP Propositions</p>	<p>All 10 propositions present.</p>	<p>Problems &amp; solutions are determined by social values; not necessarily science.</p>	<p>The relationship between sacredness &amp; science troubles conservation, &amp; planning problems become unmanageable, &amp; therefore cannot be solved.</p>	<p>The role that sentimental attachment plays on the fate of endangered species, heated conflict, &amp; respect for the law should no longer be underestimated by the scientific frame.</p>
<p>2. Policy design &amp; implementation</p>	<p>1. The marriage between law &amp; science</p>	<p>South African consumptive lion industries: policy outcomes based on manipulated SANBI research.</p>	<p>Big debate is absent with concerns over vultures. Most likely because the illicit trade is not worth too much money, an audience is apathetic, &amp; vultures are not important to branding the region.</p>	<p>Despite scientific evidence taking superiority in policymaking, ethics plays a crucial role in support/lack thereof for the industries.</p>	<p>Political decisions should focus on the social factors influencing the conservation of species. Doing so may reduce the stalling caused by uncertainty, as it rather accepts the complex system.</p>
	<p>2. Uncertainty in political decision-making</p>	<p>Bone trading debate: good or bad for lion &amp; tiger conservation?  Uncertain policy outcomes: encourages bad policies to remain in fear of worse outcomes.</p>	<p>Big debate is absent with concerns over vultures. Most likely because the illicit trade is not worth too much money, an audience is apathetic, &amp; vultures are not important to branding the region.</p>	<p>Scientific uncertainty as a political tool to stall decisions.  Uncertainty encourages continuation of bad status quos.  Uncertainty undermines efficiency. Eventual decisions likely based on politician goals.</p>	<p>Conservation requires swift action. This cannot occur if actions are constantly debated before anything gets done. Taking risks may be better than doing nothing at all.</p>
	<p>3. Outdated historical policy contexts</p>	<p>Colonial policies encouraging the killing of predators.  IUCN Red List: last updated 2016</p>	<p>Vultures poisoned: indirectly from colonial predator traps; stockpiles of outlawed pesticides.  IUCN Red List: last updated 2016 &amp; 2018.</p>	<p>Colonial/historic mindset in favour of exploiting wildlife &amp; still exist.  Effects of historical wildlife &amp; habitat declines still felt today.</p>	<p>Policies should be updated according to the latest findings. Otherwise legislation undermines the urgency of conservation.  It may be useful to encourage positive sentiments towards those likely to harm animals.</p>

						Perhaps branding poisoning & trophy hunting as colonial practices may discourage people from performing such acts.
4. Incompatible budgetary mandates & legislation	Fencing lacks funding	NGOs: professional beggars	Conservation initiatives & policies: unfeasible; voluntary enforcement. Catch-22: need funding for collaboration, but collaboration is needed to gain funding.	When less time & resources are spent on debating uncertain policy problems, funds can be directed rather at the implementation phase.		
5. Lack of adequate communication in political decision-making	Captive breeding: exclusion of research & actors; shady quotas. Hunting import bans: neglect communities.	Education proves vital to achieve community support for conservation.	Transparency of authorities & stakeholder considerations remain low in decision-making. Centralised decision-making: discourages democracy & participation of stakeholders.	For legislation & sustainable development to work, community decision-making should be respected, & their needs included. Legislation & communication should go h&-in-h&.		
6. Lack of policy enforcement	Breeding facilities: unmonitored; TOPS unenforced; quotas ignored. Hunting: continues in PAs. Regional agreements: sleeping treaties.	Penalties: low for vultures, but high for other mammals.	Strict laws & severe poaching penalties make no difference if left unenforced. Poaching remains a low-risk, high-reward operation. Cultural sensitivity & bone surplus: excuses for reluctant law enforcement.	It is not good enough to just create laws; they need to be enforced. Those responsible for law enforcement & implementation should be held accountable.		
7. Lack of accountability in policymaking & implementation	HWC/self-defence often a cover up for multi harvesting. SA Government & captive industry: DEA vs DAFF vs Provincial Legislature domains.	10% of pylon collisions reported; farmers unlikely to admit to killing wildlife; multi suppliers & users unlikely to admit to it.	Accountability is avoided at all costs. SADC: governments fail to adhere to agreements or share information. The absence of strict mandates holds no-one accountable.	Stricter mandates need to be formed on multiple levels of conservation to adequately set out the domains of responsible actors & hold them accountable.		
8. Institutional red tape & contradictory policy mandates	SAPA: able to play the democratic system. Position of captive lions in legal system constantly disputed.	Injured vultures: only permit holders can transport them. Alternative poisons readily available	Democratic procedures may reduce the feasibility of conservation. Difficulty in obtaining permits leads to conservationists & researchers operating illegally.	Policy mandates should be most clear & set out the responsibilities of involved actors.		

		<p>Tigers remain unprotected in law. Quota swapping with Skye &amp; Cecil.</p>	<p>Vultures not protected under certain laws pertaining to farm poisoning.</p>	<p>Legal procedures undermine the urgency of poaching convictions &amp; conservation. Vague policy language: undermines conservation; provides little legal guidance; causes conflict; encourages violence; dodgy ELAs. Provide legal channels for illegal operations.</p>	<p>One should ask: <i>can the social scientist in policymaking cause less damage?</i> Investigating further into how conservation &amp; community upliftment can occur symbiotically is worth pursuing from the political perspective.</p>
<p>WP Propositions</p>	<p>All 10 propositions present.</p>	<p>Institutional &amp; legal procedures, vague policies, lack of enforcement &amp; ill communication make WPs impossible to solve. Policy design &amp; implementation causes &amp; exacerbates WPs.</p>			
<p>3. Political actors &amp; Interest Group Strategy</p>	<p>1. Political actors &amp; politicising conservation</p>	<p>Colloquium: parties use the platform to criticise government.</p>	<p>Botswana poisoning becomes a surrogate for elephants; political debate over regime change.</p>	<p>L &amp; reform: concerning threat to sustainable development, habitat loss, &amp; political conflict. Politicising conservation: resurrecting issues for short-term gain.</p>	<p>Political actors involved in conservation should be held accountable for fulfilling their responsibilities, but exposing this should be done only for the sake of conservation.</p>
	<p>2. Businesses &amp; economic interests in conservation</p>	<p>Actors brand their products or campaigns with the image of a lion. SA Government approves trading rights in lion bones to known traffickers.</p>	<p>Businesses tend not to support vulture conservation.</p>	<p>The higher the symbolic value of a species, the more likely businesses are to support their conservation. Fraudulent campaigns undermine conservation. Delicate relationship between NGO mandates &amp; their donor wishes.</p>	<p>Campaigns should be held responsible for donating their earnings. Relationships between NGOs &amp; big business donors should be monitored.</p>
	<p>3. The media &amp; crisis orientation</p>	<p>Documentaries on captive breeding &amp; trophy hunting: increases awareness, but increases conflict between involved actors.</p>	<p>Media jumps on Botswana poisoning for its newsworthiness.</p>	<p>Media simplifies &amp; polarises conservation problem in a political manner. Encourages extreme responses &amp; conflict.</p>	<p>The media should be encouraged to publish accurate reports on events, &amp; encourage the audience to learn more about the issue than what is in the media's scope of coverage.</p>

WP Propositions	<p>All 10 propositions are present.</p> <p>The relationships between actors involved illustrate the complex, adaptive system in which WPs operate.</p>	<p><i>High viscosity politics</i> should be investigated further.</p> <p>If the media is going to continue making crises, rather cause a scene on the potential health consequences of depleting vultures.</p>
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Source: Author's compilation (2020).

## APPENDIX D: Ethical Clearance

### NOTICE OF APPROVAL

REC: Social, Behavioural and Education Research (SBER) - Initial Application Form

13 May 2020

Project number: 14713

Project Title: Why Conservation Fails: Uncovering the wicked political nature of Southern Africa's conflict over wildlife extinction

Dear Miss Lindsay Mandy

Your REC: Social, Behavioural and Education Research (SBER) - Initial Application Form submitted on 6 April 2020 was reviewed and approved by the REC: Social, Behavioural and Education Research (REC: SBE).

Please note below expiration date of this approved submission:

**Ethics approval period:** 13 May 2020 – 12 May 2023

#### GENERAL COMMENTS:

##### 1. SUSPENSION OF PHYSICAL CONTACT RESEARCH ACTIVITIES AT SU

There is a **postponement of all physical contact research activities at Stellenbosch University**, apart from research that can be conducted remotely/online and requires no human contact, and research in those areas specifically acknowledged as essential services by the South African government under the presidential regulations related to COVID-19 (e.g. clinical studies).

Remote (desktop-based/online) research activities, online analyses of existing data, and the writing up of research results are strongly encouraged in all SU research environments.

Please read the REC notice for suspension of physical contact research during the COVID-19 pandemic: <http://www.sun.ac.za/english/research-innovation/Research-Development/sbecovid-19>

If you are required to amend your research methods due to this suspension, please submit an amendment to the REC: SBE as soon as possible. The instructions on how to submit an amendment to the REC can be found on this webpage: [instructions], or you can contact the REC Helpdesk for instructions on how to submit an amendment: [applyethics@sun.ac.za](mailto:applyethics@sun.ac.za).

#### INVESTIGATOR RESPONSIBILITIES

Please take note of the General Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

**If the researcher deviates in any way from the proposal approved by the REC: SBE, the researcher must notify the REC of these changes.**

Please use your SU project number (14713) on any documents or correspondence with the REC concerning your project.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

#### CONTINUATION OF PROJECTS AFTER REC APPROVAL PERIOD

You are required to submit a progress report to the REC: SBE before the approval period has expired if a continuation of ethics approval is required. The Committee will then consider the continuation of the project for a further year (if necessary).

Once you have completed your research, you are required to submit a final report to the REC: SBE for review.



**Included Documents:**

**Document Type File Name Date Version**

Research Protocol/Proposal (18605702) 05/03/2020 1  
Informed Consent Form Consent Form (18605702) 11/03/2020 1  
Informed Consent Form Verbal Consent (18605702) 11/03/2020 1  
Data collection tool Interview Guide 13/03/2020 1  
Data collection tool Observation Schedule (18605702) 16/03/2020 1

If you have any questions or need further help, please contact the REC office at [cgraham@sun.ac.za](mailto:cgraham@sun.ac.za).

Sincerely,

Clarissa Graham

REC Coordinator: Research Ethics Committee: Social, Behavioural and Education Research

*National Health Research Ethics Committee (NHREC) registration number: REC-050411-032. The Research Ethics Committee: Social, Behavioural and Education Research complies with the SA National Health Act No.61 2003 as it pertains to health research. In addition, this committee abides by the ethical norms and principles for research established by the Declaration of Helsinki (2013) and the Department of Health Guidelines for Ethical Research: Principles Structures and Processes (2nd Ed.) 2015. Annually a number of projects may be selected randomly for an external audit.*